



INDIGO LEADS AVERAGE ON-TIME PERFORMANCE OVER THE LAST ONE YEAR



NANOTECHNOLOGY HAS MODERNIZED THE AVIATION INDUSTRY

AVIATION

India's premier aviation monthly magazine

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UPDATE



« **Turbulence in Airlines Industry**
Manoj Srivastava

PROVIDING CRITICAL SUPPORT WITHIN THE AVIATION ECOSYSTEM

Murali Ramachandran
Celebi Aviation - CEO India



INDIA



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CO-LOCATED EVENTS



8800490372

psrivastava@servintonline.com

9711361842

nlaroiya@servintonline.com

MEDIA PARTNERS



info@droneexpo.in



Website

www.droneexpo.in



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Editor-in-Chief : B. Kartikeya

EDITORIAL

Special Editor : Rohith Reddy

Associate Editor : Mahua sinha roy

Correspondent : B. Martin

CREATIVE HEAD : Rajesh Bali

PHOTOGRAPHER : Krishanth

MARKETING

Manager, Marketing : Rohith Reddy

SUBSCRIPTION

Asst.Manager, Subscription : Naheda

Sr.Customer Support Officer : Sony

FINANCE & ADMINISTRATION

Sr.Manager : Karunandhi

Asst.Manager : Md. Wajid Ali

Editorial & Advertising Offices

Aviation Update

16-11-741/6/E/50, S.B.H COLONY, DILSUKHNAGAR,

HYDERABAD-500 060, India.

Tel: 09444499221, 040-24055553.

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E-mail: info@aviationupdatemagazine.com

Letter to editor

editor@aviationupdatemagazine.com

For Advertising details contact

marketing@aviationupdatemagazine.com

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Sigh of relief! I had been holding my breath for almost a month until I made some revelations with my announcement in the previous issue. Can never be there a better way to celebrate my favorite child AVIATION UPDATE blowing out 7 candles. While my favorite child entered his 8th year, the new born just started to make me feel proud, running on the distant shores of Middle East even before he could walk.

Previous issue has presented you a lot of great things happening in our Aviation skies. I can now sense the favorable winds coming closer to keep us people soaring above the clouds; optimistic thinking though. What could be a more awesome way to start than shooting updates at you which are industry firsts? Moving ahead, get informed about the organizational changes happening within the firms while the defense and military sections takes you through the blast wave with some explosive news. Guess I don't have to remind you to go through cargo, business aviation, and Engine & MRO sections.

It would sound incomplete if I don't mention the cover story and the conversations we had with the amazing people. Conversation with Murali Ramachandran, CEO of Celebi Aviation India takes you through the difficulties they had to overcome due to the prevailing conditions and the progress happening in their operational sectors. My good memory said it has been a while since we gave you a story on technology. So, we brought you this time an article that speaks on how Nanotechnology has modernized the aviation industry. And of course, a valuable cover story provided by Manoj Srivastava, Director – Aviation technology on the impact of Covid-19 on airlines makes this issue a complete package.

Before I bring in more and more amazing content with the next issue, stay updated, cheers and joy. Stay blessed.

Thanks

B. Kartikeya
Editor

AIRBUS NEW SINGLE-AISLE AIRSPACE CABIN ENTERS INTO SERVICE WITH LUFTHANSA GROUP



Lufthansa has started operations with its first A320 Family aircraft – an A321neo – featuring Airbus’ new Single-Aisle Airspace cabin. In doing so, the airline becomes the first operator in Europe to introduce the new Airspace cabin features for passengers on board A320 Family aircraft. In 2018 Lufthansa Group, a long-time A320 Family customer, chose to equip more than 80 of its new A320 Family aircraft on order from Airbus with Airspace cabins.

The new Airspace features include: slimmer sidewall panels for extra personal space at shoulder level; better views through the windows with their redesigned bezels and completely integrated window shades; the largest overhead bins for 60% more bags; the latest full LED lighting technologies; LED-lit ‘entrance area’; and new lavatories with hygienic touchless features and antimicrobial surfaces.

“Lufthansa has once again made a choice of innovation and passenger appeal, raising the bar for the flying public at large to experience next-level, Airbus leading cabin innovations”, said Christian Scherer, Airbus Chief Commercial Officer and Head of International. “I am delighted to welcome one of our long term partners, Lufthansa, to become the first European operator for the A320neo Family Airspace cabin. I can’t wait to fly on one of these aircraft.”

“Regardless of the crisis, we continue to focus emphatically on a premium product for our guests,” emphasizes Heike Birkenbach, Head of Customer Experience, Lufthansa Group. “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 and setting a new industry benchmark.”

CHINA’S FIRST C919 AIRCRAFT BOUND FOR CHINA EASTERN AIRLINES TO ENTER FINAL ASSEMBLY



The first C919 aircraft, developed by Commercial Aircraft Corporation of China (COMAC), will soon enter the final assembly phase, the Chinese aviation regulator told Reuters on September 13, 2021. It is bound to be delivered to launch customer China Eastern Airlines (CIAH) (CEA).

In March 2021, China Eastern Airlines signed a purchase contract with COMAC to acquire five C919 aircraft. The Shanghai-based carrier will become the first operator of C919 aircraft in the world.

C919 aircraft is a narrow body developed by Chinese aircraft manufacturer COMAC. The first C919 was rolled out in 2015. The C919 was initially supposed to enter commercial service in 2016 but it was delayed due to technical difficulties and supply issues.

The narrow body, destined for competition against the Airbus A320neo and Boeing 737 MAX, made its first test flight in 2017. Now, COMAC aims for C919 local certification by the end of 2021.

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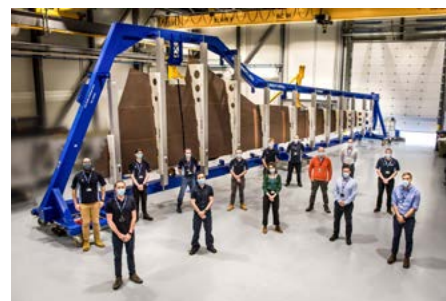


IndiGo has recorded the highest average On-Time Performance over the last one year, according to the reports released by DGCA. The airline has been an excellent performer consecutively for the past 12 months, with the highest average OTP of 97.06% across four key metro cities - Bangalore, Delhi, Hyderabad, and Mumbai. According to the reports, IndiGo registered highest OTP (above 98%) in August,

September 2020 and April, May, June 2021.

Mr. Wolfgang Prock-Schauer, President and Chief Operating Officer, IndiGo said, “We are pleased to be setting a benchmark in On-Time-Performance amongst scheduled commercial carriers in the country, despite the size of our operations. I would like to thank the operations teams for delivering an excellent performance every day for the past 12 months. Reflecting on the 15 years of our remarkable journey, one thing that remains constant has been our simple promise of being on-time, offering low fares and providing a safe and hassle-free service. We are committed to continue serving our customers On-Time on our Lean Clean Flying Machines.”

AIRBUS BEGINS ASSEMBLY OF FIRST FUTURE ‘ECO-WING’ PROTOTYPE



‘Wing of Tomorrow’, a major Airbus research and technology programme, has reached a key milestone with the assembly of its first full-size wing prototype. The Wing of Tomorrow programme will not only test the latest composite materials and new technologies in aerodynamics and wing architecture but, importantly, explore how wing manufacturing and industrialisation can be improved to meet future demand as the sector emerges from the pandemic.

Three full-size prototype wings will be manufactured in total: one will be used to understand systems integration; a second will be structurally tested to compare against computer modelling, while a third will be assembled to test scaling-up production and compare against industrial modelling.

Sabine Klauke, Airbus Chief Technical Officer, said: “Wing of Tomorrow, a crucial part of Airbus’ R&T portfolio, will help us assess the industrial feasibility of future

wing production. High-performing wing technology is one of several solutions - alongside sustainable aviation fuels and hydrogen - we can implement to contribute to aviation's decarbonisation ambition. Wing of Tomorrow is also an example of how large-scale industry collaboration will be critical to achieving our sector's agenda for a more sustainable future."

Wing of Tomorrow, part-funded by the UK's Aerospace Technology Institute, is a fully transnational Airbus programme involving global partners and teams across Airbus' European sites, including Bremen in Germany, where the 'Wing Moveables' team is based. The three wing demonstrators will bring together more than 100 new technologies to explore new manufacturing and assembly techniques with the goal of making aviation more sustainable.

Sub-assembly of the complex wing cover took place at Airbus' Filton site, England, having been manufactured at the National Composite Centre in Bristol. The wing cover and a major component from GKN Aerospace - the Fixed Trailing Edge - were delivered to the Advanced Manufacturing Research Centre, Wales, facility on Airbus' wing-production plant in Broughton, Flintshire, for assembly to begin.

■ SPICEJET RECEIVES SHAREHOLDER APPROVAL FOR TRANSFERRING CARGO BUSINESS TO SPICEXPRESS AND LOGISTICS PRIVATE LIMITED



SpiceJet has received shareholders' approval to transfer its cargo and logistics services business to its subsidiary, SpiceXpress and Logistics Private Limited ("SpiceXpress"), as a going concern, on slump sale basis valued at INR 2,555.77 crore. The consideration for the slump sale shall be discharged by SpiceXpress by issuance of its shares in favour of SpiceJet.

The transfer of the logistics business will result in a one-time gain of INR 2555.77 crore for SpiceJet wiping out a substantial portion of the company's negative net worth. SpiceJet had a negative net worth of INR 3300 crore as on June 30, 2021. The negative net worth will reduce to about INR 745 crore post the transfer of the logistics business.

The transfer of logistics business to SpiceXpress will provide greater and differentiated focus to cargo and logistics business and will allow raising capital for the business to accelerate its growth. The proposed transfer, with separate and enhanced management focus, will provide greater opportunity and flexibility in pursuing long-term growth plans and strategies for SpiceXpress business providing various innovative logistics platform using fulfilment as a service. It will also assist the management in evaluating the business performance of SpiceXpress as an independent entity while leveraging and unlocking significant value for the Company and its shareholders.

The Company has also received shareholders' approval to raise funds by issue of eligible securities through Qualified Institutions Placement (QIP). SpiceJet plans to raise INR 2,500 crore through a QIP.

Ajay Singh, Chairman and Managing Director, SpiceJet, said, "The shareholder approval paves the way for our long term plans to take a concrete shape and will result in unlocking significant value for the Company and all its shareholders. The transfer of the logistics business to SpiceXpress will reduce SpiceJet's negative net worth by INR 2,555.77 crore and strengthen our balance sheet significantly. Post the transfer of the logistics business, the new company will be able to raise capital independently of SpiceJet to fund its growth. We have also received shareholder approval to raise funds through a QIP ensuring our long term growth plans remain intact."

As per the last quarterly segment reporting by the Company ended June 30, 2021, the logistics arm continued with its strong growth story reporting yet another profitable quarter with a Net Profit of INR 30 crore. The revenue increased by a whopping 285% to INR 473 crore for the reported quarter as compared to INR 166

crore in the same quarter last year. The logistics arm today has a network which spans over 68 domestic and over 110 international destinations including US, Europe and Africa.

■ VISTARA TO COMMENCE NON-STOP FLIGHTS ON THE DELHI-PARIS ROUTE FROM NOVEMBER



Vistara announced special, non-stop flights between Delhi and Paris CDG (Charles de Gaulle) starting 7 November 2021. The airline will operate these flights as part of the bilateral 'transport bubble' agreement between India and France. Vistara will fly twice a week between the two cities - on Wednesdays and Sundays. Bookings for the flights are being progressively opened on all channels, including Vistara's website, mobile app, and through travel agents.

Mr. Leslie Thng, Chief Executive Officer, Vistara, said, "We are very pleased to commence flights to Paris, a step that reflects our commitment to growing our global network. These flights give us the opportunity to further build our presence in Europe and to present India's finest full-service carrier to the world."

The Delhi-Paris route of the airline will be served by Vistara's Boeing 787-9 Dreamliner, providing a world-class flying experience to travellers. The Dreamliner aircraft are equipped with highly efficient airflow and filtration systems that continuously refresh the cabin with air from outside. Powerful HEPA filters trap 99.9% of particulates such as viruses, bacteria, and fungi and purify the air inside the cabin every two to three minutes.

Vistara will accept all eligible customers

meeting visa/entry requirements in both the countries, as specified by the respective government bodies. Vistara strongly encourages its customers to fully understand these guidelines before making their bookings.

Vistara is India's highest-rated airline on Skytrax and Tripadvisor, and has also been the winner of several 'Best Airline' awards. In a short span of six years since starting operations, Vistara has raised the bar for operations and service standards in the Indian aviation industry.

VISTARA NAMED 'BEST AIRLINE IN INDIA & SOUTHERN ASIA' AT 2021 WORLD AIRLINE AWARDS BY SKYTRAX



Vistara won two prestigious awards - Best Airline in India & Southern Asia and Best Airline Staff in India & Southern Asia, at the 2021 World Airline Awards. Vistara was voted for by global air travellers based on their experiences, elevating the airline to the 28th position amongst 350 global airlines (up from 69th in 2019 and 86th in 2018). The World Airline Awards are based on surveys of more than 13 million travellers for the period between September 2019 and July 2021.

Leslie Thng, Chief Executive Officer, Vistara said: "We are very delighted to have won these prestigious awards that recognise the consistent efforts by each and every team member towards offering a world-class travel experience to our customers. We would like to thank Skytrax for the recognitions and express gratitude to all our customers for placing their trust in us."

Commenting on the Awards for Vistara, Edward Plaisted, CEO of Skytrax said: «Vistara has achieved a

remarkable success by winning these two major awards, demonstrating their leadership for the highest product and staff service standards. Vistara also jumped up the global ratings to be ranked at No 28 out of 350 airlines. We look ahead with optimism for 2022 that air travel may be restored to more normal times.»

HAC RECEIVES SPECIAL SAF DELIVERY



Hokkaido Air System Co., Ltd 's latest ATR 42-600 left Toulouse bound Japan, with a brand new One World Alliance livery, and using Sustainable Aviation Fuel (SAF) for the first leg of its ferry flight.

The ATR has proven to be successful in connecting communities across the Japanese archipelago, thanks to its effectiveness at taking-off and landing on short runways. This is the third ATR 42-600 that the airline has received since its first delivery in December 2019 and becomes the 14th ATR -600 to operate in Japan.

Another reason for the aircraft's Japanese success is its fuel burn efficiency in a country which is extremely diligent in reducing its carbon dioxide emissions. ATR aircraft burn up to 40% less fuel than a similarly sized regional jet and therefore emit up to 40% less CO₂. Further emission savings are possible by fuelling the aircraft with SAF and ATR recently announced a project to fly an aircraft fuelled with 100% SAF. A demonstration flight is planned for spring 2022 with a target of 2025 for the possibility of using 100% SAF on commercial ATR flights.

AMERICAN AIRLINES AND INDIGO SIGN CODESHARE AGREEMENT



American Airlines is opening new doors across India this fall thanks to a new codeshare agreement with IndiGo. The agreement will place American's code on 29 of IndiGo's domestic routes in India, providing a convenient option for American Airlines' customers arriving on the carrier's new Bengaluru (BLR) and Delhi (DEL), India, flights.

The codeshare, which will require U.S. and Indian governments' approvals, is expected to begin in October, as American launches new services between New York (JFK) and DEL on October 31, and between Seattle (SEA) and BLR on January 4, 2022.

IndiGo is based in Gurgaon, Haryana, India. With its fleet of 275+ aircraft, the airline operates more than 1,100 daily flights, connecting 70 domestic destinations and 24 international destinations. Since its founding in 2006, IndiGo's 23,000 employees have professionally served more than 300 million customers.

INDIGO STRENGTHENS REGIONAL CONNECTIVITY; COMMENCES OPERATIONS FROM GWALIOR



In-line with its vision to further strengthen regional connectivity, IndiGo commenced operations from Gwalior. The new route was inaugurated with lamp lighting at the Gwalior airport as well as Ministry of Civil Aviation in New Delhi.

The ceremony was graced by Honourable Union Minister for Civil Aviation – Shri Jyotiraditya Scindia (virtually), Honourable Chief Minister of Madhya Pradesh (virtually-TBC), Shri Shivraj Singh Chouhan, and other eminent dignitaries from Gwalior, Bhopal, and Indore at the Gwalior airport.

Mr. Sanjay Kumar, Chief Strategy and Revenue Officer, IndiGo said, “We are pleased to launch operations from Gwalior making it IndiGo’s 70th domestic destination and 4th station in the state of Madhya Pradesh. This is yet another milestone for us as we make further strides in our plan to connect seven regional destinations on 6E network this year. The winter capital of Madhya Pradesh, Gwalior, is known for its beautiful forts, temples, tomb, museum, and palaces. The increased accessibility will not only enhance trade and commerce, but also promote tourism in Gwalior, especially at this time when Indians are increasingly looking towards domestic vacations to rejuvenate and destress. For Indians seeking to explore the culture rich domestic cities, we are committed to providing an affordable, ontime, safe and hassle-free travel experience, onboard our lean clean flying machine.”

■ QATAR AIRWAYS ANNUAL LOSSES DOUBLE ON PANDEMIC, IMPAIRMENTS



In publishing its Annual Report for 2020/21, covering a challenging year with the ongoing COVID-19 pandemic causing extensive loss of traffic and revenue, Qatar Airways Group has reported a net loss of US\$4.1 billion, of which U.S.\$2.3 billion was due to a one-time impairment charge related to the grounding of the airline’s Airbus A380 and A330 fleets.

However, the Group reported an operational loss of US\$288.3 million, 7% lower compared to 2019/20. Furthermore, the Group achieved a significant improvement

in EBITDA, which stood at US\$1.6 billion compared to US\$1.4 billion the previous year. A combination of our Qatar Airways Cargo division and the Group’s commercial adaptability have been at the core of this recovery. The Group’s freight division, Qatar Airways Cargo, maintained its position as one of the world’s largest cargo carrier and grew its market share during 2020/21. Cargo has also overseen a 4.6% rise in freight tons handled over the previous fiscal year (2019/20), with 2,727,986 tons (chargeable weight) handled in 2020/21. This increase in freight handled, as well as a significant increase in cargo yield, also saw the carrier’s cargo revenues more than double.

Reflecting on the previous 12 months, Qatar Airways Group Chief Executive, His Excellency Mr. Akbar Al Baker, said: “Whilst our competitors grounded their aircraft and closed their routes, we adapted our entire commercial operation to respond to ever-evolving travel restrictions and never stopped flying, operating a network our passengers and customers could rely on. With the support of our varied fleet of modern, fuel-efficient aircraft, we were able to ensure that more of our scheduled flights operated than any other carrier and fulfilled our mission of taking stranded passengers home, whilst maintaining global supply chains to transport medical aid and supplies essential to the fight against COVID-19.”

■ GMR HYDERABAD INTERNATIONAL AIRPORT WINS CII NATIONAL AWARDS OF “NATIONAL ENERGY LEADER” & “EXCELLENT ENERGY EFFICIENT UNIT” 2021



GMR led Hyderabad International Airport has clinched the prestigious awards of CII “National Energy Leader” and “Excellent Energy Efficient Unit” at the 22nd National Award Ceremony for ‘Excellence in Energy Management’ organized by the Confederation of Indian Industry (CII) – Godrej Green Business Centre (GBC) during the 20th edition of ‘Energy Efficiency Summit’, Virtual Conference & Exposition on Energy Efficiency held from 24 - 27 August 2021. GHIAL has been recognized with «National Energy Leader» and «Excellent Energy Efficient Unit» accolades for the 3rd and 5th years in a row, respectively. On behalf of GHIAL, Mr. Prasanna Kumar Potdar, Head – Engineering and Technical Services and Mr. Vijay Rathod, Head PTB Engineering, digitally received the awards on 27th August amidst the presence of industry dignitaries and participants on the last day of the event.

The annual forum recognizes the companies engaged in energy-efficiency initiatives that adopt best practices and technological advancement in their daily operations. The jury evaluated the participants on many parameters of energy efficiency and innovative thought process adopted. The jury, CII members and industry delegates appreciated the initiatives of GHIAL.

Over the last three years, GHIAL operations have led to a substantial energy saving of around 5.53 MU owing to its consistent and sustainable approach towards energy efficiency measures, which has also led to a rapid dip in the GHG (Green House Gas) emissions at the airport. It is worth noting that Hyderabad International Airport is also a Carbon Neutral Airport having Level 3 + “Neutrality” Accreditation from Airports Council International (ACI) under its Airport Carbon Accreditation (ACA) programme.

Speaking on this recognition, Mr. Pradeep Panicker, CEO, GMR Hyderabad International Airport Ltd., said, “We are delighted to receive the award which reaffirms our unwavering commitment to serve passengers and an affirmation of our efforts to improvise and render the best use of the energy resources available. As a responsible corporate, GHIAL is committed to exploring and implementing best-in-

class energy-efficient solutions. We have been consciously working towards energy efficiency and adoption of new innovative technologies and implemented several COVID measures to ensure passenger safety as per new norms.”

AIRBUS DELIVERS FIRST OF 60 A220S TO AIR FRANCE



Air France has received its first A220-300 from an order for 60 aircraft of the type, the largest A220 order from a European carrier. The aircraft was delivered from Airbus’ final assembly line in Mirabel, Quebec, Canada and officially unveiled to the public during a ceremony held at Paris Charles-De-Gaulle Airport.

The A220 is the most efficient and flexible aircraft in the 100 to 150 seat market segment today. The renewal of the Air France single-aisle fleet with this latest generation aircraft will increase efficiency along with customer comfort and support Air France to meet its environmental goals and sustainability objectives.

The first Air France A220-300 will be operated on its medium-haul network from the 2021 winter season. Currently, Air France operates a fleet of 136 Airbus aircraft. Air France is also renewing its long-haul fleet, and has already taken delivery of 11 A350s out of an order of 38.

The Air France A220-300 cabin is configured in a single-class layout to comfortably welcome 148 passengers. Offering superior single-aisle comfort, with the widest leather seats, largest windows and up to 20% more overhead stowage space per passenger, the Air France A220 also features full Wi-Fi connectivity throughout the cabin and two USB sockets at each passenger seat.

BOEING PROJECTS DEMAND FOR MORE THAN 8,700 NEW AIRPLANES IN EUROPE’S AVIATION MARKET THROUGH 2040



Boeing forecast steady growth and greater sustainability for Europe’s commercial aviation fleet over the next 20 years, as the vast majority of the existing fleet is replaced with more fuel-efficient models. Enabled by low-cost carriers and a rapidly expanding leisure travel market, European carriers will need 8,705 new airplanes valued at €1.25 trillion/£1.1 trillion through 2040, according to the 2021 Commercial Market Outlook (CMO), Boeing’s long-term forecast of demand for commercial airplanes and services.

Global and regional air travel markets are recovering largely as Boeing projected last year. Demand for air travel within Europe is leading the recovery as health and travel restrictions ease, followed by long-haul travel’s return to pre-pandemic levels by 2023 to 2024.

Reducing aviation’s carbon footprint remains a top priority for Boeing and for carriers in the European market. For short-haul routes, European airlines are expected to further invest in new, higher-capacity single-aisle models that reduce fuel use and emissions. For long-haul fleets, airlines are projected to leverage new-generation wide bodies, such as the 787 and 777X that significantly improve efficiency. By 2040, 90% of Europe’s current fleet will be replaced with more fuel-efficient models, outpacing the global replacement share of 80%, according to the CMO.

“While Europe was significantly impacted during the pandemic, coordinated policies within the region have unlocked significant pent-up demand for air travel, resulting in an accelerating recovery,” said Darren Hulst, Boeing vice president, Commercial Marketing. “Single-aisle airplanes will initially be the main driver in expanding

capacity to meet demand in the region. In the long-haul segment, we see tremendous opportunity for carriers to replace older, less efficient aircraft with more versatile twin-engine models that reduce fuel use, CO2 emissions and noise.”

“Boeing is focused on a multi-faceted approach to decarbonising aviation, underpinned by our efforts to inform regulatory policies and develop innovative partnerships around the globe,” said Brian Moran, Boeing vice president of Sustainability Policy and Partnerships. “Designing and delivering more fuel-efficient airplanes is foundational to this strategy as well as actively enabling the industry’s transition to renewable energies with a focus on sustainable aviation fuels and advanced technologies.”

The CMO also forecasts that Europe’s commercial aviation industry will require more than 405,000 new aviation personnel by 2040, including pilots, technicians and cabin crews.

The 2021 Europe CMO includes these projections through 2040:

- Passenger traffic is projected to grow by 3.1% annually, with fleet growth of 2.7%.
- Demand for 7,100 single-aisle airplanes will be driven by continued growth in the low-cost carrier (LCC) segment that now accounts for more than 50% of intra-Europe capacity.
- Demand for 1,545 new widebodies, including passenger and freighter models, will serve long-haul networks including point-to-point as well as hub-and-spoke routes.
- The global freighter fleet is expected to grow by 70% in the 20-year forecast period, including demand for 85 new freighters in Europe.
- Commercial aviation services market opportunities valued at nearly €1.6 trillion/£1.4 trillion

Air Marshal V R Chaudhari appointed next Chief of Air Staff

Government has decided to appoint Air Marshal V R Chaudhari, PVSM, AVSM, VM, presently Vice Chief of Air Staff, as the next Chief of the Air Staff after the retirement of Air Chief Marshal RKS Bhadauria, PVSM, AVSM, VM, ADC on 30th September, 2021.

Air Marshal V R Chaudhari, PVSM, AVSM, VM, was commissioned into the Fighter stream of Indian Air Force on 29th December 1982 and has held various Command, Staff and Instructional Appointments at various levels including the present one as Vice Chief of Air Staff.

This Air Officer is decorated with PVSM, AVSM, VM.



M. Suresh takes over as Member Air Navigation at AAI

M. Suresh has taken over the charge of Member (Air Navigation Services) at Airports Authority of India. Prior to this assignment, he was holding the charge of Executive Director (Aviation Safety) at Corporate Headquarters of AAI and discharging the strategic function of ensuring safety in aerodrome operation and air navigations services and developing & maintaining a safety management policy of AAI.

Suresh is an Air Navigation Service technical expert and has vast experience in planning, provision, operation & maintenance of CNS facilities, airport system facilities & information technology facilities at airports in India. He has been instrumental in the implementation of NOCAS Version-2, the Building Height Clearance Software for the public, SKY REV 360, NIC CPPP Training Program, e-Office deployment and the implementation of the Biometric Access Control project in AAI and many such initiatives.

He also held the posts of General Manager (Airport Licensing) and General Manager (IT) at CHQ and Regional Executive Director (North East Region) and was responsible for planning, design of modern state-of-the-art environment-friendly airport terminals and airside infrastructure like runways, apron and their financial evaluation, regulatory clearances, tendering & award processes, etc.

Elbit Systems Announces New Appointments

Elbit Systems announced on September 1 that, after 20 years as Chief Financial Officer (“CFO”) of the Company, and having held various managerial positions in Elbit Systems and its subsidiaries around the world for many years prior to that, Joseph Gaspar will become Senior Executive Vice President (“EVP”) – Business Management.

Dr. Kobi Kagan, currently serving as Deputy General Manager and Senior Vice President – Finance and Control of Elbit Systems Land, will replace Mr. Gaspar as EVP and CFO.

The appointments will become effective as of April 1, 2022.

Dr. Kagan was appointed to his current position in Elbit Systems Land in 2018, and from 2010 to 2018 he served as Elbit Systems Land and C4I’s Vice President – Finance and Control. Dr. Kagan joined Elbit Systems in 2008 as a Sales Director at Elbit Systems Land and C4I. Prior to that, Dr. Kagan served for 26 years in the Israeli Navy and in the Israeli Ministry of Defense, where he holds the rank of a Naval Captain (reserves), in a variety of positions, including the Head of the Navy’s budget department. Dr. Kagan holds a Bachelor of Arts degree in economics and business administration, an MBA in business administration and a PhD in economics from Bar-Ilan

University, and is a graduate of the Harvard University Business School’s Advanced Management Program.

Bezhael (Butzi) Machlis, Elbit Systems President & CEO, said: “With his multi-disciplinary capabilities and vast experience, Joseph Gaspar has played a key role in the Company’s success throughout the years and has contributed significantly to the Company’s financial achievements. I am pleased Joseph will continue to take a leading position in the Company as Senior EVP – Business Management. I am also pleased to appoint Kobi Kagan as the Company’s new CFO and believe his skills and experience will continue to be a great asset to Elbit Systems. I wish Joseph and Kobi success in their new positions and am confident they will contribute significantly to the Company’s growth and excellence in the future”.



ST Engineering has appointed Tan Lee Chew as President Commercial

ST Engineering has appointed Tan Lee Chew as President Commercial and also as a member of the Group Executive Committee, effective 1 September 2021. Lee Chew joins from Amazon Web Services where she was the Managing Director, Worldwide Public Sector (ASEAN) responsible for leading new business growth through the adoption of AWS services as an enabler to deliver technology transformation at scale for organisations.

Reporting to Group President & CEO Vincent Chong, Lee Chew will oversee and drive growth for the Commercial cluster, which comprises three business areas: Commercial Aerospace, Urban Solutions and Satellite Communications, and accounts for close to 50% of Group revenue as of 30 June 2021.

The appointment sees Lim Serh Ghee relinquish his role as Chief Commercial Officer. He will remain as Group Chief Operating Officer (Operations Excellence), and also a member of the Group Executive Committee, until his planned retirement on 30 October 2021.

“We would like to thank Serh Ghee for his outstanding service and significant contributions during his 37 years with the Group and wish him every success in his future endeavours,” said Vincent. “The appointment of Lee Chew will strengthen our management team to drive further global success. Lee Chew brings with her significant global experience having spent 30 years in multinational companies in the technology sector, holding senior positions including roles with regional and global responsibilities in sales and marketing, and business transformation.”





JetBlue Names Ursula Hurley Chief Financial Officer

JetBlue announced the appointment of Ursula Hurley to Chief Financial Officer, effective immediately. Hurley, a 17-year veteran of the airline, has served as acting CFO since June 2021.

As CFO, Hurley will be responsible for JetBlue's overall financial strategy including accounting, audit, aircraft and engine transactions, cash management, corporate finance, fuel, and tax. She will also oversee the company's real estate and strategic sourcing units and will continue reporting to Robin Hayes, JetBlue's chief executive.

"Ursula has done an incredible job leading us through the pandemic," said Hayes. "With a steady hand, she's raised capital to allow us to weather the challenges and proven to be focused on helping us manage our cost structure. As we emerge from the pandemic, her continued leadership in managing costs will be fundamental to her role."

"I'm so excited to continue to work closely with both the senior leadership team and our incredible finance team to support JetBlue's recovery," said Hurley. "Together we're committed to rebuilding margins, maintaining our focus on costs, and repairing our balance sheet to help us continue to thrive."



Boeing Appoints Ziad Ojakli to Head Government Operations

The Boeing Company named Ziad S. Ojakli as the company's executive vice president of government operations effective October 1, 2021. In this role, Ojakli will lead Boeing's public policy efforts, serve as chief lobbyist for the global enterprise, and oversee Boeing Global Engagement, the company's global philanthropic organization. He will report to Boeing President and CEO David Calhoun and will serve on the company's Executive Council. In this role, Ojakli succeeds Marc Allen, Boeing's Chief Strategy Officer, who has served as interim executive vice president of Government Operations since this past June.

"Ziad is a proven executive with an impressive track record of leading public policy and government relations operations for global companies," said Calhoun. "His broad experience serving in executive roles in government and the private sector will contribute to our engagement with our stakeholders as we continue our focus on safety, quality and transparency, and transforming our company for the future. I also want to thank Marc Allen for his impactful leadership of our Government Operations organization in recent months as it has continued to advance our company's policy priorities."

Ojakli joins Boeing following a successful and diverse career in senior global government relations roles in the automotive and finance industries in addition to serving within the White House administration of former U.S. President George W. Bush.



IAI appoints Yehuda (Hudi) Lahav as Executive VP of Marketing

Israel Aerospace Industries' (IAI) President & CEO Boaz Levy announced on Monday the appointment of Yehuda (Hudi) Lahav as Executive VP of Marketing. Lahav's appointment, following a series of other

appointments announced by IAI in recent weeks, including Guy Bar Lev for Executive VP and General Manager of Systems Missiles and Space Group, Shmuel Kuzi as Executive VP and General Manager of the Aviation Group, Eitan Eshel as Executive VP Chief Technology Officer, Moni Katz as Executive VP of Strategy and Israel, and Amir Geva as Executive VP for Coordination with North America.

Lahav, possessing extensive and diverse business experience, understands the company and its ecosystem well. In this position, Lahav will lead IAI's sales and marketing efforts across over 100 countries where the company is active. Hudi will strengthen the company's activities in existing markets and expand its activities to new ones, while leading business and marketing efforts at the company's headquarters and across the different divisions.

Prior to serving in his current position as Chief Business Officer at NSO, Lahav was the Director of the Rakia division at IAI's Military Aircraft Group at and a Director of Marketing in the company. Lahav, a former IDF combat navigator and Colonel in reserves finished his military career after serving as the Commander of the Ovda Airbase and as IDF's military attaché in Paris.

IAI's President & CEO, Boaz Levy: "IAI is active in over 100 countries around the world, and is leading business and sales amounting to billions of dollars every year. Hudi Lahav joins IAI's management to continue the company's growth momentum and promote its business activity around the world. The position plays a central role at the core of IAI's business activity and its future growth. I wish Lahav success in his new role and would like to thank Eli Alfassi for completing his role in this position".

Joramco appoints Fraser Currie as Chief Executive Officer

Joramco, the Amman-based maintenance, repair, and overhaul (MRO) provider and the engineering arm of Dubai Aerospace Enterprise (DAE), has appointed Fraser Currie as its new Chief Executive Officer, effective October 1, 2021.

Currie succeeds Jeff Wilkinson, who is taking an expanded role at DAE Engineering to grow the engineering division's footprint.

Currie said: "I am delighted to take the helm of such a competent and capable team. Joramco has gone through a very successful transformation over the past few years, and I am looking forward to developing the company further with a clear vision.

"I would also like to use this opportunity to thank Jeff Wilkinson for his years of commitment and strategic leadership to transform the operational cadence of Joramco and look forward to continue working with him as part of DAE's wider engineering ambition."

Jeff Wilkinson commented: "I would like to congratulate Fraser Currie on his appointment. Having worked closely together over the last years and significantly growing the revenue and customer base, I am confident that Fraser will lead Joramco into its next phase of growth."

Currie joined Joramco in April 2018 as Chief Commercial Officer. Prior to joining Joramco, Currie held the position of Chief Executive Officer at Texel Air, a Bahrain based cargo airline. Currie has 38 years of industry experience, the last 17 years of which at senior executive levels. Currie holds an MBA from the Open University.





MoD places supply order for 118 Main Battle Tanks Arjun Mk-1A for Indian Army

Ministry of Defence (MoD) placed an order with Heavy Vehicles Factory (HVF), Avadi, Chennai for supply of 118 Main Battle Tanks (MBTs) Arjun Mk-1A for the Indian Army on September 23, 2021. The order, worth Rs 7,523 crore, will provide further boost to the 'Make in India' initiative in defence sector and is a big step towards achieving 'Aatmanirbhar Bharat', envisioned by Prime Minister Shri

Narendra Modi. It may be recalled that the Prime Minister had handed over the MBT Arjun Mk-1A to Chief of Army Staff General M M Naravane in Chennai on February 14, 2021.

The state-of-the-art MBT Mk-1A is a new variant of Arjun Tank designed to enhance fire power, mobility and survivability. Infused with 72 new features and more indigenous content from the Mk-1 variant, the tank would ensure effortless mobility in all terrains, besides precise target engagement during day and night. It has been designed and developed by Defence Research & Development Organisation (DRDO) by incorporating numerous upgrades on Arjun MBT, the in-service main battle tank with the Indian Army.

The MK-1A is equipped with accurate & superior firepower, all-terrain mobility and an invincible multi-layered protection provided by an array of advanced technology systems. It can take on the enemy during day & night conditions and in both static & dynamic modes. By virtue of these capabilities, this indigenous MBT proves to be at par with any contemporary in its class across the globe. This tank is particularly configured and designed for Indian conditions and hence it is suitable for deployment to protect the frontiers in an effective manner.

This production order to HVF, Avadi opens up a large avenue in defence manufacturing for over 200 Indian vendors including MSMEs, with employment opportunities to around 8,000 people. This will be a flagship project showcasing the indigenous capability in cutting edge defence technologies.

MoD promulgates framework for increased utilisation of simulators by the three Services & Indian Coast Guard

The Ministry of Defence (MoD) has promulgated the framework for enhanced and synergised utilisation of simulators by the three Services and the Indian Coast Guard (ICG). The overarching vision is to transform to simulation-based training across all military domains for combatants, leaders, maintainers, administrators, life science experts, procurement and financial agencies and thus achieve cost effective, efficient, safe, fast-paced and smart training.

The framework lays emphasis on indigenous design & development as well as outsourcing of operation and maintenance of simulators to the Indian companies. The framework has the following goals and objectives:

- To reduce live equipment utilisation
- To ensure capability plans cater for phased induction of simulators.
- To duly factor requirement of simulators at the planning stage of procurement.
- To coordinate among various agencies of the Government and factor combined requirements of simulators during procurement.

The policy will be applicable to all types of simulators in use/to be procured in the future by the Armed Forces. Avenues of application of simulation technology will be constantly explored to achieve a high level of op preparedness while reducing expenditure on training and preserving the life of equipment.

A detailed action plan with assigned responsibility to all the constituents of MoD and industrial association will be followed to revitalise the exploitation of simulators by the three Services and the ICG. The Indian agencies involved in development, production and maintenance would be engaged by the Services to ensure highest level of indigenisation for production, deployment and maintenance of the military simulators.



Successful Maiden Flight Test of Akash Prime Missile

A new version of the Akash Missile – ‘Akash Prime’ has been successfully flight tested from Integrated Test Range (ITR), Chandipur Odisha on 27 September 2021. The missile intercepted and destroyed an unmanned aerial target mimicking enemy aircrafts, in its maiden flight test after improvements.

In comparison to the existing Akash System, Akash Prime is equipped with an indigenous active Radio Frequency (RF) seeker for improved accuracy. Other improvements also ensure more reliable performance under low temperature environments at higher altitudes. Modified ground system of the existing Akash weapon system has been used for the current flight test. The range stations of ITR comprising Radars, Electro Optical Tracking System (EOTS) and Telemetry stations monitored the missile trajectory and flight parameters.

Defense Minister Rajnath Singh has congratulated DRDO, Indian Army, Indian Air Force, Defence Public Sector Undertaking (DPSU) and industry for the successful trials of Akash Prime Missile. He stated that the successful flight test proves the competence of DRDO in design and development of world class Missile systems.

Secretary DDR&D and Chairman DRDO Dr G Satheesh Reddy congratulated the team for the successful flight trial of Akash Prime Missile. He said that the Akash Prime system will further boost the confidence of the users (Indian Army and Indian Air Force) as the Akash system is already inducted and now getting improved with more lethal missiles.

Raytheon Missiles & Defense, Northrop Grumman successfully test fire hypersonic weapon

Raytheon Missiles & Defense, a Raytheon Technologies business, in partnership with Northrop Grumman, successfully completed the first flight test of a scramjet-powered Hypersonic Air-breathing Weapon Concept, or HAWC, for the Defense Advanced Research Projects Agency and the US Air Force. The companies are on track to deliver a prototype system to the US Department of Defense according to a Raytheon statement issued on September 27.

During the test, HAWC was carried under the wing of an aircraft before it was released. Seconds later, a solid rocket motor boosted HAWC to supersonic speeds, where the scramjet engine ignited and accelerated the missile, enabling it to reach hypersonic flight. The test validates the ability of HAWC’s airframe and propulsion system to reach and cruise at hypersonic speeds.

“This is a history-making moment, and this success paves the way for an affordable, long-range hypersonic system



in the near term to strengthen national security,” said Colin Whelan, Vice President of Advanced Technology at Raytheon Missiles & Defense. “This test proves we can deliver the first operational hypersonic scramjet, providing a significant increase in warfighting capabilities.”

Scramjet engines use high vehicle speed to forcibly compress incoming air before combustion to enable sustained flight at hypersonic speeds – Mach 5 or greater – which is five times the speed of sound. By traveling at these speeds, hypersonic

weapons like HAWC are able to reach their targets more quickly than traditional missiles, allowing them to potentially evade defense systems.

“We have reached a milestone in delivering a game-changing capability to the warfighter,” said Dan Olson, Vice President and General Manager of Weapon Systems Division for Northrop Grumman. “Decades of learning advanced manufacturing techniques and industry partnerships helped us define what is now possible.”

Government signs contract with Airbus for 56 C-295MW transport aircraft for IAF

The Ministry of Defence (MoD) signed a contract with Airbus Defence and Space, Spain for 56 C-295MW transport aircraft for the Indian Air Force. Of these, 40 aircraft will be manufactured in India. The size of the deal has not been mentioned but is believed to be around Rs. 200 billion (\$2.7 billion).

The MoD has also signed an Offset Contract with Airbus Defence and Space through which it will discharge its offset obligations through direct purchase of eligible products and services from Indian Offset Partners.

These contracts were signed following the approval accorded by the Cabinet Committee on Security earlier this month.

The induction of the C-295MW will be a significant step towards modernisation of the transport fleet of the Indian Air Force (IAF). It is a transport aircraft of 5-10 tonne capacity with contemporary technology that will replace the ageing Avro transport aircraft of IAF.

The aircraft is capable of operating from semi-prepared strips and has a rear ramp door for quick reaction and para dropping of troops & cargo. The aircraft will give a major boost to tactical airlift capability of IAF, especially in the Northern and Northeastern sectors and the Andaman & Nicobar Islands.

The project will provide a major boost to the 'Atmanirbhar Bharat Abhiyan' of the Government that offers a unique

opportunity for the Indian private sector to enter into technology intensive and highly competitive aviation industry. Out of 56, forty aircraft will be manufactured in India by TATA Consortium. All the deliveries will be completed within ten years of signing of the contract.

All 56 aircraft will be installed with indigenous Electronic Warfare Suite. After completion of the delivery, the subsequent aircraft manufactured in India can be exported to countries which are cleared by the Government of India. The project will give a boost to aerospace ecosystem in India wherein several MSMEs spread over the country will be involved in manufacturing of parts of the aircraft. The program will also involve development of specialised infrastructure in the form of hangars, buildings, aprons and taxiway. This programme is a unique initiative of the Government to strengthen the indigenous capabilities and boost 'Make in India'.



Indian Navy signs contract with BEL for supply of Naval Anti drone system

The Indian Navy has signed a Contract with Navratna Defence PSU Bharat Limited (BEL) for supply of the first indigenous, comprehensive Naval Anti Drone System (NADS) with both hard kill and soft kill capabilities.

The contract was signed by Indian Navy and BEL at New Delhi, in the presence of senior naval officers and DRDO representatives. Indian Navy has provided consistent support and has played a lead role in the joint development of the anti-drone system by DRDO and BEL.

NADS, developed by DRDO and manufactured by BEL, is the first indigenously developed anti-drone system to be inducted into the Indian Armed Forces. Multiple Units of BEL - Bangalore, Hyderabad, Pune and Machilipatanam, and DRDO Labs, LRDE-Bangalore, DLRL and CHESS, Hyderabad, and IRDE-Dehradun, in close collaboration with Indian Navy, were involved in the making of this fully indigenous system, as part of the Atmanirbhar Bharat initiative to counter drone threats of adversaries.

The Naval Anti Drone System can instantly detect and jam micro drones and uses a laser-based kill mechanism to terminate targets. The NADS will be an effective all-encompassing counter to the increased drone threat to strategic naval installations.

The NADS was first deployed to provide security cover for the Republic Day Parade this year and later during the Hon'ble Prime Minister's Independence Day speech at Red Fort. The system, which offers 360-degree coverage, was also deployed in Ahmedabad for the Modi-Trump roadshow.

The Naval Anti Drone System uses the help of Radar, Electro-optical/infrared (EO/IR) sensors and Radio Frequency (RF) detectors to detect and jam the micro drones. The DRDO's RF/Global Navigation Satellite System (GNSS) detects the frequency which is being used by the controller and the signals are then jammed. The DRDO's anti-drone technology system provides for both 'soft kill' and 'hard kill' options to the Indian Armed Forces to tackle fast-emerging aerial threats.

Both the static and mobile versions of NADS will be supplied to the Indian Navy within a short time from the signing of contract.



Boeing Delivers First Operational Block III F/A-18 Super Hornet to the US Navy

Boeing delivered the first of 78 contracted Block III F/A-18 Super Hornets to the US Navy. Block III gives the Navy the most networked

and survivable F/A-18 built with a technology insertion plan that will outpace future threats, according to a Boeing statement issued on September 27.

"The fleet needs capabilities to keep its edge," said Capt. Jason "Stuf" Denney, US Navy F/A-18 and EA-18G Program Manager. "Getting the first operational Block III in our hands is a great step forward in supporting our capability and readiness goals."

Block III's new adjunct processor translates to a fighter that will do more work and in far less time increasing a pilot's situational awareness. The jet is ready to receive app-based solutions that will allow upgrades to the aircraft throughout its life span.

"We invested in Block III technology and developed the capabilities in partnership with the US Navy to meet its emerging requirements," said Jen Tebo, Boeing Vice President of F/A-18 and EA-18G Programs. "The hardware upgrades are complete. Today we are maximizing the open hardware and software and developing the apps to keep Block III ahead of future threats. We are giving Navy pilots the tools to make the fastest and most informed decisions possible now and in the future."

Boeing will continue to deliver Block III capabilities to the Navy through the mid-2030s from three lines. One new build production, and two Service Life Modification lines extending the life and eventually upgrading Block II Super Hornets to Block III. The first aircraft delivered will complete the US Navy flight test program before deploying to a squadron.

Raytheon Intelligence & Space to acquire SEAKR Engineering

Raytheon Technologies has signed a definitive agreement to acquire privately-held SEAKR Engineering a leading supplier of advanced space electronics. Closure of the acquisition is subject to the completion of customary conditions and regulatory approvals. SEAKR Engineering will be a wholly-owned subsidiary of Raytheon Technologies and will report into Raytheon Intelligence & Space upon closing.

"Our investment strategy accelerates our agility in meeting a higher standard

of performance — the space standard — and expands our core space business with new applications that are shaping our world," said Roy Azevedo, president of Raytheon Intelligence & Space. "With SEAKR Engineering, we are enhancing our capability to provide qualified systems faster. SEAKR's culture of forward-thinking innovation will complement our ability to solve our space customers' hardest problems."

Based in Centennial, Colorado with more than 540 employees, SEAKR Engineering was founded in 1981 by the Anderson family. Over the last 40 years, the company has delivered more than 300 flight units with a 100% on-orbit success rate.

"SEAKR Engineering is a forward-leaning business with a determined drive to

innovate and do the work necessary to make advancements that enable new possibilities in space," said Scott Anderson, President and Co-Founder, SEAKR Engineering. "Being able to leverage the strengths and expertise of the Raytheon Technologies team, we will have the ability to build on our industry-leading products as part of a larger talented team equally committed to our customers, employees and values."





Turbulence in Airlines Industry

By Manoj Srivastava

How 0.125 Micron-sized virus created a panic situation across the globe wherein the hospitality industry and almost every industry got affected across the globe. The Airlines industry immediately took action and stopped almost all domestic and international flight operations. I would say the Aviation industry is one of the most vulnerable and unsafe industry as seen in many such situations in the past like the dot net bubble burst, economic recessions, 9/11, or any kind of human-made or natural calamity situation

We all are fully aware that the Airlines industry operates at a very low profit margin. It also operates in a highly regulated manner. It is closely monitored

by the associated government authorities due to the traveler's safety and security. However, due to the nature of business, any small changes in the environment or related can impact its operations. However, with Covid -19 pandemic, shutting down of operations was never heard of.

As I said virus COVID-19 outbreak most likely started between the middle of October and the middle of November of the year from China, Today, it has spread in almost 120+ countries within 3 months only. In such situations, most of the Airlines suspended international flights and a few domestic as well. As a result, the survival of the airlines was getting difficult day by day. Some of them had already announced to lay

off their staff, and a few are sending their staff on unpaid leave. Suppose the situation is not improved in the next 3-4 months. It will not be surprising to see some of the big and mid-size Airline companies getting bankrupt.

According to our most recent anonymous travel study, a survey predicts that a whopping 81% of those surveyed in the Middle East and Central and Eastern Europe said they want to fly again this year. This indicates that people's desire to travel, whether for pleasure or business, hasn't faded. However, the manner we travel has irrevocably altered.

Here, we should understand why airlines

operate in such an uncertain business environment? Why are Airlines getting disturbed in short-term business or recession hits? Why are airlines not reducing their other costs instead of reducing staff's salary or laying them off? Why do Airlines not keep some contingency funds to deal with such a situation? Likewise, there are many questions you may have about the Airlines Industry.

The aviation sector is expected to perform better in 2021 than in 2020, but that depends on governments managing the pandemic epidemic and reopening international crossings.

Let me answer a few common questions coming to the mind of the readers. The first and foremost thing we must understand is that an Airlines business is a very cash-rich and highly regulated business. Airlines can't run the business in isolation. At every step, they need to follow certain rules laid

down by the concerned authorities. IATA, FAA, CAA, DGCA, and country-specific civil aviation authority or ministry.

Let me tell you the mantra of running a successful Airlines is to have the following ingredients before starting the operation: -

- ✓ Strong and realistic 5-year business plan
- ✓ Professionally evaluated business plan
- ✓ Appropriate selection of equipment / Aircrafts
- ✓ Optimal Network Planning and strategy
- ✓ Best and economic MRO strategy
- ✓ Deploy adequate and minimum resources to start the operation
- ✓ And cash reserve for unforeseen contingency events.

Apart from the above, 6 essential

ingredients to start the operations following 3 major Key performance indicators will help to sustain the operation in the longer run: -

- ✓ Optimum Utilization of Aircraft/s
- ✓ Security and safety of the travelers
- ✓ On-time performance
- ✓ Better Revenue Management and Optimization.
- ✓ Continuously reduce operating cost

If any airline can successfully manage the above 7 ingredients with 6 KPIs, trust me, no other factor will be required to make it successful.

How does Technology help Airlines to make a success story?

Today, IT is essential to run any business. However, Airline's business can't even think to start the operations without IT.





IT deployment in the airlines business is slightly different and expensive in comparison to any other business verticals. Therefore, it is very important to have a senior IT executive who has adequate knowledge of Airlines IT systems and associated business functions.

Airlines operation considerably operates in 24x7x365 days work format. Once an IT product/system is evaluated, selected and deployed into it, the operation can't be changed, replaced or Migrate frequently, especially those business critical applications.

Hence, its imperative that while evaluating, selecting, and deploying IT applications and services, one should ensure the following:-

- Select and deployed an IT System based on business plan and size of operation, i.e., don't select expensive and international branded products/applications/services if you have plans for the only domestic operation.
- Commercially don't sign-off longer-

period locked-in contract/agreements.

- Try to out-source IT systems and associated services as much as you can.
- Initially, implement mandatory IT services, which are essential to support business.
- Don't get influenced by brand names. Instead, evaluate the features of the product & services offerings.
- Don't deploy a legacy system & Services. Only use hosted and subscription-based systems & services.
- Only deploy those applications and Services that help Airlines reduce operating costs and resources or add some ancillary revenue.

What business strategy can help Airlines to make a success story?

Somehow, technology is an enabler of the business, but most importantly, business strategy and planning play a crucial role in making a successful story. Hence, it's crucial

to have the following statements in your business plan: -

- Utilize your equipment/aircraft as much as you can, but don't go beyond OEM recommendations.
- Keep lowering operating costs.
- The network Load factor should always be higher than the breakeven.
- RSPKM (Revenue Seat Per Kilometer) should always be higher than CSPKM (Cost Seat Per Kilometer)

Why is the Airlines business so vulnerable and uncertain?

As mentioned earlier, in even small turbulence in the hospitality industry, natural calamity, or man-made imbalance, the airline business is affected immediately. Airlines can't afford to carry the financial load on their own. Due to this, they immediately lay off the staff, reduce the staff salaries, suspend operations and, create **messy** situations across the industry. Now, the big question here is why such a situation arises? And what is the long-term

strategy to deal with such a situation?

The answer is that the Airlines business is a very complex one. However, it could be a simple way to run if airlines adopt the suggested points earlier along with the KPIs in the routine operation.

However, in the real-time situation of Airlines, they cannot manage all the above ingredients and KPIs together. They take short-term business decisions for survival, which is ultimately landing up as a crashing situation.

What would be a long-term business strategy to run Airlines business:

I would suggest we consider the following points into business plan for not only survival but also success.

- Airlines business is a very passionate business – one can start an airlines business as an employer, or an employee can't do any other business, so make sure you must have passion before getting into the airline industry.
- Airlines should create a contingency fund to handle such unforeseen circumstances.
- The airlines' industry is ready / should be prepared to support the government in an emergency like evacuation, patient, doctors, medical equipment/medicine and other goods transportation across the country or even cross the border if needed.

Therefore it is also the responsibility of the concerned authority, i.e., IATA, FAA, ICAO, and country-specific ministry/ government agency – MoCA and DGCA to provide financial support and release 'To Do / Don't' guidelines to the Airlines industry, which could be in terms of the bailout package, short-terms low-interest loan for business continuity, as usual, lowering the ATF price,

- Waiving-off levied taxes, GSTs, exemptions of landing/parking/ navigation fee, etc.
- Airlines shouldn't immediately decide to lay off, cutting-pay of the staff, in such a quick decision, airlines may get some relief for a short period but will lose the trust of the team. Business confidentiality in the long run because, as I said, airlines staff can work in Airlines only, so make sure your staff should not work in other airlines once the industry is back in action – an exception will be always there.

The time span from 2021 to 2022 will be filled with vacations, road trips, and other short getaways. The world is becoming increasingly unpredictable, and individuals are becoming increasingly technologically separated as a result. They work online and live alone in an increasingly metropolitan environment. All of them will have a strong desire to mingle socially, travel, and engage in real-world activities. Many individuals have expressed a rising desire to 'escape' due to the epidemic, and I, for one, am

eagerly awaiting the return of aircraft numbers to pre-crisis levels.

The aviation sector is slowly regaining its footing, and many people are looking forward to talking to the skies again.

Manoj Srivastava – Director – Aviation Technology



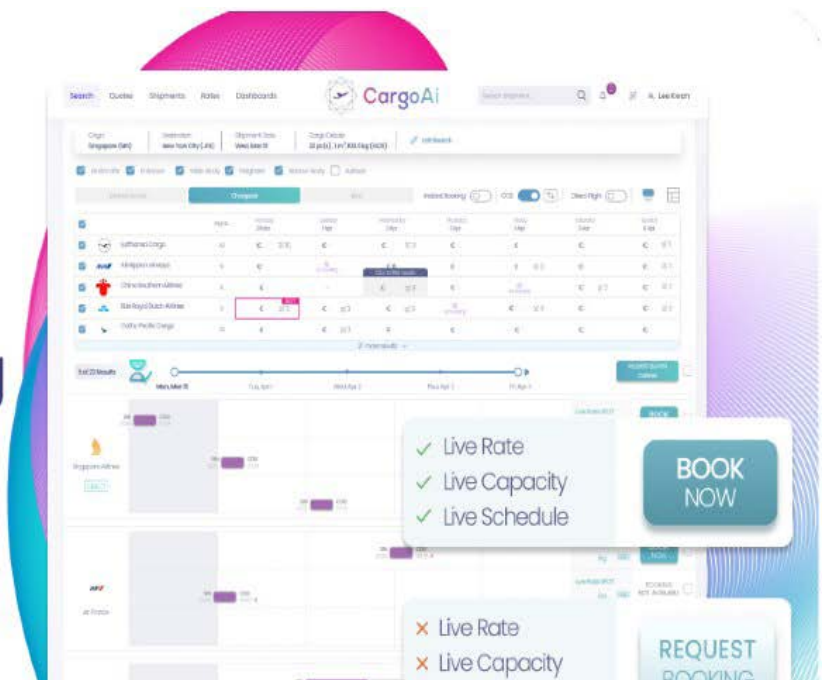
A Highly accomplished Senior Airlines Technology Executive with more than 22 years of proven experience in Airlines, Airport, OTA's and E-Commerce domain he has been instrumental in Managing IT Infrastructure, Cloudification, Digital transformation, CRM, ERP, system migration (legacy to new generation web application) and Mobile Apps customer experience areas across IT landscape.

He provides technical support to business leadership to maintain business continuity in the competitive environment in various IT application and service deployment, i.e., O365, CRM, ERP, eCommerce B2B/B2C portal development, AWS Cloud Service management, Payment Gateway, and other service provider integration (API/ Web Services), Cybersecurity and industry-standard IT Policy deployment, strong analytical and negotiation skills, project management, budgeting, and cost analysis. In the recent past, he implemented PCI-DSS and ISO/IEC 27001



INDUSTRY FIRST

Advanced Rate Management with Direct Booking



CargoAi adds an advanced rates management module to its offering

- Users of www.CargoAi.co can now view and manage all cargo rates directly on the platform (street, contract, spot, interlines...), enabling considerable efficiency gains for freight forwarders and carriers.
- Thanks to the “Booking Request” integrated into this new Rate Management functionality, freight forwarders can also make an e-booking request directly via the platform to all airlines.
- This new product feature is unique to an air cargo digital solutions platform and provides freight forwarders worldwide with access to market and contract rates, easing capacity procurement decisions and processes.

The digitalization of the distribution and procurement processes accelerates with the inclusion of the Rate Management feature integrating the Booking Request on the platform www.CargoAi.co. Not only was it expected by current users but also highly desired by airline and GSA partners.

On the freight forwarding side, detailed cargo capacity booking requests with flight, dimensions, and rates are sent to any airline or GSA via a standardized e-mail (or FFR in booking systems). For airlines and GSAs who don't have eBooking API available, this new functionality allows them to still achieve e-Bookings and thereby benefit from the advantages of a digital distribution process: simplicity, time-saving, and cost reduction.

This is made possible thanks to CargoAi's unique and complete live schedule solutions that provide the most accurate schedule data in Air Cargo and have been the backbone for the eQuote (Spot) requests functionality.

“Like all the features we are launching, Rate Management with the integrated Booking Request option is a further step towards the digitalization of the entire air cargo distribution and procurement process. We developed it following feedback from users of www.CargoAi.co, who are seeking services that have a direct impact on their bottom line while having much better visibility and ability to manage their booking requests. Airlines and GSAs can still modify, confirm or reject a booking,” explains Matthieu Petot, CEO of CargoAi.

Atlas Air Worldwide Announces New ACMI Contract with FedEx

Atlas Air Worldwide Holdings announced its subsidiary Atlas Air, Inc. has entered into a long-term agreement with FedEx to provide two 747-400 freighter aircraft on a full-time aircraft, crew, maintenance and insurance (ACMI) basis. This new agreement is in addition to the company's existing multi-year peak season contract that provides FedEx with a minimum of five aircraft during the fourth quarter.

Both 747-400 freighters have entered service and are flying on behalf of FedEx to support their growing express and e-commerce network.

“We are pleased to grow our long-term relationship with FedEx. This agreement reflects the continued strong demand for airfreight capacity, particularly in the express and e-commerce markets,” said John W. Dietrich, President and Chief Executive Officer of Atlas Air Worldwide. “Atlas is a leader in supporting express networks, with a focus on operating the most modern, fuel-efficient aircraft to deliver high levels of on-time performance for our customers.”



Emirates SkyCargo upgrades customers to a seamless booking experience with CargoWise

Emirates SkyCargo is launching a new technical solution for its customers that will enhance user experience and the efficiency of the booking process for cargo shipments.

Working with WiseTech Global, a leading provider of software solutions to the logistics industry, Emirates SkyCargo will be providing direct access to its flights and inventory for cargo customers through the CargoWise platform. Customers will now be able to make cargo bookings direct on the platform for a majority of their cargo requirements after completing a short registration process.

“At Emirates SkyCargo, we are always looking at ways to make every stage of

the transportation process more efficient – from the time of booking the shipment to the delivery of the cargo to the consignee. We are delighted to work with WiseTech to connect the CargoWise platform to our own Emirates SkyChain system, allowing customers enhanced direct access to search for flights and make bookings directly with Emirates SkyCargo without requiring any other touchpoints. This will save time and effort for our customers and for our global teams and at the same time help avoid any unnecessary confusion and inefficiencies in the booking process,” said Nabil Sultan, Emirates Divisional Senior Vice President, Cargo.

Scott McCorquodale, Chief Automation Officer, Air Cargo at WiseTech, said: “As the platform of choice for many of Emirates SkyCargo’s major customers, this connection is a testament to CargoWise’s penetration in the market. Adding to our growing number of airline-direct ebooking connections on the CargoWise platform, over time, all CargoWise users will have access to Emirates SkyCargo’s flight schedules, rates, availability and real-time eBooking functions. Working together, this connection provides ease of access to timely data at the user’s fingertips, translating to increased efficiencies and productivity, and importantly, informed decision making.”

ANA Cargo joins Pharma.Aero for end-to-end air transportation of pharma cargo

ANA Cargo, the first Japanese airline to obtain CEIV PHARMA certification, has joined Pharma.Aero as a Full Member.

“Pharma.Aero welcomes ANA Cargo into our family of members to exchange and build market knowledge and expertise. Pharma.Aero continues to pursue its vision in achieving reliable end-to-end air transportation of pharma cargo by expanding its global network and inviting more stakeholders across the pharma air supply chain in our collaborative projects. In the near term, we wish to jointly forge quality pharma trade lanes and develop

new standards and guidelines”, said Nathan De Valck, Chairman, Pharma.Aero.

Dai Yuasa, Senior Vice President of Global Marketing, ANA Cargo added, “We are very honored to join Pharma Aero, which brings together top global pharma companies, pharma hub airports, airlines and forwarders that focus on pharmaceuticals. We are looking forward to making further contributions to the pharma air transport sector. ANA has been focusing on the air transport of pharmaceuticals. In

2017, ANA became the first Japanese airline to obtain CEIV PHARMA certification. Under

current COVID19 situations, air transport plays a more significant social role in the transportation of vaccines, therapeutic drugs and PPEs. At the same time, we have to consider sustainability issues. It is important that we continuously improve our services such as temperature, time and container management to maintain the quality of each pharma shipment. By participating in Pharma.Aero, ANA hopes to learn and co-operate with those who are leading the pharma air transportation, so that we can deliver pharma products to the world with higher quality service.”



MASKargo and cargo.one announce global partnership to revolutionize the airline's digital presence

As part of its digitalization agenda, MASKargo has entered into a distribution agreement with leading e-booking platform cargo.one. The aim is to bring a first-class digital booking experience to MASKargo's customers and to expand its presence in key cargo markets. Freight forwarders using cargo.one will soon have access to MASKargo's real-time rates and capacity at the click of a button and receive immediate confirmation of their bookings. cargo.one will benefit from MASKargo's network into Asia and Australia, as it delivers on its global expansion strategy.

"At MASKargo, our strategy is to deliver a first-class customer experience by way of a continuous innovative digital solutions cycle. We are delighted to partner with cargo.one to augment our domestic digital offering to a premium global presence by bringing our real-time rates and capacities to this innovative and rapidly growing

online booking platform", Mark Jason Thomas, Chief Commercial Officer at MASKargo, explains.

"Over the past months, cargo.one has already helped shape our strategy and I believe the team's expertise and analytics will be crucial in supporting our shift towards a digital-first business model going forward. The platform will increase the airline's service quality and efficiency, and the ongoing partnership support and access to data will also enhance MASKargo's ability to manage digital sales channels and drive market relevance".

"Not only will we reach a larger booking audience by extending our network visibility to cargo.one's strong global user base, but we are also keen to benefit from being at the forefront of the platform's imminent expansion into new markets, particularly within Asia", Mark Jason Thomas confirms.

"In line with our Asia expansion strategy, we aim to partner with forward-thinking and customer-centric airlines. We are therefore especially pleased to welcome MASKargo as our latest airline partner, with its strong Asia and Oceania network," says Moritz Claussen, Managing Director of cargo.one.

"We look forward to working with the MASKargo team in serving their customers' needs in the best way possible and developing the future of digital cargo in Asia together."

MASKargo and cargo.one are now working on integrating their systems and look forward to bringing MASKargo capacities to forwarders before the end of 2021. The new partnership will provide cargo.one users with additional access to 20 of the most sought-after routes on cargo.one to Asia and Australia, with destinations such as CGK, SIN, CAN, and SYD, to name just a few.

WFS acquires US cargo handler Pinnacle Logistics



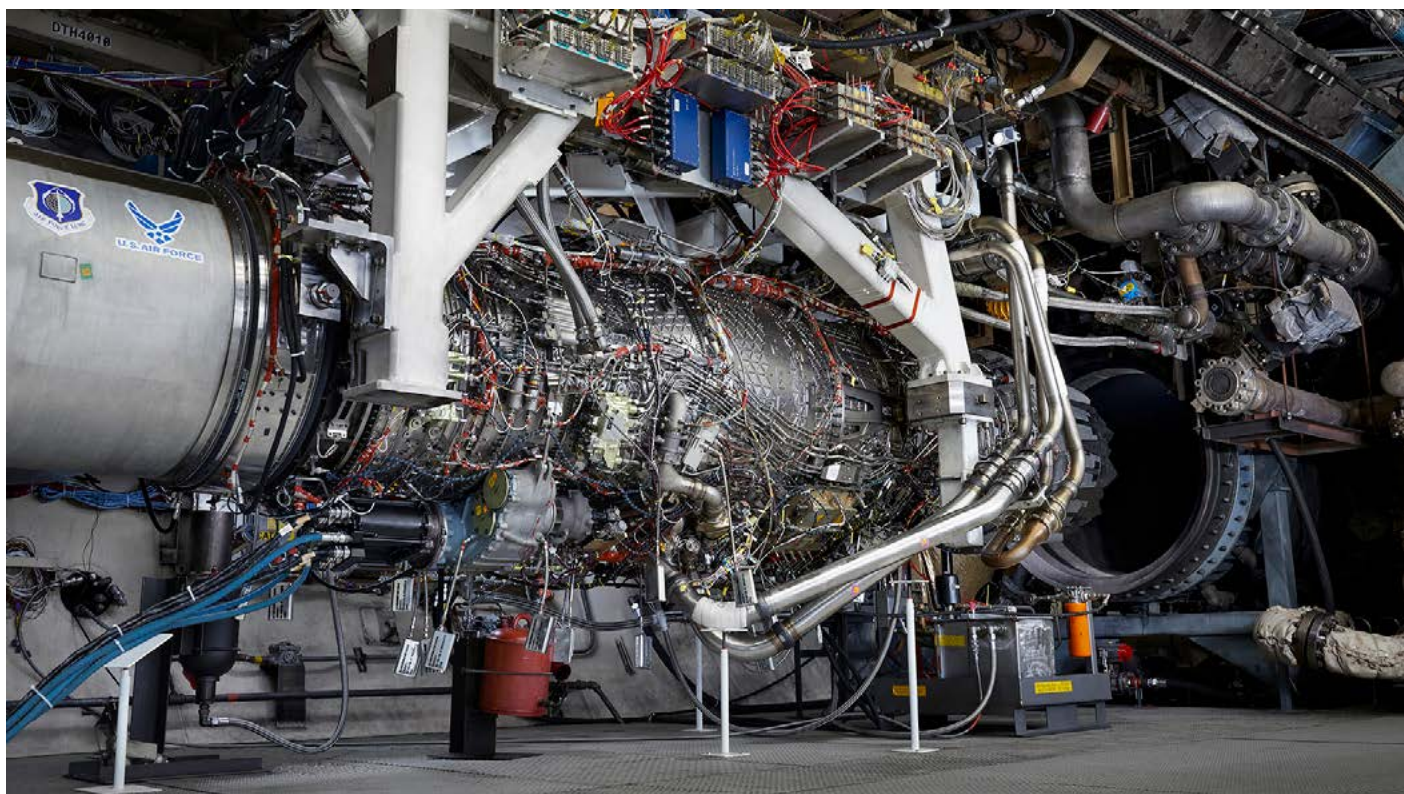
Worldwide Flight Services (WFS) announced the acquisition of IAS Logistics DFW, LLC (d/b/a "Pinnacle Logistics"), a leading provider of cargo handling services in the United States. Financial details were not disclosed.

Headquartered in Fort Worth, Texas, Pinnacle Logistics is a leading provider of cargo handling services for the aviation market in the U.S. and is focussed on

specialist express cargo handling for e-commerce customers. The acquisition delivers on WFS's commercial growth strategy, which includes accelerating revenue growth in cargo handling through product development including high-growth specialist e-commerce handling.

Michael Simpson, WFS's EVP Americas, commented: "The acquisition of Pinnacle Logistics enhances our core cargo and

express cargo handling value proposition to customers, and Pinnacle's established trucking logistics business further expands our service offering. Pinnacle's people bring renowned experience and expertise, great service quality, and long-standing customer relationships with them to WFS. This acquisition is a strong strategic and cultural fit for WFS and we are delighted to welcome the Pinnacle team to WFS."



GE initiates testing on second XA100 adaptive cycle engine

GE has initiated testing on its second XA100 adaptive cycle engine as part of the U.S. Air Force's Adaptive Engine Transition Program (AETP). Testing began on August 26, 2021, at GE's Evendale, Ohio, altitude test facility. This is GE's final planned prototype engine as part of AETP.

Full-scale prototype engine testing in the AETP program is the capstone of a multi-year technology maturation and risk reduction effort to bring an adaptive cycle engine to full maturity in close partnership with the U.S. Air Force. 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%, improve fuel efficiency by 25%, 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 U.S. Air Force-approved biofuels.

"The U.S. Air Force and Congress have invested more than \$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," said David Tweedie, GE Edison Works' General Manager for Advanced Combat Engines.

"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 war fighter."

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 U.S. Air Force's Arnold Engineering Development Complex (AEDC) to finish out all planned AETP testing activities.

"The Air Force has put a tremendous amount of rigor into the AETP product requirements. We believe we're delivering on those requirements, and a big reason for that is our close collaboration with the Air Force. Our partnership there has been a critical factor in our success," Tweedie added.

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.

AJW establishes European MRO arm

AJW Group has launched its European MRO facility, AJW Technique Europe, located near Gatwick Airport. The MRO begins with a specialisation 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 Services, whose skilled and certified 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



AJW **TECHNIQUE** europe

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.

Christopher Whiteside, Chairman and CEO of AJW Group, comments:

"We are delighted to announce the strategic expansion of our world-class maintenance

services into Europe, enabling us to continuously meet and exceed regional customer needs."

Sajedah Rustom, CEO of AJW Technique, comments:

"We are immensely proud and excited to expand in Europe, where we look forward to delivering our highly-regarded, innovative repair services and solutions, on the doorstep of all the European airlines."

ExecuJet MRO expands line and heavy maintenance for Indian registered Falcon jets with DGCA approval

Directorate General of Civil Aviation (DGCA) has certified ExecuJet MRO Services in Dubai to carry out line and heavy maintenance on various types of Indian registered Dassault Falcon business jets.

"The Indian DGCA certification includes line and heavy maintenance on Falcon 7X and 8X aircraft as well as several variants of Falcon 2000 and Falcon 900 aircraft," says Nick Weber, Regional VP Middle East at ExecuJet MRO Services.

"India is a key market for us," says Weber, adding that there are many Indian-registered business jets coming to Dubai regularly.

"Dubai's close proximity to India, coupled with the strong business links between the two countries, means Dubai is ideally situated to provide maintenance to Falcon operators from India," says Weber.

ExecuJet MRO Services Middle East is a wholly owned Dassault Aviation subsidiary and is certified for the entire range of Falcon aircraft. As a Dassault-owned facility, ExecuJet can carry out work covered under the manufacturer's warranty coverage and programs. ExecuJet has invested significantly in Dassault tooling to support the Falcon range and has sent maintenance

personnel to Dassault Aviation in Bordeaux for practical training.

Business aviation is a truly global business, says Weber, adding that this is why ExecuJet is certified by 15 international regulators including the European Aviation Safety Agency (EASA), US FAA, the United Arab Emirates' General Civil Aviation Authority (GCAA), and others.





GA Telesis Engine Services Receives India DGCA Certification to Overhaul CFM56-5B/-7B Engines

GA Telesis Engine Services ("GATES") has received certification from the Directorate General of Civil Aviation ("DGCA") in India to overhaul CFM56-5B/-7B engines. DGCA India approval is a significant milestone for GATES and opens access to a strategic

growth market for CFM56-5B/-7B engine overhauls in South Asia. In addition, this allows GATES to consolidate and further expand its growing customer base in India. GATES has also been granted certification by the FAA (United States), EASA (European Union), TCCA (Canada), CAAC (China), GACA (Saudi Arabia), DGAC (Mexico), ANAC (Argentina), DGAC (Indonesia), and ECAA (Egypt).

"We are very excited about the new opportunities the regionally recognized DGCA India certification unlocks for our shop," commented Russ Shelton, President, Engine Strategy Group, GA Telesis. "We look forward to offering our world-class engine maintenance solutions to customers

in India while also demonstrating our commitment to being a partner in their success," said Shelton.

"Receiving certification in India is a noteworthy accomplishment for GATES and allows us to establish a strong footprint here with superlative engine maintenance services and unparalleled customer support. Moreover, the certification is well-timed as we have numerous ongoing campaigns with leading airline customers," said Avinash Singh, Director of Business Development, Asia Pacific ("APAC") for GATES. "We are honored to receive this milestone approval, especially amidst the COVID-19 pandemic, and thank DGCA for their support," added Singh.

HAL, Rolls-Royce Sign Pact for Make-in-India Adour Engine Parts for Global Markets

HAL and Rolls-Royce have signed an agreement for Make-in-India Adour engine parts to support Rolls-Royce's international defence customer base. The agreement was exchanged between Mr. B Krishna Kumar, Executive Director (Engine & IMGT), HAL and Mr. Abhishek Singh, Senior Vice President – Defence, India and South East Asia, Rolls Royce.

Through this partnership, Rolls-Royce aims to strengthen the ecosystem for Adour engines in India by building on HAL's existing capabilities for manufacturing and supporting the Adour engines for Indian customers over several decades. This follows the MoU signed by Rolls-Royce and HAL during the Aero India 2021 to establish an Authorized Maintenance Centre for Adour at HAL to support international military customers and operators.

On the occasion, Mr. R. Madhavan, CMD, HAL said, "With over 30 years' experience of supporting repair and maintenance services for the Adour engines in India, HAL has the capability and capacity to support a large defence customer base. This is the first order for supply of spares for the Adour Global Supply chain. We plan to be a key player in the supply chain of Adour engines

and expect more orders to follow. We look forward to working with Rolls-Royce to build on this capability to serve global market for supply of spares and MRO of Adour engines. This new partnership will create avenues for the two companies to expand the defence sourcing footprint in India."

Commenting on the partnership with HAL, Mr Kishore Jayaraman, President, Rolls-Royce India and South Asia from Rolls-Royce said, "Our valued partnership with HAL has grown from strength to strength over the last few decades and this is a significant step towards strengthening the defence manufacturing ecosystem in India, and to help catapult India's vision for the defence sector to 'make in India' for the world."

Nanotechnology has modernized the aviation industry



Nanotechnology Aviation industry

In the aerospace and military industries, firms and research teams have focused on the arrival of nanotechnology because of the wide variety of implications it has for various scientific and industry all areas.

Nanotechnology has been rapidly used in aerospace manufacturing due to the desire for lighter and more efficient aircraft. To keep things simple, this article will provide you with a quick rundown of some of the nanomaterial' benefits and applications.

Nanotechnology refers to the fields of science and engineering that make use of nanoscale phenomena in the design, characterisation, manufacture, and application of materials, structures, devices, and systems.

How nanotechnology is related to the aviation industry

Numerous nanoparticles have been successfully employed as filler materials in aircraft construction to enhance the properties of structural and non-structural polymers. Carbon nanotubes, nanoclays, nanofibres, and graphene are the most frequently used nanocomposites.

Among the applications of nanotechnology in aerospace are high strength, low weight composites, improved electronics and displays with low power consumption, a variety of physical sensors, multifunctional materials with embedded sensors, large

surface area materials, and novel filters membranes for air purification.

Nanotechnology is widely recognized as a powerful generator of innovation and is thus viewed as a critical technology for the world's future economy.

With their extraordinary multifunctional qualities, Nanomaterials have the potential to alter the way the aviation sector operates fundamentally.

Aviation Industry Nanomaterials

From weight reduction to eco-friendly fuels and reduced fuel consumption to faster and highly responsive communication systems to fewer or no repairs to extended and safe life to a shorter development cycle from concept to implementation and many other factors that affect the aviation industry's success.

As a result of their versatility, nanomaterials can be used in three main aviation industry sectors.

1. Design of the airframe.
2. Aircraft engine Components
3. System for electronic communication in aircraft

Structures made from nanomaterials for aircraft.

Material properties necessary for airframe structure

- Airframe Structure materials must meet the following requirements:
- It weighs less but is stronger
- Intensely Strong
- Rust Resistance
- It's easy to fix and reuse.
- Reduced maintenance and higher durability

The modern aviation design requirements like faster, miniature, highly maneuverable self-healing, intelligence guided, smart, eco-friendly, lightweight and stealth systems warrant materials with extraordinary mechanical and multifunctional properties.

Lightweight alternatives to traditional composites

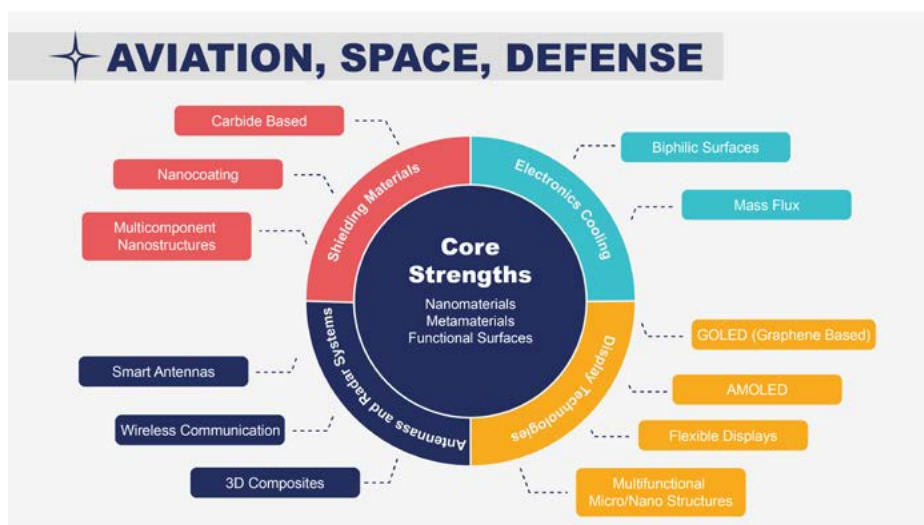
Materials containing carbon nanotubes (CNTs) have a wide range of Young's moduli, high specific strength, and other desirable properties. Safety and Thermal Performance are just two examples.

Lightweight alternatives to traditional composites metals that have a certain mass. Some composites based on CNTs that can which can be included in the airframe structure

Structure of the aircraft

Carbon Nanotube (CNT)-based Polymer Composites: The properties of carbon nanotube (CNT)-based polymer composites include a wide range of Young's Modulus, a high specific strength, and a low coefficient of friction.

- Crash Resistance and Thermal Performance, respectively, and traditional composites and light metals with a specific mass.
- Specific carbon nanotube-based composites that can be used in the aircraft structure are as follows:
 - Various nanomaterials have been used with success in aircraft construction as filler materials to enhance the properties of structural and non-structural polymers. The most commonly used



Nanocomposites include carbon nanotubes, Nanoclays, nanowires, and graphene

- There are two primary ways in which nanotechnology is being utilized in aircraft engineering. The second method that nanotechnology is helping aircraft engineering is through looking at composite materials. Composite materials are increasingly used in aircraft due to their unique combination of reduced weight and high strength.
- High-strength, lightweight composites, better electronics and displays with lower power consumption. Various physical sensors, multifunctional materials embedded with sensors, large surface area materials, and novel filters and membranes for air purification are just a few examples of how nanotechnology can be used in aerospace.
- During the flight, aircraft parts are subjected to fluctuating loads and might develop cracks in high-stress locations. In the absence of frequent inspection and repair of structural components, cracks may grow, resulting in structural failure and the loss of life.
- But airline inspections and maintenance are pricey. High gasoline prices and worldwide climate change efforts have further highlighted the need for increased fuel economy. Growth in international competitiveness supports

quick and low-cost production of dependable, efficient, and easy-to-maintain aircraft. In short, the aerospace industry must produce innovative materials that are strong, light, safe, fuel-efficient, and affordable.

- Using nanotechnology, it may be feasible to manufacture nearly flawless materials and improve performance and passenger safety while also saving a large amount of money.

Use of nanomaterials in Aerospace.

NASA is currently investigating nanomaterials' lightweight and high-strength qualities and nanoelectronics' high working speeds. Because nanomaterials are mature and scalable, we can create better aircraft, satellites, and planetary rovers.

This collection focuses on current nanotechnology developments in aeronautical materials and electrical systems. Also evaluated will be fascinating nanotechnology displays in space.

NanoTech2021

The next Nanotech will occur in October of 2021. All of the key players in aviation, both on the ground and in the air, are participating.

“Out of Oven” approach to Nanotechnology.

A four-story oven costs tens of millions of dollars in infrastructure to cook a fuselage for an Airbus A350 or Boeing 787. This is not necessary, adds Wardle. As a result of

our process, the heat is applied just to parts that need it. Think of it as a pizza that cooks itself. Pizza cooks on its own when plugged into the electricity rather than using an oven.

Nanotechnology will eventually take over control of the aviation and aerospace industries.

Utilization of Energy in nanotechnology

Traditional energy sources are finding a use for nanotechnology, while alternative energy approaches are being considerably enhanced to assist meet the world's growing energy demands. Many researchers are working to find ways to generate energy sources that are clean, economical, and renewable, as well as strategies to reduce energy use and reduce environmental toxicity burdens.

- ✓ Nanotechnology improves catalysis to increase the efficiency of crude oil fuel production. It also reduces fuel consumption in automobiles and power plants by improving combustion and reducing friction.
- ✓ Nanotechnology is also used in oil and gas extraction, such as nanoparticles to detect small down-well oil pipeline breaks.
- ✓ For power plant emissions, researchers are looking at carbon nanotube scrubbers and membranes.



Qatar Executive showcases world's first Gulfstream G700

Qatar Executive has welcomed the arrival of the world's first Gulfstream G700 jet aircraft to the State of Qatar, as part of a special demonstration by the manufacturer honouring Qatar Executive as the launch customer. Gulfstream introduced the G700 in 2019 as its flagship aircraft.

The G700 will be the latest addition to Qatar Executive's fleet of long-range and ultra-long-range aircraft, and can operate non-stop from Doha to New York in about 12 hours and from Doha to Seoul in just over eight hours. Equipped with new Rolls-Royce Pearl 700 engines and an advanced high-speed wing design, the G700 is able to fly 7,500 nautical miles at Mach 0.85 or 6,400 nautical miles at Mach 0.90.

The private charter service provider has ordered 10 of the world's largest business jets, and will take delivery of the first aircraft off the assembly line in Georgia, U.S.A. in 2022.

Qatar Airways Group chief executive, Akbar Al Baker, says: "We take great pride in the expansion of Qatar Executive throughout the pandemic. The arrival of the Gulfstream



G700 in Doha emphasises our position as one of the leading business jet aircraft service providers in the Middle East and around the world. As the global launch customer for this technologically advanced jet, we look forward to welcoming the G700 into Qatar Executive's fleet in 2022 and continuing to set new standards in air travel for years to come.

"Qatar Executive grew exponentially during the COVID-19 pandemic, where the average monthly block hours reserved grew by 76 per cent year-over-year and the booking enquires increased by more than 100 per cent. The sharp growth came as a result of the new strategies implemented by Qatar Executive and dynamic positioning of its services in the right market place, in

addition to understanding its customer requirements and offering tailored flight hour packages."

"These were the first international flights for the G700, and it performed exceptionally well, setting two new records in the process," says Mark Burns. "We are excited to introduce the G700 in person to customers in the Middle East and Europe, and are proud that we can do so while also demonstrating our commitment to sustainability at the same time. Not only did the aircraft prove its speed and distance capabilities, the fully outfitted cabin is also receiving rave reviews with its impressive cabin size, environment, quality and flexibility."

Gulfstream G500 Interior Earns International Yacht & Aviation Award for Design Excellence

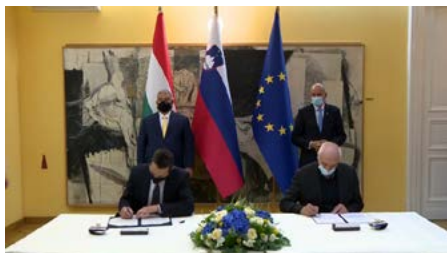


Gulfstream Aerospace Corp. and the Gulfstream G500 have been awarded the 2021 International Yacht & Aviation Award (IY&AA) for excellence in cabin design. The "Performance and Polish" G500 entry gained the top honors in the Interior Design/VIP Completions category.

"This is the fifth year in a row we have earned an International Yacht & Aviation Award, and I am proud of our amazing Gulfstream team of designers and artisans that brings creativity and imagination to our ultramodern aircraft," said Mark Burns, president, Gulfstream. "Every Gulfstream cabin is the product of collaboration among our interior and industrial design teams and the craftsmanship of the men and women who build the custom cabin elements by hand. Our combined focus on performance,

innovation, quality and artistry sets Gulfstream interiors apart."

The Gulfstream G500 Performance and Polish interior design conveys the aircraft's high-speed capabilities and mimics the smooth flight passengers enjoy while flying in the aircraft's stylish, comfortable cabin. The award-winning design was achieved through a play on contrasts in color, content and composition: linear patterns juxtaposed with sweeping movement; plush upholstery balanced with smooth, sleek lines; ebony furniture contrasting with ivory upholstery; and a carpet that blends the two. The combination of Gulfstream innovation and artistry is also evident in the award-winning seat design, advanced ergonomics, handcrafted furnishings and hand-tailored finishes.



Pipistrel and Genevation enter aircraft manufacturing cooperation

Official signing of the contract occurred in witness of Prime minister of Hungary Mr. Viktor Orban and Prime minister of Slovenia Mr. Janez Janša after the opening ceremony of the 53th International Entrepreneurial Fair (MOS) in Celje on the 15th September 2021.

Pipistrel's award winning aircraft family SW 121 has been identified as the ideal fit for the needs of future Hungarian aviation undertakings, with Genevation stepping up with their interest to manufacture, market

and provide after-sales support for select markets. Following extensive coordination on technical, organizational, airworthiness and governmental levels, the two partners with support of the Governments are excited to announce that the cooperation has been signed.

The cooperation project valued at over 100 million EUR for a 10-year period shall establish:

- certified Aircraft Production Organization in Hungary,
- final assembly in Hungary of Pipistrel SW 121 family aircraft for select domestic and international markets (Hungary, Russia and ex-USSR territories, African countries, Visegrad countries, Turkey and Israel),
- Cooperation in development of future opportunities and production of advanced composite structures, aircraft components, special mission programs and zero emission aircraft.

Preceding this agreement was **the Governmental MoU**, signed by, Dr.

Gáspár Maróth, Hungarian Government Commissioner responsible for Defence Development and Zdravko Počivalšek, Slovene Minister of Economic Development and Technology. The Governments have therein affirmed that Hungary is willing to promote and strengthen the growth of its defence industry, creating new production capabilities, increasing the knowledge as well as innovative solutions; where at the same time the Slovenia is highly supporting the bilateral and regional industrial cooperation, especially in the industries where significant advanced experience and traditional products have already been achieved and can be further capitalized.

We look forward to welcoming the opportunity which Hungarian produced Pipistrel aircraft will create as part of this cooperation, to deliver exceptional strategic value to stakeholders. All involved parties expect a significant arise of industry-wide engagement, forming **enhanced global competitiveness**, backed by skill and experience which Slovenia-Hungary regional connection is offering.



Bombardier gets order for 20 Challenger 3500 business jets

Bombardier has announced that an undisclosed client has agreed to purchase 20 of its high-end luxury Challenger 3500 business jets, its largest order for 2021. Based on current list prices, the order is worth in the region of US\$534 million.

The Challenger 3500 was unveiled on September 14 with a totally redesigned interior including the patented Nuage seat, which was pioneered in its Global-series aircraft. It is expected to enter into service in the second half of 2022. The new passenger spaces offer a host of new technologies, including the industry's first voice-controlled cabin, wireless chargers throughout the cabin, and the only 24-inch, 4K displays in its class. The altitude in the cabin is 31% lower than that of its

predecessor, the Challenger 350 and it will be the first business jet in the super mid-size segment with an Environmental Product Declaration, an open book on the aircraft's environmental footprint throughout its entire life cycle. Customers will also be able to furnish the cabin with optional high-end sustainable materials, while additional sustainably minded initiatives for this aircraft include the introduction of the first eco app solution in business aviation, and a carbon neutral flight test program.

"This significant order comes just days after the unveiling of the Challenger 3500 business jet, quickly reinforcing the supremacy of this platform in the super mid-size market. The new Challenger 3500 aircraft is ideally suited to meet a growing demand for business travel," said Peter Likoray, Senior Vice President, Sales, New Aircraft, Bombardier.

Providing critical support within the aviation ecosystem

Murali Ramachandran, Celebi Aviation - CEO India



Brief us on various services that Celebi is providing in Aviation and its bases of operation?

Celebi is one of the world's leading ground handling companies with over 60 years of experience in the industry. It has played a key role in the transformation of aviation landscapes in the countries that it has operations in viz. Austria, Germany, Hungary, India, & Turkey. This global footprint gives Celebi a distinguished place among the biggest European companies in the business. Celebi is one of the largest independent ground handling companies in Europe & India as a full-service ground handling provider as per IATA standards.

In its 12 years of operations in India, Celebi has successfully become one of the largest independent ground handlers in the country. We have played a critical role in providing employment and upgrading the quality and levels of service in this sector. Its operations at key gateway airports such as Mumbai, Delhi, Bengaluru, Hyderabad, Ahmedabad, Kochi and Kannur have contributed to the development of world class ground handling facilities in India. In line with its vision to keep pace with technological developments and its

commitment to environment sustainability, it has introduced various innovations over the years. The most recent being the deployment of Taxi bots at Indian airports. Celebi also provides cargo warehousing services at Delhi airport.

Celebi has made investments of over \$220 million in its decade long presence in India. Celebi currently employs close to 6000 Indians at different airports in the country and equips them with world class training and superior wages. Celebi is currently one of the largest employers in this sector. Celebi also launched India's first BCAS (Bureau of Civil Aviation Security) accredited Aviation Security Training Institute located inside the Delhi airport premises in 2018 to help train staff in further strengthening aviation security at Indian airports.

What was the kind of effect pandemic had on your services and business? How are you prepared for the future challenges during this period of uncertainty?

Our ground handling and cargo warehousing sector is heavily dependent on international flights and a few domestic

customers. Since the pandemic broke out, our ground handling business had dropped by over 90%. The sector is very labour and capital intensive. We have a very high fixed cost base which makes our position more fragile & precarious. Currently, we are operating to a quarterly plan given the minimal visibility our cash flows have been severely impacted. With no meaningful fiscal relief as yet to this sector, the situation is quite challenging. Our priority remains the well-being, health and safety of our employees and our customers. We remain in sync with our customers' expectations on this front.

COVID has forced all of us to rethink conventional business processes, use technology as much as possible and integrate all applications. This situation will also hopefully make some airlines re-think their strategy to perform self-handling and focus on their core business. Hopefully they will re-cast their vision on such matters and that's an opportunity for businesses like ours. We are also engaging with airlines to restructure some of their processes and deliveries to bring costs down. This situation also vindicates the need to have professional and structured companies like



Celebi in this fragile sector. International companies like ours who have sound financials stand out better during these challenging times. We form a very critical support sub sector within the aviation ecosystem whose health is critical for the sector to get back on its feet when things improve.

Recently, SpiceJet has leased out part of ground handling ops to Celebi. Can you throw some light on this deal? How is this deal benefiting both sides?

Yes they are currently using our services for their freighter flights. We hope to transition the passenger flights soon.

Are you expecting any such deals with other airline operators?

As mentioned above we continue to engage with domestic carriers to get them to see the value in handing over their ground operations to professional experts like us. Thereby save on costs and improve efficiencies.

Will the aviation sector get back to normal anytime soon? What does it mean for the jobseekers peeping into Aviation?

We do not foresee the business volumes coming back to pre-COVID levels any time soon. A slow-paced recovery will see the sector getting back to pre COVID levels only by 2023. Domestic flights in India are easing back and will hopefully recover earlier. However, we do foresee various possible scenarios as to how the industry will probably recover in the near future. Recently, the Union Government extended the capacity cap imposed on scheduled airlines on domestic flights but we are yet to get an update on the operations of international scheduled flights barring the bubble flights. On the employment front, at a peak we were operating with 15000 colleagues globally. This has gone thru some restructuring due to the pandemic. We are hoping that the sector will be able to gradually come back to the old levels in the next year or so.

Are there any environmental friendly initiatives been introduced/adopted by the company?

Celebi, as an environmentally conscious and responsible company in the aviation sector, aims to maintain and improve the quality of life of both its employees and customers. It actively practices environmental protection within the scope of respective airports' integrated environmental management system. It does considerably more than the legally prescribed minimum, treating environmental protection as a process of continual improvement. Celebi relies on leading-edge technologies to sustainably reduce noise and CO2 emissions and manages other environmental effects by using brand new, high-tech ground service equipment which use non fossil fuels wherever possible.

Celebi has also invested in a 2 MW solar plant to address a fair amount of our power requirement in the cargo terminal.

With the view to support environmental-friendly initiative to improve local air quality and cut down noise emission, pollution and other related emission as may be generated by the use of auxiliary power unit or diesel run ground power and air conditioning units, Mumbai International Airport Limited awarded us the license for the provision of Bridge Mounted Equipment (BME) Services on the build, own, operate and transfer model, and it is mandatory for all the airlines to use this service. The recent investment into TaxiBot is another example of Celebi's vision on this front

Any plans for the expansion of your services and the bases of operation in the following years?

Despite the pandemic's impact on our business, Celebi Aviation remains invested with a long-term vision in this business. We are following up on some opportunities globally as well as in India. India is one of our key focus markets and we will continue expanding our footprint in the country. We have been recently awarded

the license to install and operate Bridge Mounted Equipment at all passenger boarding bridges at Kempegowda International Airport, Bengaluru. Celebi has also expressed interest in the AIASL disinvestment. Celebi's plan is to help formalize the aviation sector in India that will in turn add efficiency to the entire flight operation in the country. We have matured as a successful ground handling and cargo handling services provider and are trusted by our clients. We would like to leverage on the goodwill created during all these years and will be glad to serve our clients in multiple airports in the coming future.





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8800490372

psrivastava@servintonline.com

9711361842

nlaroiya@servintonline.com

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Contact Details

Nachiket Basole

M:- +91-9867312834, +91-9833312834
Email:- nachiket.basole@ficci.com

Puneet Maithani

M:- +91-9319440030, Email:- puneet.maithani@ficci.com