



**LUFTHANSA GROUP
RECEIVES FIRST 787
DREAMLINER**



**MALAYSIA AIRLINES TO ACQUIRE
20 A330NEO FOR WIDEBODY
FLEET RENEWAL**

AVIATION

UPDATE

India's premier aviation monthly magazine

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Our SEPTEMBER issue looks at the most recent developments in the aviation industry, emphasizing important news from Indian aviation circles. With the magazine's eight illustrious years coming to an end, this issue's front cover gives our readers a prominent look at a special conversation with Mr Salil Gupte, President of Boeing India.

It's great to see Indigo introduce a revolutionary "Three-Point Disembarkation System" in honor of its sixteenth anniversary under the Quick Updates section. As the first airline in the world to adopt the new Three Point Disembarkation procedure, IndiGo will conduct it from two front and one rear departure ramp. After conducting tests, IndiGo received positive client feedback.

Turn to the Business Aviation section of the magazine to learn more about Airbus Helicopters' delivery of the first ACH160 to a Brazilian client. Also, an overview of the Dual HUD on the Falcon 8X that Dassault Aviation certifies. This version has a lot of extras that further enhance the material as it moves on to the sections on defense and military, space exploration, and technology, and an individual interview with Rahul Verma about the Era of Algorithms in Aviation.

This issue covers a broad range of topics relevant to operators and owners of aircraft. We always work to bring up relevant industry issues and draw attention to important elements of the growth of the aviation sector.

As we carry you throughout the world's skies, for the time being, sit back, unwind, and take in a peek at the development and evolution of the aviation industry.

■ INDIGO INTRODUCES A GLOBAL-FIRST, INNOVATIVE “THREE-POINT DISEMBARKATION SYSTEM” TO MARK ITS SIXTEENTH ANNIVERSARY



IndiGo introduced a new revolutionary Three Point Disembarkation process which will enable its customers to exit the aircraft faster than ever before. The new Three Point Disembarkation process will be carried out from two forward and one rear exit ramp, making IndiGo the first airline in the world to use this process.

This novel Three Point Disembarkation process will help IndiGo set new standards in customer experience on its 16th anniversary.

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Commemorating the 16th anniversary of IndiGo, Ronjoy Dutta, CEO and Whole-time Director, said, “It brings us immense pride to be the first airline in the world to use a three-point system. At IndiGo, we constantly and dynamically keep reinventing our internal standards to enable a hassle-free customer experience as well as contributing to operational efficiencies for all stakeholders including airport operators and ground handling companies.”

At the historic occasion, Sanjeev Ramdas, Executive Vice President – IndiGo, said, “At IndiGo, we have always looked at newer ways to enhance our customer experience and make flying, as well as our ground operations, efficient and hassle-free. Adding a third ramp for disembarkation is a simple yet effective way to complete a smooth travel experience for our customers. We have always been known for setting new benchmarks in innovating travel and our 16th anniversary is the perfect occasion

to make the experience a little sweeter for our customers – as they can get to work or meet their loved ones quicker.”

IndiGo has conducted trials and have received encouraging feedback from customers. The cabin crew shall make the necessary announcements to inform customers at the time of deboarding. This new disembarkation procedure will be implemented on IndiGo’s A320 and A321 fleet for flights arriving at remote stands at Delhi, Mumbai, and Bengaluru airports to begin with, and will be progressively deployed across the network.

■ SPICEJET SETTLES WITH ANOTHER MAX LESSOR GOSHAWK AVIATION LIMITED AND AFFILIATES



SpiceJet announced that it has entered into a settlement agreement with aircraft lessor Goshawk Aviation Limited and its affiliated leasing entities namely Wilmington Trust SP Services (Dublin) Limited, Sabarmati Aviation Leasing Limited and Falgu Aviation Leasing Limited related to two Boeing 737 MAX aircraft and one Boeing 737-800 NG aircraft.

The settlement will allow the entry into service of two more fuel-efficient Boeing 737 MAX aircraft into the SpiceJet fleet.

The parties have agreed to settle all their disputes under and related to the aircraft lease agreements for three aircraft. The agreement, the terms of which are confidential, ends all litigation proceedings between the parties. All proceedings, including before the UK Court and Execution Proceedings before the Delhi High Court will be withdrawn accordingly.

Goshawk Aviation Limited is one of the main lessor of MAX aircraft of SpiceJet. The settlement with Goshawk follows SpiceJet’s successful settlements with De Havilland

Aircraft of Canada Limited, Credit Suisse, Boeing, CDB Aviation, BOC Aviation and Avolon.

■ VISTARA INDUCTS ITS THIRD BOEING 787-9 DREAMLINER; RAMPS UP FREQUENCIES TO FRANKFURT AND PARIS



Vistara announced more than a 100% increase in frequencies to/from Frankfurt and Paris as it gears up to receive its third Boeing 787-9 Dreamliner aircraft which has been leased recently. Starting 30 October 2022, Vistara will operate 6x weekly flights between Delhi and Frankfurt, up from the current 3x weekly frequency; while connectivity between Delhi and Paris goes up from 2x to 5x weekly. Vistara today opened sale for these additional flights, across all channels including its website, mobile app, OTAs (online travel agencies), and other travel agents.

Mr. Deepak Rajawat, Chief Commercial Officer, Vistara, said, “Europe has been a key focus market for us since the very beginning, and we are glad that our customers appreciate our offerings on these long-haul routes. We have been wanting to ramp up frequencies on these sectors and we are delighted to be able to finally do that.”

In May 2022, the airline scaled up frequencies on several international routes, including Delhi-London and Mumbai-Singapore to daily flights, besides bolstering its other international and domestic routes. Earlier this week, Vistara inaugurated services between Mumbai and Jeddah, as well as on the Mumbai-Bangkok route.

Vistara’s Boeing 787-9 Dreamliner comes with a three-class cabin configuration,

giving customers the choice of Business, Premium Economy, and Economy cabins. The new aircraft will also feature fully-flat business class seats, each with direct aisle access, and a separate Premium Economy cabin. A host of other features in all three cabins are thoughtfully put together to reflect Vistara's focus on delivering an unparalleled flying experience. These include in-seat screens in all three cabins with High Definition (HD) Display offering a cutting-edge In-flight Entertainment system powered by Panasonic.

AIRASIA INDIA BECOMES THE FIRST AIRLINE IN INDIA TO USE THE REVOLUTIONARY AI-POWERED CAE RISE™ TRAINING SYSTEM



AirAsia India and CAE have announced their collaboration to integrate the CAE Rise™ Training System into the airline's simulator training program. AirAsia India is the first airline in India to adopt a data-driven training program using CAE Rise™.

CAE Rise™ leverages analytics to deliver a higher quality of training, providing real-time data during training sessions while giving instructors insights that enable them to objectively assess a pilot's technical competencies and performance. As long-time collaborators, AirAsia and CAE have worked together since 2014 on pilot training at CAE network training centers.

"This collaboration uniquely incorporates CAE's distinct features, which enable a more robust data-driven training program for our pilots," said Capt. Manish Uppal, Head of Operations, AirAsia India. "At AirAsia India, we continue to be at the forefront of integrating technology and ensuring that safety is paramount in every aspect of our training and operations."

"With Indian regulator DGCA aiming to make Evidence-Based Training (EBT) implementation mandatory, CAE Rise™ will be a key tool in collecting data to support a smooth EBT implementation and practice," said Capt. Arun Nair, Chief Pilot Training & Standard, AirAsia India.

"We are thrilled that AirAsia India will leverage the benefits of CAE Rise™ for their pilot training," said Nick Leontidis, CAE's Group President, Civil Aviation. "With CAE Rise™, AirAsia India is investing in the development of their pilots and the safety of their passengers."

SPICEJET REPORTS A NET LOSS OF INR 420 CRORE IN Q1FY2023 EXCLUDING A ONE-TIME FOREX LOSS OF INR 369 CRORE

SpiceJet reported a net loss of INR 789 Crore (INR 420 Crore excluding forex adjustment) for the quarter ending June 30, 2022 as compared to a net loss of INR 729 Crore in the quarter ending 30 June, 2021 as business was severely impacted by record high fuel prices and a depreciating Rupee.

Total revenue for the reported quarter was INR 2,478 Crore as against INR 1,266 crore in the same quarter of the previous year. For the same comparative period, operating expenses were INR 3,267 Crore as against INR 1,995 crore. On an EBITDA basis, loss was INR 379 Crore for the reported quarter as against a loss of INR 244 crore for the quarter ended June FY2022. The airline continued to add new destinations to its network.

The airline reported a net loss of INR 458 Crore for the quarter ending March 31, 2022 against INR 235.3 Crore for the quarter ending March 31, 2021. Business was severely impacted by the third wave of Covid-19 and high fuel prices during Q4FY2022. SpiceJet reported a net loss of INR 1,725 Crore for FY2022 as compared to a net loss of INR 998.3 Crore in FY2021. The financial result for Q4FY2022 and FY2022 were delayed due to ransomware attack on our systems on May 25, 2022.

Ajay Singh, Chairman and Managing Director, SpiceJet, said, "The industry has been witness to one of the most severe operating environment in the recent past which impacted the progress and recovery made in Q3FY2022. Record high ATF prices and depreciating Rupee were the major contributors. Despite the complex operating environment and highest ever input costs, SpiceJet has been able to sustain its operations with the confidence shown by our partners and passengers. Last year was a period of restructuring and settlements and we successfully completed and implemented settlements with most of our major partners including manufacturers and lessors setting the stage for our seamless growth and expansion. As we move ahead we are encouraged with the strong travel demand and our focus for the next year would be to induct more fuel efficient Boeing 737-8 MAX aircraft and concentrate on our regional and international routes."

"We are optimistic about our future and our continued recovery and in order to achieve our future plans the Board has mandated fresh capital issuance and the Company will be shortly engaging with investment bankers for a potential raise of up to US \$200 million."

"Our excellent cargo operations have provided the much required impetus and we will soon conclude the hive-off of cargo business into a separate independent company, SpiceXpress in the current quarter which will be followed by capacity enhancement with additional freighter aircraft within FY2023."

In terms of operational parameters, SpiceJet had the highest passenger load factor amongst all airlines in the country. Our average domestic load factor for the quarter ending 31st March, 2022 was 83.3% while for FY2022 it was 80.4%. SpiceJet had the highest PLF of 86.43% in Q1FY2023.

In FY2022, SpiceJet launched 140 new routes. During the quarter ending 31st March, 2022, the airline operated 411 charter flights carrying more than 65,000 passengers. Under 'Operation Ganga', SpiceJet flew back a large number of Indian students stranded in Ukraine. During the Q1FY2023, SpiceJet launched 24 new routes.

■ SPICEJET SUCCESSFULLY CONCLUDES HAJ PILGRIMAGE SPECIAL FLIGHTS



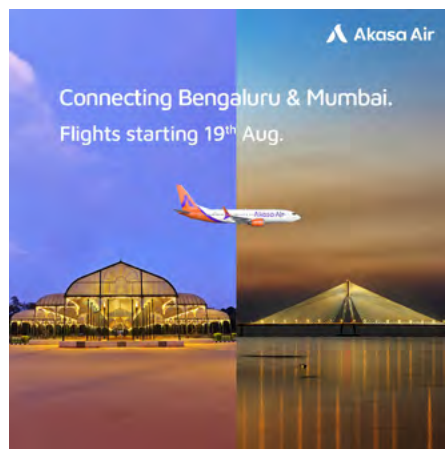
SpiceJet announced the successful conclusion of its special Haj flights for 2022. The last batch of pilgrims from Jeddah via Fujairah arrived in Srinagar on August 3. SpiceJet was the only Indian airline to operate Haj flights this year.

A total of 40 flights were operated with more than 5500 pilgrims undertaking the annual pilgrimage to Mecca. SpiceJet's 737 aircraft was deployed for these special flights.

The first leg of the special flights to Medina was operated from Srinagar airport between 5th and 20th June 2022. The return journey of pilgrims from Jeddah to Srinagar began on 15th July and was completed on August 3. The first special Haj flight with 145 passengers on-board a Boeing 737-800 was flagged off from Srinagar airport on 5th June 2022. Shri. Manoj Sinha, Hon'ble Lieutenant Governor of Jammu & Kashmir, had joined the launch event virtually.

SpiceJet has in the past operated special Haj flights from Gaya and Srinagar, ferrying around 19,000 pilgrims to and from the holy pilgrimage. The operation of special Haj flights was resumed this year after a hiatus of two years due to the Covid-19 pandemic.

■ AKASA AIR OPERATES ITS MAIDEN FLIGHTS ON THE BENGALURU-MUMBAI ROUTE



After successfully taking off on the Mumbai-Ahmedabad and Bengaluru-Kochi routes, Akasa Air inaugurated its first flights on the Bengaluru-Mumbai route enabling the airline to offer twice-daily flights in each direction on the Bengaluru-Mumbai route.

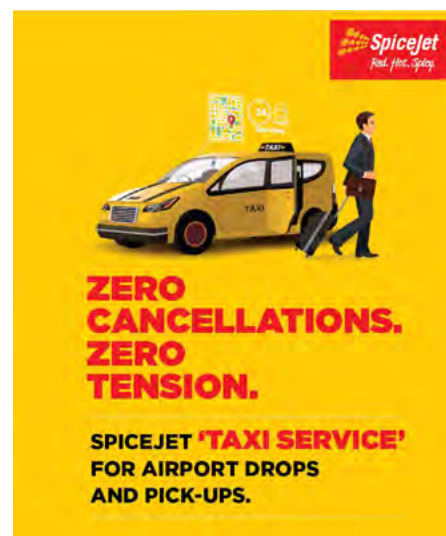
Further expanding its operations on the Bengaluru-Mumbai route, the airline will commence one additional daily flight from August 30, 2022, and another from September 19, 2022. In addition, strengthening its pan-India network connectivity, the airline has also added a new route between Bengaluru and Chennai, which will commence from September 10, 2022. In line with the airline's vision of adopting a phased approach to grow its network across India, Akasa Air has already announced flights for six routes across five cities, including Mumbai, Ahmedabad, Kochi, Bengaluru, and Chennai.

Commenting on the maiden flight and the new route, Praveen Iyer, Co-Founder, and Chief Commercial Officer, Akasa Air, said, "We have achieved yet another milestone today with the launch of commercial flights on the Bengaluru – Mumbai route. We believe that strong interconnectivity between these cities is imperative as a catalyst for the rapid progression of our country's industrial and technological prowess. We are excited to offer connectivity between the two major aviation hubs that rank among the top three busiest airports across the country.

Chennai is the fourth city we are connecting with Bengaluru, as we constantly augment this important sector. From September 10 we will offer double-daily flights in each direction on this new route".

The airline started its commercial operations with two aircraft and received its third aircraft on August 16, 2022. It will continue to grow its fleet by adding one new aircraft every two weeks with a view to establish a strong pan-India presence with a focus on metro to tier 2 & 3 route connectivity. Akasa Air's fleet size will be 18 aircraft by the end of March 2023 and over the next four years, the airline will add 54 additional aircraft, taking its total fleet size to 72 aircraft.

■ SPICEJET LAUNCHES TAXI SERVICE FOR SEAMLESS PASSENGER EXPERIENCE



SpiceJet has announced the launch of a taxi service for its passengers at 28 major airports including Dubai. The taxi service with multiple benefits such as zero cancellation fee and zero wait time with 100% confirmed, sanitised cabs is now available in Delhi, Mumbai, Chennai, Hyderabad, Bengaluru, Kolkata, Varanasi, Amritsar, Jaipur, Ahmedabad, Kochi, Pune, Tirupati, Dehradun, Port Blair, Dubai and many more cities offering unmatched doorstep convenience. Additionally, passengers also get an instant cash back on completing their rides with SpiceJet's Taxi Service.

SpiceJet already offers a first-of-its-kind option of booking cabs in-flight mid-air using the airline’s entertainment platform SpiceScreen. With the launch of the taxi service, SpiceJet passengers can now enjoy enhanced convenience when travelling.

Debojo Maharshi, Chief Business Officer, SpiceJet, said, “This end-to-end service will enhance the SpiceJet experience for our passengers. We are eliminating the stress of booking a cab to or from an airport with a convenient doorstep service, zero waiting and confirmed cabs at arrival station as well. This initiative is yet another product of our passion for passenger convenience.”

SpiceJet’s taxi service completely eliminates the possibility of unexpected or repeated cab cancellations that may occur at the last moment with zero cancellation and zero wait time policy. Airport drop and pick-up can become extremely challenging at times and with the airline’s taxi service passengers can commute absolutely worry-free. Passengers booking SpiceJet flights will receive an SMS with details of the SpiceJet Taxi service. A link in the SMS will enable passengers to update details of pick-up location and pick-up time. When it is updated, their cab will get confirmed and a well-kept sanitized cab will be reserved for them for their departure to make their journey more convenient and hassle-free.

■ VISTARA TO CONNECT MUMBAI & ABU DHABI WITH DAILY FLIGHTS FROM 1 OCTOBER 2022



Vistara announced non-stop flights between Mumbai and Abu Dhabi, UAE, starting 1 October 2022. The airline will operate daily flights between the two cities

using its A320neo aircraft. Bookings for the flights are being progressively opened on all channels, including Vistara’s website, mobile app, and through travel agents.

Mr Vinod Kannan, Chief Executive Officer, Vistara, said, “We are delighted to expand our presence in the UAE, with a second Emirate, and offer the choice of flying India’s best airline on one of the busiest international routes from India. We are confident that greater connectivity between Mumbai and Abu Dhabi will complement the growing trade and tourism between the two countries. We are certain that customers from India and the UAE will appreciate experiencing our award-winning product and services on the route.”

■ LUFTHANSA GROUP RECEIVES FIRST 787 DREAMLINER



Boeing and the Lufthansa Group celebrated the delivery of the first 787 Dreamliner, a 787-9, to Europe’s largest airline group at Paine Field, Everett, Wash. The Lufthansa Group has 32 firm orders for the 787 and joins nearly 50 customers worldwide in operating the industry’s most fuel efficient and capable airplane. Boeing designed the 787 family with superior efficiency, which allows airlines to profitably open new routes and fly people directly where they want to go in exceptional comfort.

Using 25% less fuel and creating 25% fewer emissions than the airplanes they replace, the 787 family has avoided more than 125 billion pounds of carbon emissions since entering service in 2011.

“With the Boeing 787, we are introducing another modern aircraft type that is one of

the most fuel-efficient long-haul aircraft in our fleet,” said Jens Ritter, CEO Lufthansa Airlines. “This will allow us to significantly further improve the average CO2 balance. This aircraft is sustainable and offers customers a premium flying experience.”

Since revenue service began in 2011, the 787 family has launched more than 325 new nonstop routes around the world, including approximately 50 routes opened since 2020. The 787-9 can fly 296 passengers up to 7,565 nautical miles (14,010 km) in a typical two-class configuration.

“Today’s delivery to the Lufthansa Group is a significant milestone for both companies as we resume European 787 deliveries and Lufthansa receives its first 787. I am delighted to see Lufthansa join a growing set of airlines worldwide operating the industry’s most capable twin-engine airplane,” said Stan Deal, president and CEO of Boeing Commercial Airplanes. “With unmatched fuel efficiency and huge passenger appeal, the 787 will play an integral role in the Lufthansa Group’s long-haul network.”

■ INDIGO ANNOUNCES RAS AL-KHAIMAH AS THE 100TH DESTINATION IN 6E NETWORK



IndiGo announced Ras Al-Khaimah as its 100th destination in its 6E network. The Indian private airline will start new direct flights between Mumbai and Ras Al-Khaimah from September 22.

Ras Al-Khaimah, which is the sixth populous city of the United Arab Emirates, was named as Gulf Tourism Capital for 2020 and 2021 by Gulf Cooperation Council. Some of its tourist destinations are Sunset at Jebel Jais, Zipline Down Jebel Jais’ slope, Dhayah Fort, National Museum, Khatt Springs amongst others. The city is also a popular destination for leisure travellers, destination weddings

and incentives targeting the MICE segment.

IndiGo Chief Strategy and Revenue Officer Sanjay Kumar said, "We are pleased to announce our entry into the fourth Emirate with Ras Al-Khaimah as our 26th international and 100th overall destination. These new flights will cater to the high demand for travel to Ras Al Khaimah with India being the third largest international source market for the city in 2021, and traffic expected to reach pre-pandemic levels this year."

Ras Al Khaimah International Airport CEO Atanasios Titonis said, "Our team along with IndiGo's team have been working several months together to achieve this main step for our airport and to boost tourism for Ras Al Khaimah as an Emirate. We envisage a huge array of opportunities coming in from the Indian subcontinent with the start of this operation as Mumbai is a major airline hub and it can further connect our passengers to several destinations within India and also other international destinations served by IndiGo."

Sheikh Salem Bin Sultan Al Qasimi, Chairman of The Department of Civil Aviation Ras Al Khaimah and Ras Al Khaimah International Airport said: "Ras Al Khaimah International Airport's partnership with IndiGo airlines is a significant step forward in getting back to a normal footing post the pandemic. We welcome them wholeheartedly and we are enthusiastic to address the increased passenger flow from the Indian subcontinent. Ras Al Khaimah's thriving tourism and industrial sector will benefit from this connectivity and I am confident that this partnership will prove to be an important piece in our ongoing expansion strategy for the airport."

MALAYSIA AIRLINES TO ACQUIRE 20 A330NEO FOR WIDEBODY FLEET RENEWAL



Malaysia Aviation Group (MAG), parent company of Malaysia Airlines, has selected the A330neo for the carrier's widebody fleet renewal programme. The initial agreements cover the acquisition of 20 A330-900 aircraft, with 10 to be purchased from Airbus and 10 to be leased from Dublin-based Avolon.

The announcement was made at an event in Kuala Lumpur, attended by MAG CEO Izham Ismail and Airbus Chief Commercial Officer and Head of International Christian Scherer, who signed a Memorandum of Understanding (MOU) for the aircraft to be ordered from Airbus. The agreements with engine manufacturer Rolls-Royce and Avolon were also signed at the ceremony.

Powered by the latest Rolls-Royce Trent 7000 engines, the A330neo will join the carrier's fleet of six long range A350-900s and gradually replace its 21 A330ceo aircraft. The carrier will operate the A330neo on its network covering Asia, the Pacific and the Middle East. Malaysia Airlines will configure its A330neo fleet with a premium layout seating 300 passengers in two classes.

Izham Ismail said: "The acquisition of the A330neo is a natural transition from our current A330ceo fleet. The A330neo will not only provide fleet modernisation and enhanced operational efficiency, but will also meet environmental targets through reduced fuel-burn per seat, while keeping passenger safety and comfort at its core. This is a significant milestone as MAG moves towards the successful execution of our Long-Term Business Plan 2.0 to position itself as a leading aviation services Group within the region."

In addition to the renewal of the widebody fleet, Airbus and MAG also signed a Letter of Intent (LOI) to study a wider collaboration in the areas of sustainability, training, maintenance and airspace management.

Christian Scherer said: "Malaysia Airlines is one of the great Asian carriers and we are proud and humbled to be its preferred supplier of widebody aircraft. The decision is a clear endorsement of the A330neo as the most efficient option in this size category for premium operations. It's also the clear winner in terms of in-flight comfort and we are looking forward to working with Malaysia Airlines to define an exceptional cabin experience."

AKASA AIR OPERATES ITS MAIDEN FLIGHTS ON THE BENGALURU-KOCHI ROUTE

After successfully commencing its commercial operations with its maiden flight on August 07, 2022 - Akasa Air inaugurated its first flights on the Bengaluru – Kochi route. Taking off from Bengaluru's Kempegowda International Airport at 11:00hrs, Akasa Air's QP 1353 arrived at Cochin International Airport at 12:30hrs.

Subsequently the first flight from Cochin International Airport Akasa Air's QP 1354 took off at 13:10 and arrived at Bengaluru's Kempegowda International Airport at 14:15hrs. From August 13 onwards, Akasa Air will offer double-daily flights in each direction on the Bengaluru-Kochi sector.

In line with the airline's vision of adopting a phased approach to grow its network across India, Akasa Air has already announced a total of five routes in five cities, including Mumbai, Ahmedabad, Kochi, Bengaluru and Chennai and would be operating a total of 54 weekly flights by August 13, 2022.

Praveen Iyer, Co-Founder and Chief Commercial Officer, Akasa Air said, "We are extremely grateful for the response we have received from travellers since our maiden flight which was flagged off by

the Honourable Civil Aviation Minister Shri Jyotiraditya Scindia-ji on 07 August. With this new Bengaluru – Kochi route, we look forward to our customers from these cities experiencing Akasa Air’s warm and efficient customer service and reliable operations at very affordable fares.”

■ GMR HYDERABAD INTERNATIONAL AIRPORT TO BOOST LEISURE AND BUSINESS TRAVEL WITH CONNECTIONS TO THREE VIETNAMESE CITIES



Are you set for an experience filled with natural beauty, distinctive architecture, and delicious food? You can now explore the scenic beauty of Sam Mountain and Halong Bay to the magnificent, rice terraces and beaches. Vietnam is now just four hours away from the city of pearls. Come October, GMR Hyderabad International Airport is all set to launch Vietjet Air’s direct flight service from Hyderabad to Hanoi, Ho Chi Minh and Da Nang. Hyderabad Airport will be the first airport in Southern India where VietJet will be launching its non-stop service to multiple cities in Vietnam.

The maiden Vietjet flights to Hanoi, Ho Chi Minh City and Da Nang are slotted to take to the skies on 7th October, 9th October and 29th November respectively. Each service will operate between Hyderabad International Airport and the popular Vietnamese cities four times a week.

Commenting on the new Vietjet services, Mr Pradeep Panicker, CEO-GHIAL, “There has been a trend of resurgence towards increased international travel over the past

few months. Indian travellers are ready to explore exotic destinations. Vietjet’s new direct flight services connecting Hyderabad with Vietnam will not only boost leisure tourism but also facilitate trade and commerce to stimulate businesses across sectors. This route is bound to satiate the spirit of the travellers from our regions who are looking for memorable tourist experiences in Vietnam and vice versa.”

Talking about the new routes, Mr Jay L Lingeswara, Vietjet Commercial Director said, “We are thrilled to strengthen our network in India with new direct flights starting from Hyderabad this October. We are glad to see an overwhelming response from Indian travellers and look forward to inspiring Hyderabad to experience the magic of Vietnam while also being a bridge to Southeast and Northeast Asian destinations. Hyderabad, the city of pearls, will be another highlight out of Delhi and Mumbai where we expand our India-Vietnam flight network to 17 routes to end of the year. We are confident the greater connectivity, affordability along with better flexibility will complement the rising demand for both business and leisure travel.”

■ INDIGO JOINS WEF SUSTAINABILITY CAMPAIGN ‘CLEAR SKIES FOR TOMORROW’



IndiGo becomes a signatory in the Clear Skies for Tomorrow, India Coalition campaign, spearheaded by the World Economic Forum. IndiGo’s commitment to deployment of sustainable initiatives will

help in achieving a significant scale for SAF to gain a critical mass and bring in cost-efficiency for widespread adoption in India.

IndiGo has been focused on sustainable operations for a few years and launched its first ESG report – IndiGo Green in 2021. Earlier this year, IndiGo operated its brand new A320 NEO flight from Toulouse, France to New Delhi on 18 Feb 2022 with 10% blend of sustainable aviation fuel (SAF) under the IndiGo Green initiative.

On the occasion, Ronojoy Dutta, Chief Executive Officer and Wholetime Director, IndiGo said, “We are pleased to announce that we have joined the Clear Skies for Tomorrow, India Coalition campaign in-line with our commitment towards sustainable operations. Accepting this call to action is critical to reduce the impact of operations on the environment and provide a better future for generations to come. We also believe it is important for us to contribute back to the community we serve and provide our signature on-time, courteous and hassle-free service at affordable fares, onboard our lean clean flying machines.”

Lauren Uppink Calderwood, Head of Aviation, Travel and Tourism Industries said, “Sustainable Aviation Fuels are one of the key technologies available to government and industry in decarbonizing aviation. But development and production are currently limited due to high capital costs and its reliance on technology that is yet to be proven at scale. Still, we are encouraged by the progress made by industry commitments, including IndiGo committing to sustainable flying. Together, we can build pathways and solutions in our commitment to net zero in aviation.”

Natilus selects Pratt & Whitney Canada as engines supplier for its autonomous cargo aircraft

Natilus, a U.S. company producing the world's first purposefully designed and manufactured autonomous aircraft for air freight transport, has announced that it has selected Pratt & Whitney Canada to supply the engines for the first of the Natilus family fleet: the N3.8T. The company is initially producing the N3.8T as a prototype and as long-term short-haul air cargo feeder. The first N3.8T aircraft is under production and is scheduled to fly in 2024.

"Natilus has designed and developed a blended-wing autonomous aircraft that can offer services at a fraction of the cost of today's transport, while reducing negative impacts on our environment. We wanted to select an engine supplier that shares our vision of innovation, safety and efficiency. Pratt & Whitney Canada is recognized and respected for their worldwide support of customers, while the PT6A engine is the benchmark in reliability and has an unmatched history of performance with low TBO (Time between Overhauls)," said Aleksey Matyushev, Natilus Co-founder and CEO.

"Pratt & Whitney has a long-standing commitment to supporting innovation for sustainable aviation, and so we are pleased that Natilus has recognized the capabilities of the PT6 engine family to increase efficiencies in the air cargo transport industry while reducing carbon emissions," said Nicholas Kanellias, vice president, General Aviation, Pratt & Whitney Canada. "The selection of the PT6A-67D to power Natilus' innovative cargo aircraft further asserts the dependability, versatility and flexibility of the PT6 turboprop engine family, the world's most popular engine in its class."

Today, there are only two ways to move cargo internationally: by air and by sea. The difference between the cost and time of these two modes of transportation is dramatic, with sea freight currently 13 times less expensive, but 50 times slower in delivery. Natilus intends to revolutionize the air transport industry by providing the timeliness of air freight at an affordable cost reduction of 60% to increase the competitiveness of the air cargo market.



DB Schenker launches its first charter flights between Europe and South America

DB Schenker offers additional charter capacities across the Atlantic. The new route starts from the Netherlands and reaches Brazil after two stopovers in the USA. In South America, direct connections to Argentina and Chile are available. The weekly freight charter flight provides 50 tons of capacity and expands DB Schenker's growing intercontinental flight network.

Thorsten Meincke, Global Board Member for Air & Ocean Freight at DB Schenker: "To keep economies running, companies require stable supply chains. By expanding our flight network to South America, we provide a new source of reliable capacity to the market. We are happy to say that the demand is already high."

Every Sunday night, the flight leaves Amsterdam (AMS) and stops in New York City (JFK) and Miami (MIA) on Monday before reaching Viracopos (VCP) near São Paulo on the same day. On Tuesdays, a direct connection can be made to Buenos Aires (EZE), and Santiago de Chile (SCL) can be reached on Wednesdays. An airline partner will be operating the new transatlantic route with Boeing 767 freighter jets. The charter flight's stopover in Miami allows access to numerous further destinations in the operating carrier's portfolio.

The first bookings include a diverse range of goods, including many automotive parts. Temperature-controlled cargo and dangerous goods can also be transported upon request. Within Europe, the flights seamlessly connect to DB Schenker's land transportation network.



UPS to Acquire Multinational Healthcare Logistics Provider Bomi Group

UPS announced plans to acquire Bomi Group, an industry-leading multinational healthcare logistics provider. The transaction will add temperature-controlled facilities in 14 countries and nearly 3,000 highly-skilled Bomi Group team members to the UPS Healthcare network in Europe and Latin America.

"As a leading global healthcare logistics company, Bomi enhances our portfolio of services and accelerates our journey to become the number one provider of complex healthcare logistics," said EVP and President of UPS International, Healthcare and Supply Chain Solutions Kate Gutmann. "UPS Healthcare and Bomi Group employees share similar values and our cultures are firmly rooted in a relentless focus on quality. The combination of our two teams will significantly improve our healthcare customers' ability to continue to develop and deliver life-saving innovations."

Since 1985, Bomi Group has provided high value-added services for the Medtech and Pharma sectors with a customized and tailored approach. It is a quality-focused company devoted to healthcare that has built solid and long-lasting business relationships with more than 150 multinational customers worldwide.

Key Bomi Group leaders, including CEO Marco Ruini, will continue in their roles to provide seamless service to Bomi Group customers after the transaction closes. Bomi Group's employees will also continue to play vital roles in the combined organization.

"With over 35 years in the healthcare logistics industry, our team has developed best-in-class services designed to meet and exceed the needs of our medical technology and pharmaceutical customers," said Ruini. "Joining the UPS team will expand those capabilities and create an even more integrated and powerful global network for our customers."

The acquisition will add more than 350 temperature-controlled vehicles and four million square feet (391k m²) to the UPS Healthcare global footprint, offering customers access to faster shipping times, greater production flexibility, and offerings to help them attract new business. The acquisition will play a key role in the delivery of next-generation pharmaceutical and biologic treatments that increasingly require time-critical and temperature-sensitive logistics.

"We are focused on building healthcare logistics capabilities and services that allow our customers to deliver the newest healthcare innovations," said UPS Healthcare President Wes Wheeler. "We are excited to combine Bomi's talent, expertise and capabilities with UPS Healthcare – together, we will provide unmatched solutions to our customers, powered by UPS's integrated, global smart logistics network."



LATAM Adds Fourth Freighter as Part of Its Growth Plan

LATAM Group has announced the addition of its fourth passenger aircraft converted to all-cargo service as part of its growth plan announced in 2021. With this aircraft, the company consolidates a fleet of 15 freighters.

With the addition of aircraft N564LA operated by LATAM Cargo Colombia, LATAM will increase its cargo capacity between Europe and the Americas. "This freighter will allow us to strengthen our transatlantic offering, with more capacity from Europe to the USA, and to further connect cargo to multiple destinations in South America through strategic points like our Miami hub. We plan to continue expanding service to and from markets that are relevant for our customers as the remaining freighters included in our growth plan are incorporated into our fleet," said Andrés Bianchi, CEO of LATAM Cargo.



LATAM expects to end the year with a fleet of 16 cargo aircraft after the delivery of the fifth freighter due in September.

Atlas Air bought out by private equity for \$5.2bn



Atlas Air Worldwide a leading global provider of outsourced aircraft and aviation operating services announced that it has entered into a definitive agreement to be acquired by an investor group (“the Consortium”) led by funds managed by affiliates of Apollo together with investment affiliates of J.F. Lehman & Company and Hill City Capital in an all-cash transaction with an enterprise valuation of approximately \$5.2 billion.

Under the terms of the agreement, Atlas Air Worldwide shareholders will receive \$102.50 per share in cash, representing a 57% premium to the 30-day volume-weighted average trading price per share of Atlas Air Worldwide common stock as of July 29, 2022¹. Upon completion of the transaction, Atlas Air Worldwide will become a privately held company and shares of Atlas Air Worldwide common stock will no longer be listed on the Nasdaq stock exchange. Atlas Air Worldwide will continue operating under the Atlas Air Worldwide name, be led by John Dietrich and the current executive team and maintain its global presence.

“We believe this transaction will deliver immediate and certain value to Atlas Air Worldwide shareholders at a substantial premium, and we are pleased to reach this agreement with the Consortium,” said Duncan McNabb, Chairman of the Atlas Air Worldwide Board of Directors. “The Board’s decision to unanimously approve this transaction follows a careful evaluation and thoughtful review of value creation opportunities for shareholders. We believe this transaction is the right next step to maximize value for our shareholders and the best path forward to accelerate the Company’s ability to execute its strategic plan and achieve its long-term growth objectives.”

“Over our 30-year history, Atlas Air Worldwide has grown to become a global leader in airfreight, delivering high-quality services to our diverse roster of customers around the world,” said John Dietrich, President and Chief Executive Officer of Atlas Air Worldwide. “Following the closing of the sale to the Consortium, we will seek to leverage their resources, relationships and industry expertise to build on our strong financial and operational performance. Their investment in our company demonstrates their confidence in our people and our culture as we serve the growing needs of the global supply chain.”

“Atlas Air Worldwide is a market leader that continues to set higher standards for excellence within the airfreight industry,” said Apollo Partners Antoine Munfakh and Jason Scheir and J.F. Lehman & Company Partner Alex Harman on behalf of the Consortium. “With the strong market demand and long-term secular tailwinds for global air cargo services, Atlas is poised to capitalize on many opportunities for continued growth as a fund portfolio company of Apollo, J.F. Lehman and Hill City. We look forward to leveraging our resources, capital and experience in the sector to support the talented Atlas team, alongside our partners in this exciting next phase.”

¹July 29, 2022 represents the last full trading day prior to market speculation regarding a potential sale of the Company.

Approvals and Timing

The transaction is expected to close in the fourth quarter 2022 or first quarter 2023, subject to customary closing conditions, including approval by Atlas Air Worldwide shareholders and receipt of regulatory approvals.

Agility Completes £763 Million Acquisition of Menzies Aviation

Agility, a supply chain services, infrastructure and innovation company, announced that it has finalized its acquisition of UK-based John Menzies PLC and will combine the business with its National Aviation Services (NAS) business to create a world leader in aviation services in 58 countries.

Once integrated, the combined company will operate as Menzies Aviation and will be the world's largest aviation services company by number of countries and second largest by number of airports served.

Operating as Menzies Aviation, the combined company will provide air cargo services, fuel services and ground services at airports on six continents. Combined revenues of Menzies and NAS exceeded \$1.5 billion in 2021. The new company will have approximately 35,000 employees and operations at 254 airports in 58 countries, handling 600k aircraft turns, 2 million tonnes of air cargo and 2.5 million fuelling turns per year.

"Menzies and NAS will create the world leader in aviation services," said Hassan El-Houry, who becomes Chairman of the combined company, having previously held the role of NAS CEO.

"We will have the scale and resources to expand and grow as the industry recovers from the COVID-19 pandemic. Commercial aviation is a key engine of global economic growth, and our customers need partners they can count on as flight volumes return."

The company's customers will include Air Canada, Air China, Air France-KLM, America Airlines, British Airways, Cathay Pacific, EasyJet, Emirates, Ethiopian, FlyDubai, Frontier Airlines, IAG, Jazeera, Qantas Group, Qatar Airways, Southwest, Turkish, United Airlines, WestJet and Wizz Air.

"With the combination of Menzies and NAS, our customers will receive world-class service, expanded product offerings, and the industry's best safety practices at airports on six continents," said Menzies Aviation CEO Philipp Joeinig, who will be CEO of the combined company. "Agility's backing gives us the resources to provide innovative solutions for growing and forward-thinking customers, and to develop our talent, technology, and sustainability; critical factors for our future success. It also means we are well-positioned to support our customers in tackling supply chain challenges and labor shortages."

Agility Vice Chairman Tarek Sultan said, «This is a new chapter for Agility, Menzies, and NAS. By acquiring Menzies and combining it with NAS, Agility has the opportunity to unlock greater value in both. Agility has a strong track record of sustainable and responsible growth over the last two decades, driven both organically and through mergers and acquisitions, and this latest deal is part of our strategy to further accelerate that growth. For Agility, this deal creates the largest owned and operated – «controlled» - business in Agility's portfolio by revenue, headcount, and global presence. We're looking forward to seeing the new Menzies soar with Agility's backing.»



Boeing Announces UPS Purchase of Eight Additional 767s

Boeing announced an order from UPS for eight more 767 Freighters. The incremental order will increase UPS's 767 Freighter fleet to 108 airplanes, enabling the global carrier to further modernize and sustainably grow its fleet.

"The additional 767s will help us continue to deliver what matters to UPS customers around the world. This is a very versatile aircraft that we operate across every region of the globe," said UPS Executive Vice President and President U.S. Nando Cesarone. "With these aircraft, our fleet will continue to be among the most modern in our industry, meeting our customers' needs while improving our efficiency, sustainability and reliability."

Air cargo continues to play a crucial role in global trade, from supporting supply chains to expanding e-commerce. The International Air Transport Association (IATA) has estimated that global air cargo revenue in 2021 was more than double the revenue in pre-pandemic 2019.

"This repeat order from UPS is a testament to the outstanding cargo capabilities of the 767 Freighter and further demonstrates Boeing's market leadership in the freighter segment," said Hssane Mounir, Boeing senior vice president of Commercial Sales and Marketing. "UPS will operate more than 100 767 Freighters with this order and will build its fleet of Boeing and Boeing-heritage airplanes to more than 260 airplanes. We are honored to play an important role in UPS's efforts to operate a more sustainable, more efficient fleet."

UPS will begin taking delivery of these new airplanes in 2025, with an additional 767-300 Boeing Converted Freighter (BCF) entering service in late 2023. This purchase builds on UPS's order for 19 767 Freighters in December 2021.

Etihad Airways scales up its cargo operations with Airbus' new generation A350F freighter



Etihad Airways has firmed up its order with Airbus for seven new generation A350F freighters, following its earlier commitment announced at the Singapore Airshow. The freighters will upgrade Etihad's freight capacity by deploying the most efficient cargo aircraft available in the market.

This order of the A350F sees the national carrier of the UAE expanding its relationship with Airbus, and adding to its existing order of the largest passenger version of A350-1000s, five of which have been delivered.

Tony Douglas, Group Chief Executive Officer, Etihad Aviation Group, said: "In building one of the world's youngest and most sustainable fleets, we are delighted to extend our long-term partnership with Airbus to add the A350 Freighter to our fleet. This additional cargo capacity will support the unprecedented growth we are experiencing in the Etihad Cargo division. Airbus has developed a remarkable fuel-efficient aircraft that, in tandem with the A350-1000 in our passenger fleet, supports our commitment to reaching net-zero carbon emissions by 2050."

"Airbus is delighted to extend its long standing partnership with Etihad Airways, who recently introduced the A350 passenger services and is continuing to build on the Family with the game-changing freighter version, the A350F," said Christian Scherer, Chief Commercial Officer and Head of Airbus International. "This new generation large freighter brings unprecedented and unmatched benefits in terms of range, fuel efficiency and CO₂ savings, that support customers by enhancing operational efficiencies at the same time as reducing environmental impact."

Mr Dinesh Kumar Batra takes charge as Chairman & Managing Director of BEL



Mr Dinesh Kumar Batra, Director (Finance) & CFO, has taken additional charge as Chairman & Managing Director (CMD) of Navratna Defence PSU Bharat Electronics Limited (BEL) with effect from September 1, 2022.

As Director (Finance) & CFO, Mr Dinesh Kumar Batra steered BEL to achieve its highest ever turnover of Rs. 15,044 Cr and PAT of Rs. 2,349 Cr in FY 2021-22. He was instrumental in increasing BEL's authorised capital to Rs. 750 Cr from Rs. 250 Cr and issuing two bonus shares for each share held by the shareholders of the company. He also played a pivotal role in obtaining necessary approvals for BEL's highest ever payout of 450% Dividend.

Mr Dinesh Kumar Batra was instrumental in the company's move to foray into the Electro-Explosive segment. He is also credited with BEL entering into Li-on battery packs for automobiles to support the e-Mobility programme of the Government of India. He is a member of the Board of BEL subsidiaries, BEL-Thales Systems Limited (BTSL) and BEL Optronics Devices Limited (BELOP).

Boeing Names Brian Besanceney as New Communications Chief



The Boeing Company named Brian Besanceney as the company's senior vice president and chief communications officer effective September 6, 2022. A corporate affairs leader with more than 25 years of strategic communications and government relations experience, including senior roles at Walmart and Disney, Besanceney will oversee all aspects of Boeing's communications, such as communications at its commercial airplanes, defense and services businesses, media relations, external affairs, employee engagement, and company branding. Besanceney will report to Boeing President and CEO David Calhoun and serve on the company's Executive Council.

"Brian is an outstanding communications executive with a proven record of leading global teams and helping several of the world's well-known companies and organizations tell their stories, in addition to managing complex issues in the private sector and at the highest levels of government," said Calhoun. "I am confident Brian will help us build on our ongoing commitment to engaging our employees and stakeholders transparently as we continue to navigate a challenging global environment and work to position Boeing for the long term."

Most recently, Besanceney has served as senior vice president and chief communications officer at Walmart, where he has been highly regarded for his strategic communications counsel and his effective leadership of the company's comprehensive global communications, including media, social and digital, stakeholder engagement, and events for the world's largest company.

Prior to Walmart, Besanceney served as senior vice president of public affairs at Walt Disney World where he led external and internal communications and corporate citizenship, as well as worldwide government and industry relations for Disney's Parks & Resorts division.

Airbus Chief Financial Officer Dominik Asam to leave the Company in 2023

Dominik Asam, 53, Chief Financial Officer (CFO) of has decided to leave the Company beginning of March 2023 after almost four years in the position to pursue a new opportunity as Chief Financial Officer of SAP the market leader in enterprise application software.

Dominik Asam joined Airbus as CFO and Member of the Executive Committee in April 2019.

"I am grateful for each day I have had the honour of working for Airbus so far. It has been a privilege to be part of the Airbus management team under the leadership of Guillaume Faury. Airbus is now in a better competitive position and I have great faith in my colleagues' ability to continue writing this unique success story," said Dominik Asam. "I am looking forward to supporting this flagship European company for the remainder of my tenure by working with the management to ensure a smooth transition with the next Airbus CFO. I hope to stay in close touch with Airbus after transitioning to my new role at SAP to further deepen what is already a strong relationship between the two companies."

Airbus CEO Guillaume Faury said: "Dominik is an outstanding CFO. He has been a great wingman during the challenging and uncertain times of the COVID pandemic and is a key asset to any team. Dominik has also been a key contributor to the solid financial performance of Airbus – thanks to a highly committed finance team - and to the Company's transformation as we continue to pioneer sustainable aerospace."

The Company will now prepare the succession of Dominik Asam who will remain fully in charge until his departure.

Usha Prashar joins the Board of Directors at Hans Airways



Hans Airways, the new long-haul hybrid airline readying to start scheduled flights between Birmingham, UK and Amritsar, India, is delighted to confirm the appointment of Baroness Usha Prashar, CBE to its Executive Board.

Since 1970, Baroness Prashar has served as director, or chair, of a variety of public and private sector organisations, including NED appointments with Channel Four, ITV Television, UNITE Group Plc and Nationwide Building Society. She has served as Chair of the National Literacy Trust and Trustee of the BBC World Service Trust, hitherto serving as president of the Royal Commonwealth Society and Deputy Chair of the British Council.

Baroness Prashar also previously served as Honorary President of the UK Community Foundations (UKCF), the umbrella organisation for all community foundations, providing philanthropic advice to clients and delivering UK-wide grant-making programmes.

Currently she is the Chair of the UK Federation of Indian Chambers of Commerce and Industry (FICCI) and Chair of Cumberland Lodge, an educational charity initiating fresh debate on the burning questions facing society.

"We are extremely honoured to welcome Baroness Prashar to our Board," said Hans Airways' CEO Satnam Saini. "She brings considerable experience in the private sector and in public affairs and with her commitment to philanthropy work, and is a revered and vocal advocate on education and societal issues."

"Baroness Prashar shares a keen interest in aviation and connecting people. The business model Hans Airways is following as a true 'community airline' was a determining factor in her decision to accept our invitation to join our Board. We are delighted she shares our vision and we are very much looking forward to her valuable contribution," he added.

Baroness Usha Prashar commented: "I am delighted to join Hans Airways' Board and feel privileged to be part of this community airline at the start of its journey. I am very impressed with its vision and planning to date and hope to make a meaningful contribution to its success."

JetBlue Announces System Operations Leadership Appointment

JetBlue announced the appointment of Steve Olson as the airline's new vice president, system operations. He will report to Joanna Geraghty, JetBlue's president and chief operating officer.

Olson joins JetBlue from American Airlines where he currently serves as managing director of the carrier's integrated operation center with oversight of nearly 6,000 daily American and American Eagle flights across the globe. He has spent nearly two decades with American – and its predecessors US Airways and America West – leading the carrier's integrated operations center as well as its Phoenix hub. Olson began in commercial aviation as a frontline customer service representative with America West.

He is a graduate of Embry-Riddle Aeronautical University, a licensed aircraft dispatcher and commercial pilot, and brings 14 years of experience as an aircraft maintenance technician with the Arizona Air National Guard.

"I'm excited to welcome Steve to JetBlue with his experience across so many aspects of aviation from maintenance and dispatch to the airport and the ops center," said Geraghty. "As we continue to expand and evolve JetBlue's operations, Steve's leadership will play a big part in ensuring our crewmembers are set up to deliver the award-winning JetBlue experience for our customers. At the same time, I want to thank Alex for his 15 years of dedication to JetBlue and his support for our crewmembers."

"It's an honor to be joining the JetBlue system operations team as the company continues on its expansion path," said Olson. "I'm looking forward to getting to know the many crewmembers who work around the clock to ensure safe and efficient operations for JetBlue's customers."

Alex Battaglia, who has led JetBlue's system operations and airports teams, is retiring from JetBlue after more than 15 years with the company in a number of leadership roles, and after nearly 40 years in the airline industry.

"Our ability to navigate the most complex and difficult aviation environment in the United States has been in large part due to Alex's deep airline expertise," said Robin Hayes, JetBlue's chief executive officer. "His passion for taking care of our customers and crewmembers on every flight will leave a lasting mark on JetBlue."

"I want to thank Alex for his many contributions to JetBlue over a tremendous period of change and growth for our company as our operation has doubled in size," said Peter Boneparth, chairman of JetBlue's board of directors. "Alex has been a champion for our brand over the years and we are grateful for his passion and dedication to JetBlue."

GA Telesis MRO Services Promotes Fabian Robinson to VP & General Manager

GA Telesis a leader in integrated aviation services, announced the promotion of Fabian Robinson to the position of Vice President and General Manager of GA Telesis MRO Services Composite Group located in Fort Lauderdale. Robinson has an extensive career that began nearly 20 years ago as a mechanic while attending engineering school.

"I have been privileged to witness Fabian's development over the past 20 years," said Pastor Lopez, President of MRO Services. "As he applies his engineering skills coupled with his business acumen, I am confident he will positively impact the team and the business," he added.

Robinson joined the newly formed GA Telesis MRO Services Composite Group in 2017, overseeing engineering and quality. During his tenure in this position, he created processes and established procedures that improved quality while improving turn times. In addition, he worked closely with airline customers to support out-of-production aircraft and provide sound cost-saving initiatives. Prior to joining the GA Telesis team, Robinson spent 13 years at AAR Landing Gear Services and his last position was Director of Quality, where he oversaw quality control and the quality assurance department. Robinson holds a Bachelor's in Mechanical Engineering and an MBA from Florida International University.

The MRO Services Group was formed during the second half of 2017 to streamline the decision-making process, lean MRO operations, and create a single customer interface and quality experience among the companies in the group. The MRO Services Group strongly focuses on performance by deploying lean principles and eliminating waste from daily activities. The current OEM arrangements greatly benefit our customers and our OEM partners. GA Telesis can deliver OEM quality material at lower prices to our customers while enhancing the OEM's market channels.

Lockheed Martin Names Tim Cahill as Missiles and Fire Control's Executive Vice President

Lockheed Martin announced that Tim Cahill will be the new executive vice president of the company's Missiles and Fire Control (MFC) business area. The appointment is effective Nov. 1.

Cahill is currently senior vice president of Lockheed Martin's Global Business Development & Strategy, where he brought integrated solutions to our customers and established comprehensive growth-enabling strategies across the enterprise. He previously served as senior vice president for Lockheed Martin International and vice president, Integrated Air and Missile Defense (IAMD) Systems for MFC. At MFC, he managed several significant programs including Terminal High Altitude Area Defense (THAAD), PAC-3, Medium Extended Air Defense System (MEADS), and numerous other emerging technologies. He has also held leadership positions at Lockheed Martin Space.

"Tim is a strategic leader with the right combination of experience to enable the future growth of our Missiles and Fire Control business. He is known for building strong, collaborative relationships with team members and customers alike, and I look forward to what he will bring to not only MFC, but also our customers who rely on us for their critical missions," said Lockheed Martin Chief Operating Officer Frank St. John.

Cahill joined the company in 1995 following a distinguished career as a U.S. Air Force officer. He succeeds Scott Greene, who will retire at the end of the year after more than 41 years of service to the company. Greene will serve as a strategic adviser to the chief operating officer from Nov. 1 until the end of the year to ensure a smooth and orderly leadership transition process.

"I am honored to be part of the exceptional MFC team of more than 20,000 employees dedicated to supporting our customers' mission with our innovative products and solutions," said Cahill. "The future of MFC is bright and we look forward to playing an important role in delivering 21st Century Security integrated solutions to our U.S. and allied customers around the world.»



HAL's Director Finance Gets Additional Charge of CMD, HAL



Mr. C. B. Ananthkrishnan, Director (Finance) of HAL has taken over the additional charge of the post of Chairman and Managing Director following the superannuation of Mr R. Madhavan as CMD HAL on July 31, 2022. Mr Ananthkrishnan will hold this post for a period of three months from today or till the post of CMD, HAL is vacant, whichever is earlier

Aviation Update Editor Kartikeya in Conversation with
Mr. Salil Gupte
President, Boeing India



India is one of the fastest-growing aviation markets. Do you think the other services aligning with aviation for e.g – the MRO sector/ lessor market is growing at an equal pace in our country? Your views on the current MRO ecosystem development in India and what changes need to be done for Indian MROs to be at par with their global competitors?

India, with its abundant capabilities and building capacities in infrastructure and services, is one of the fastest growing aviation economies in the world, offering a variety of options in growth and production. India's speedy economic growth and expanding middle class play a key role in fueling the demand across South Asia for 2,400 new commercial jets, valued at nearly \$375 billion during the 20-year forecast period. We, at Boeing, consider India as a top priority and anchor country for over 75 years. Boeing has been steadily increasing its sourcing from India for its global manufacturing and supply chain. Going forward, we will continue to grow a globally

competitive supplier base in India, with strong partnerships that are aligned with the government's vision of an Aatmanirbhar Bharat. We expect unprecedented growth not just within the aviation sector but also in its parallels like the Maintenance, Repair and Overhaul sectors and the lessor market.

India is positioned strongly to localize maintenance services capabilities and provide cost-effective solutions given its large technical labor force, including uniquely qualified and highly trained ex-servicemen, and industry capabilities within the country's borders. That is why you will notice new strategic agreements within businesses to ensure that Indian aircraft are catered to within the nation for their maintenance and repair. AI Engineering Services Limited (AIESL) has entered into a strategic agreement with Boeing for the MRO of Boeing 777 IHoS aircraft operated by the Indian Air Force. Also exploring collaboration in Repair and Overhaul of Landing Gear and other commercial common 737NG equipment fitted on the

Indian Navy's P-8I fleet. Air Works has recently handed over the last of the six P-8I maritime patrol aircraft after completing Phase 32 maintenance checks to Boeing and the Indian Navy, marking a big milestone in the nation's ambition to become self-reliant in maintaining its defense and aerospace assets. Horizon Aerospace and Boeing also had a strategic agreement for the MRO of three key Boeing defense platforms in India the P-8I operated by the Indian Navy, the C-17 Globemaster and VIP B737 transport fleet operated by the Indian Air Force.

We estimate that around 70 percent of an aircraft's life cycle costs are attributed to services (including maintenance, repair, overhaul, and modifications; training and professional services; and digital solutions and analytics). Overall, Boeing expects the market for commercial aviation support and services to be worth \$1.7 trillion from 2021 to 2030. The current MRO market in India, which has grown through the pandemic, is estimated to be worth ~\$1.7 billion by the MRO Association of India, up from \$1.5





billion in 2020, thanks to the tax reforms in early 2020. The MRO Association of India expects this market to become more than double over the next 10 years to reach \$4 billion annually by 2031. This tremendous growth rate also matches the Government of India's expectations of a ~\$5 billion market in the next decade.

So, there is growth within all the aviation-related sectors. But since it's only in the last few years that equal focus is being put on the maintenance and repair of aircraft within India, the pace of growth may not be the same.

India tends to have certain inherent advantages such as the proximity to global airport hubs, long-term forecasted growth in air traffic, and availability of a large pool of skilled aviation technicians and engineers. This positions the nation well to become a key regional player, as well as a hub, in the global MRO industry, given that more attention is paid to the need of the industry so that it can train its manpower better. As I said, India does have the potential to be a leading name in the global MRO industry and Boeing recognizes that and will pursue all the necessary steps to attain it.

On one hand Boeing's latest forecast

has predicted the need for over 2.1 million new aviation personnel over the next two decades to support air travel recovery while the world is grappling with the problem of a shortage of skilled labor. How do you see this picture changing in the coming months?

Boeing recognizes the value of training its personnel on the field and continues to pursue collaboration opportunities to further develop the aviation industry in India. With our growing installed platform base with commercial and defense customers in India and our expanding supplier base, it is imperative that we invest in developing and nurturing talent. Boeing's skill development activities in India touch every stakeholder in the aviation and aerospace ecosystem. We have been working with the National Skills Development Mission to introduce students to advanced aerospace engineering projects and related best practices, resulting in high-tech career paths for talented students.

Can you throw some light on Boeing's contribution in the development of skill capabilities in India?

Yes, Boeing through its skilling and upskilling initiatives is developing Indian MSMEs, and training hundreds of pilots,

aircraft maintenance engineers, technicians, and frontline factory workers across India with partners like Air India, Tata, and MSMEs - Rossell Techsys, SASMOS, Jaivel and other industrial partners like Indo MIM, Lakshmi Machine Works, Air Works, and Wipro.

Boeing has a variety of skill India initiatives, including the Accelerated Apprenticeship Program, launched in collaboration with AI Engineering Services Limited and the Ministry of Civil Aviation. The state-of-the-art center was inaugurated in June 2018 in Mumbai with the aim to increase the employability of aircraft maintenance engineers. It combines a smart class setting and advanced training aids with a customized curriculum created by Boeing experts. The first batch graduated in SEPTEMBER 2019 and all the students were employed with leading Indian carriers. The second batch graduated in December 2021.

These programs have skilled more than 2,500 frontline aerospace manufacturing workers and aircraft maintenance engineers. Boeing's investment in supplier development, training, tooling and quality management has enabled Indian suppliers to engage in high-value, high-tech manufacturing of complex aerospace components and subsystems for India and for the world.

What can you tell our readers about the rising cases of technical snags in India. As per DGCA, the main reasons are the COVID-19 pandemic leading to curtailed operations and lack of manpower. Your views? How can we avoid such incidents in the future?

With the onset of the COVID-19 pandemic, the Indian government started increasingly shifting focus on the Maintenance, Repair and Overhaul (MRO) sector. In fact, the Indian MRO market is one of the few globally that has grown through the pandemic. The growth was given impetus by key government reforms in early 2020, which reduced tax on MRO services.

Boeing ensures that all its aircraft have facilities in India for their MROs. Moreover, our skill India initiative ensures that skilled and trained personnel meet the demand for repair and maintenance.

With rising passenger traffic Indian airlines are changing their fleet patterns based on the demands. Where do you see this trend going? Are Indian skies more suited for narrowbodies or widebodies?

The trend signals that the Indian airlines are being more aware of their segment in the market and their audience or passengers. An airline that focuses more on meeting demands for domestic travel will prefer single-aisle airplanes such as the 737 family and will continue to serve growth in domestic as well as regional markets, including short-haul flights from India to the Middle East and Asia Pacific regions.

Indian operators will need just over 2,000 new single-aisle airplanes over the next 20 years, whereas an airline which caters to more international flights will prefer Boeing widebody aircraft like the 777-9 or the 777 and 787 that represent not only 100% of the India market, but also 100% of total market share on the highly valuable India – North America markets. The 787 Dreamliner is the only complete widebody family enabling airlines to open new routes and expand their network and have maximum payload with unmatched efficiency. However, some airlines may prefer something more versatile like the 737 MAX family including the 737-7, 737-8, 737-9 and 737-10, which provides sustainable versatility, low costs, high performance, capacity, and efficiency, and is the largest family of aircraft that can address an airline's requirement for a diversified short-to long-haul fleet. They offer a winning low-cost combination to airlines. With more than 5,000 orders, the 737 MAX is the fastest-selling airplane in Boeing's history.

Although both Boeing narrowbody and widebody aircraft are well designed and suited to cater to the Indian skies and its passengers. Indian carriers are adding more capacity on both domestic and international routes. India will need 240 new widebody airplanes such as the 787 Dreamliner to meet long-haul demand. These aircraft will help to improve and expand long-haul connectivity – especially routes from India to North America and Europe. In fact, the 787 has gained a 6% market share during the pandemic in India due to its versatility and efficiency.

Air India is planning one of the biggest aircraft deals in history with about 300 aircraft orders. It is speculated that Air India is in talks with both Airbus for A350s and Boeing for B 737s, this massive order will be a game-changer not just in the Indian aviation industry but globally. Your views?

We are thrilled about the deal and the potential it holds for us and the airline. B737 MAX is one of the most adored and ordered aircraft from its family. Since Nov. 2020, we have sold more than 1,000 airplanes across the 737 MAX family, reflecting the value of MAX's versatility and commonality. This year through May, we have sold more than 180 737 MAX airplanes. We are confident our product line is well-positioned, and we're focused on executing to meet that customer demand.

Your views on the transfer of technology module of the Indian Government and Make-in-India? How is Boeing actively contributing towards achieving Aatmanirbhar Bharat?

The Transfer of Technology module and the Make in India initiative are major contributing factors in establishing India as a leader in the field of research and development. The Boeing India Engineering & Technology Center (BIETC) in India is leveraging a talented pool of 3,000+ engineers and innovators across Bengaluru and Chennai to drive growth and innovation in aerospace. These technologists undertake high-quality, advanced aerospace work and offer engineering expertise to Boeing's defense, space, and commercial businesses, spanning engineering design of structures and systems, manufacturing support, developing systems to test our aircraft, and providing digital solutions to our airline customers. Boeing is investing \$200M in a new 43-acre state-of-the-art wholly owned engineering and technology campus in Bengaluru. This will be Boeing's largest facility of its kind outside the U.S.

Boeing is focused on supporting the development of aerospace and defence capabilities and achieving Aatmanirbhar Bharat in India. Boeing's sourcing from India stands at \$1 billion annually through its large and growing network of 280+ supplier partners – that are an integral

part of our global supply base. These Indian companies are manufacturing and exporting systems and components for some of Boeing's most advanced products from India to the world. Over 25 percent of our suppliers from India are MSMEs. Boeing has been steadily increasing its sourcing from India for its global manufacturing and supply chain. We will continue to grow a globally competitive supplier base in India, with strong partnerships that are aligned with the government's vision of an Aatmanirbhar Bharat. We have suppliers from all over India contributing to different integral parts of the aircraft. Some of which are Tata Advanced Systems Limited (TASL) manufactures complex floor beams for the 787-8, 9 and 10 Dreamliners, Mahindra Aerostructures Pvt Ltd (MASPL manufactures and supply the Boeing 737 inlet outer barrel components and sub-assemblies, Wipro Infrastructure Engineering's aerospace business unit manufactured and delivered strut assemblies for 737 MAX and next-generation 737 airplane programs and many more suppliers and joint ventures that contribute to achieving Aatmanirbhar Bharat.

Any expansion plans on the cards in India?

Right now Boeing's focus is to expand the existing supplier's chain to meet customer demands to attain Aatmanirbharta along with Skill India initiative.

What advice would you give to the students pursuing AME or a career in aerospace?

I would highly recommend it as it's a growing field with lots of opportunities and prospects for growth. It opens career options as an Aircraft production manager, Aerospace designer checker, Mechanical design engineer, Assistant technical officer, or Thermal design engineer. Major job opportunities for Aerospace Engineers are available in Air Force, Airlines, Corporate Research Companies, Helicopter Companies, Defence Ministry, Aviation Companies, NASA, Flying clubs, Aeronautical Laboratories, Aircraft manufacturers, government-owned air services and many others. If you have an interest in the field, it's just about finding the right resources and institutions to get your dream job.



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Airbus Helicopters delivers the world's first ACH160 to a Brazilian customer



Airbus Helicopters has delivered the world's first ACH160 to a customer in Brazil on the eve of the 17th edition of the Annual Latin American Business Aviation Conference & Exhibition (LABACE) at Congonhas airport, São Paulo. The rotorcraft will notably be the first H160 to fly in Latin America.

"We are very proud that the world's first ACH160 has been delivered here in Brazil, and look forward to seeing its distinctive and elegant silhouette flying through the skies of São Paulo, stated Jean-Luc Alfonsi, Managing Director of Airbus Helicopters' Brazilian customer centre, Helibras. "Helibras is the leader in the Brazilian turbine helicopter executive aviation segment and we are confident the ACH160 will set new standards for customers and operators wanting to make a distinctive choice in terms of safety, comfort and performance".

According to data from the Brazilian General Aviation Association (ABAG), more than 2,500 airports and 1,300 heliports in Brazil use corporate aviation services via jets, turboprops, piston aircraft and helicopters. "The growing general aviation market in Brazil is crucial for increasing economic and social productivity, as well for maintaining the country's air connectivity," emphasises Alfonsi.

The ACH160 is the latest member of the ACH family and the most technologically advanced helicopter in its class. It provides 20% greater volume per passenger compared to previous generation medium twin helicopters, 35% larger windows than its competitors, resulting in the brightest cabin in its category and 15% lower fuel burn than its nearest competitor.

Textron Aviation delivers two King Air 260 to the United States Forest Service

Textron Aviation announced it has delivered two Beechcraft King Air 260 aircraft to the U.S. Forest Service. The aircraft will perform wildfire mapping missions.

"We are honored the U.S. Forest Service has added the King Air 260 to its fleet," said Bob Gibbs, vice president, Special Mission Sales for Textron Aviation. "Whether for the wildfire detection and mapping, resource management, aerial supervision module/lead plane or air attack, the King Air continues to demonstrate its leadership in this mission. Customer faith in our legendary products and trust in our company and our team are at the core of our enduring relationship with U.S Forest Service."

The King Air 260 aircraft have been modified for the installation of the latest infrared (IR) sensing technology, the Overwatch Imaging TK-9 Earthwatch Airborne Sensor, along with legacy U.S. Forest Service sensors, that can accurately map wildfires, even at night and through smoke. This information is critical for firefighters to have when the exact extent of a fire is not known due to darkness, smoke, and size of the fire, rapid spread, or complex terrain. IR mapping aircraft can also be used to detect new fires started by lightning when they are very small.



Dassault Aviation Certifies Dual HUD on Falcon 8X

The FAA and EASA have approved use of Dassault's advanced dual head-up display known as FalconEye, on the company's Falcon 8X very long range trijet, adding to the aircraft's industry-leading low visibility operations capability. The dual HUD configuration will ultimately permit an EFVS-to-land capability in near zero-zero conditions, pending new EASA regulations.

"The bottom line is that this approval results in enhanced safety and more capability for Falcons equipped with Dassault's industry-first FalconEye technology," said Carlos Brana, Executive Vice President, Civil Aircraft at Dassault Aviation.

Dassault Aviation has been an undisputed leader in the development of HUD technology. In 2016, Dassault introduced FalconEye, the first head-up display (HUD) system to combine synthetic, database-driven terrain mapping and actual thermal and low-light camera images. Today, single HUD-equipped aircraft with FalconEye can fly non-precision approaches to 100 feet.

A number of 8X operators have already scheduled installation of the new mod, which allows both pilots to share the same synthetic and enhanced vision view, enabling one to act as "pilot flying" while the other monitors flight conditions. Dual HUDs enhance situational awareness while simplifying training at the same level of experience and qualification for approaches.

The dual HUD option will be certified on the Falcon 6X, due to enter service mid-2023, and on the ultra-long range Falcon 10X, planned for certification in late 2025.

The dual HUD on the Falcon 10X will take the dual HUD configuration to an even more advanced level in which it can serve as the "primary means of pilot operation," freeing pilots to configure the instrument panel's primary flight display for other uses.

Meanwhile, Dassault's current HUD and FalconEye equipped aircraft can now operate to 200 feet with a 30 percent runway visual range (RVR) credit without any flight department specific EASA approval required. EASA eased approval requirements after taking into account HUD and EFVS technology improvements through the past 20 years.



Bombardier Announces Firm Order for the First Challenger 3500 Business Jet based in Europe

Bombardier announced the sale of its industry-leading Challenger 3500 business jet to Italian-based operator, Air Corporate SRL. This will be the first company to offer the aircraft for charter in Europe.

Introduced in 2021, the new Challenger 3500 aircraft offers a unique blend of performance, advantageous operating costs, ultimate cabin experience and smooth ride, making it an ideal choice for the European charter market. And with its redesigned interior with intelligent and sustainably minded cabin features, the Challenger 3500 aircraft is elegantly crafted to combine comfort with function, fully elevating the passenger experience.

"The new Challenger 3500 aircraft is the perfect charter solution for Air Corporate SRL and other flight departments, offering a truly seamless corporate travel experience," said Ettore Rodaro, Regional Vice President, Sales, Europe, Bombardier. "With its impressive performance, consistent reliability and exceptional smooth ride, the Challenger 3500 is the industry's leading super mid-size business jet."

"We're thrilled to be adding the new Challenger 3500 aircraft to our fleet," said Roano Grandi, President, Air Corporate SRL, alongside Jacopo Foroni, CFO and Paolo Serini, COO. "This exceptional aircraft provides us with an outstanding option to further enhance our charter business and provide our discerning customers with an exceptional private aircraft experience at every level."



DRDO & Indian Navy successfully flight-test Vertical Launch Short Range Surface-to-Air Missile off Odisha coast

Defence Research & Development Organisation (DRDO) and Indian Navy successfully flight tested Vertical Launch Short Range Surface-to-Air Missile (VL-SRSAM) from the Integrated Test Range (ITR), Chandipur off the coast of Odisha on August 23, 2022. The flight test was carried out from an Indian Naval Ship against a high-speed unmanned aerial target for demonstration of vertical launch capability. The missiles, equipped with indigenous Radio Frequency (RF) seeker, intercepted the target with high accuracy. The VL-SRSAM system has been indigenously designed and developed by DRDO.



During the test launch, flight path and vehicle performance parameters were monitored using flight data, captured by various Range instruments such as Radar, Electro-optical tracking system (EOTS) and Telemetry systems deployed by ITR, Chandipur. The launch was monitored by senior scientists from various DRDO labs involved in the design and development of the system such as Defence Research & Development Laboratory (DRDL), Research Centre Imarat (RCI), Hyderabad and R&D Engineers, Pune.

Raksha Mantri Shri Rajnath Singh has complimented DRDO, Indian Navy and associated teams on the successful flight trial of VL-SRSAM and stated that the missile will prove to be a force multiplier for the Indian Navy.

Secretary Department of Defence R&D & Chairman DRDO congratulated the teams involved in the successful flight test and said that the trial has proved the effectiveness of the weapon system. He added that it will further strengthen the Indian Navy for neutralising various aerial threats at close ranges including sea-skimming targets.

BEL signs MoU with Smiths Detection India to manufacture High-Energy Scanning Systems in India

Navratna Defence PSU Bharat Electronics Limited (BEL) on August 30, 2022, signed an MoU with Smiths Detection, a global leader in threat detection and security inspection technologies, for offering advanced, high-energy scanning systems to the Indian market.

The MoU will leverage the high-end, technological capabilities of both the firms to meet India's domestic security needs. It has been signed in line with the Indian Government's 'Make in India' initiative, which seeks to increase manufacturing activities in India.

With a marked increase in movement of people and goods at critical infrastructure, land borders and urban sensitive points, there is a growing requirement for screening technologies in India. To facilitate ease of doing business and enhance safety, the Indian Government is investing in port and land border security. Moreover, the requirement for industry-leading high-energy scanning technology is being driven by Defence installations, which need to screen large volumes of vehicles and impose restricted entry at sensitive areas. BEL will handle front-end requirements in the market, supporting localization of the projects. Smiths Detection will provide its state-of-the-art screening technology and technological expertise for the project. The MoU is for a period of five years and can be extended further by mutual consent.

Mr Vikrant Trilokekar, Managing Director of Smiths Detection in India, said: "We are delighted to announce the MoU with BEL. Together, we have the expertise and experience to supply the Indian Government with the industry-leading screening technology it requires for its ever-evolving security needs. Smiths Detection is committed to the Indian market and looks forward to the opportunities the MoU with BEL will uncover."

Mr Bhanu Prakash Srivastava, Director (Other Units), BEL, said: "Though Defence is its mainstay, BEL has been continuously exploring opportunities in allied non-defence areas like Homeland Security and Network & Cyber Security. Through this tie-up with Smiths Detection, BEL will look at catering to the emerging market for high-energy scanning systems, yet another step in the direction of "Atmanirbhar Bharat" (self-reliant India).



US Air Force awards Raytheon Missiles & Defense \$972 million for upgraded AMRAAMs

Raytheon Missiles & Defense business is awarded a \$972 million contract for upgraded AMRAAM® missiles. This is the first AMRAAM contract to produce an entire lot of AIM-120D3 and AIM-120C8 missiles developed under the Form, Fit, Function Refresh, also known as F3R, which updates both the missile's hardware and software.

"This contract underscores the importance of AMRAAM in the warfighters' arsenal," said Paul Ferraro, president of Air Power for Raytheon Missiles & Defense. "These missiles, developed under the Form, Fit, Function Refresh, have the most advanced hardware and software needed to compete with peer adversaries."

In addition to providing missiles to both the U.S. Air Force and U.S. Navy, the contract also supplies AMRAAMs to 19 countries, extending the production line for both the U.S. and Allied partners.

Under the F3R program, engineers used model-based systems engineering initiatives and other digital technologies to upgrade multiple circuit cards and other hardware in the guidance section of the missile and to re-host legacy software in the AIM-120D3 and AIM-120C8 AMRAAMs. These variants combine System Improvement Program 3F software updates with F3R hardware, providing tremendous capability against advanced threats.

The U.S. Air Force had the first live-fire of the production version of AIM-120D3 in June 2022, showcasing the success of the missile against a target. There are two additional live fires planned for 2022.



Boeing, Nammo Complete Long-Range Ramjet Artillery Test

Boeing and Norwegian defense and aerospace company Nammo have successfully test-fired a ramjet-powered artillery projectile, further demonstrating the viability of one of the U.S. Army's modernization priorities – long-range precision fires.

During the June 28 test at the Andøya Test Center in Norway, a Boeing Ramjet 155 projectile was fired out of a cannon and its ramjet engine ignited successfully. It demonstrated flight stability with a well-controlled engine combustion process.

"We believe the Boeing Ramjet 155, with continued technology maturation and testing, can help the U.S. Army meet its long-range precision fires modernization priorities," said Steve Nordlund, Boeing Phantom Works vice president and general manager. "This successful test is evidence that we are making great progress."

"This is a historic moment for Nammo," said Nammo Chief Executive Officer Morten Brandtzæg. "The test results demonstrate that ramjets are viable and can fundamentally change the future of artillery."

"We have great confidence in the ramjet concept," Brandtzæg added. "The test – with all aspects from cannon firing, to the projectile body, fins, and trajectory all functioning perfectly – represents a real technological breakthrough in artillery, and a major success for Boeing, Nammo, and the U.S. Army."

The long-range test at Andøya follows years of research, development and testing by Boeing and Nammo of ramjet technology, including more than 450 static or short-range tests.

Boeing Phantom Works and Nammo have been working together under a strategic partnership to jointly develop and produce the next generation of boosted artillery projectiles. In July 2019, the Boeing-Nammo team was awarded a contract under the U.S. Army's XM1155 program to develop and mature the Ramjet 155 projectile. In May 2021, the team was awarded a Phase II technology development contract.

Ramjet 155 uses an engine in which the air drawn in for combustion is compressed solely by the forward motion of the projectile at supersonic speeds. Considered a hybrid between guided artillery and missiles, the program has an objective of a common round design that can be used in L39 and L58 cannons.

The team continues to develop and mature the technology, with further testing and demonstrations planned in the coming months.



Collins Aerospace completes first flight of next-generation MS-110 sensor

Collins Aerospace has successfully completed the first flight test of its newest Fast-Jet reconnaissance pod, the MS-110 Multispectral Airborne Reconnaissance system, on an F-16 for an undisclosed international customer. The test flight demonstrated aircraft integration, flightworthiness, and full-system performance within the demanding confines of tactical jet flight envelopes.

The advanced MS-110 greatly enhances airborne reconnaissance mission capabilities by providing a longer range and wider area of surveillance in contested and peacetime scenarios against peer and near-peer adversaries. The system's advanced imagery and multispectral capabilities detect targets with a higher degree of confidence, even through poor weather/atmospheric conditions, and may be rapidly disseminated via high-bandwidth datalink and Collins' ground intelligence-sharing architecture.

"Accurate and reliable intelligence that can be shared at a national and coalition level is critical to mission success in the Joint All Domain Command and Control (JADC2) battlespace," said Lora Magliocco, director and general manager, Airborne ISR Solutions for Collins Aerospace. "Successfully completing this trial demonstrates the readiness of the MS-110 systems to support customers around the globe."

Collins Aerospace reconnaissance systems have been fielded and are operational on tactical fast jet platforms such as the F-15 and F-16, as well as special mission ISR business jets. The system is also compatible with MALE UAVs such as the MQ-9. The MS-110 sensor evolved from the highly successful DB-110 system and leverages Collins Aerospace's proven multi-spectral imaging (MSI) expertise from SYERS-2C flown on the U-2.



Northrop Grumman's RQ-4 RangeHawks Embark on New Mission

Northrop Grumman Corporation's RQ-4 RangeHawk is poised to support the SkyRange program's U.S. hypersonic missile flight tests from its Grand Sky facility near Grand Forks, North Dakota. SkyRange is the Department of Defense Test Resource Management Center's (TRMC) unmanned high-altitude, long-endurance, responsive mobile flight test system,

In support of the SkyRange initiative, Block 20 and 30 RQ-4B Global Hawk aircraft are being transferred to TRMC to be reconfigured into RangeHawks. The conversion will integrate advanced payloads to equip the aircraft with the capability to support the testing of hypersonic vehicles and other long-range weapons. RangeHawks provide over-the-horizon altitude, endurance and flexibility, which are critical for collecting telemetry and other data to monitor the vehicle during flight tests. Increasing the capacity of hypersonic vehicle testing furthers research and development necessary to remain competitive in the global landscape.

"Our RQ-4 RangeHawks will support the emerging class of hypersonic weapons and provide a combination of range, endurance and payload capacity," said Jane Bishop, vice president and general manager, global surveillance, Northrop Grumman. "These aircraft will continue their role in vital national security missions while enabling us to bring premier aircraft design, modification, operations and sustainment work to the Grand Forks community."

While previous testing relied on ship-based sensors, RangeHawks can perform such missions with fewer assets, reducing cost and complexity. RangeHawks are equipped with sensors to demonstrate an alternative data-collection support system to test hypersonic systems, and have participated in several hypersonic test events in the Pacific and elsewhere.

"SkyRange will enable the Department of Defense to accelerate our pace of testing hypersonic systems," said George Rumford, acting director and principal deputy, TRMC. "Northrop Grumman's RangeHawk is ideally suited to collect data by providing persistent time-on-station positioned closer to flight path and agility to adapt to the dynamics of a testing environment – a force multiplier as we evolve critical national security capabilities."



DRDO successfully test fires indigenously developed laser-guided ATGMs

Indigenously developed Laser-Guided Anti-Tank Guided Missiles (ATGM) were successfully test-fired from Main Battle Tank (MBT) Arjun by Defence Research and Development Organisation (DRDO) and Indian Army at KK Ranges with support of Armoured Corps Centre & School (ACC&S) Ahmednagar in Maharashtra on August 04, 2022. The missiles hit with precision and successfully destroyed the targets at two different ranges. Telemetry systems have recorded the satisfactory flight performance of the missiles.

The all-indigenous Laser Guided ATGM employs a tandem High Explosive Anti-Tank (HEAT) warhead to defeat Explosive Reactive Armour (ERA) protected armoured vehicles. The ATGM has been developed with multi-platform launch capability and is currently undergoing technical evaluation trials from 120 mm rifled gun of MBT Arjun.

Raksha Mantri Shri Rajnath Singh has complimented DRDO and Indian Army for successful performance of the Laser Guided ATGMs. Secretary, Department of Defence R&D and Chairman DRDO Dr G Satheesh Reddy congratulated the teams associated with the test firing of Laser Guided ATGMs.



GA-ASI Tests PT6 E-Series Engine from Pratt and Whitney on MQ-9B RPA

General Atomics Aeronautical Systems, Inc. (GA-ASI) tested a PT6 E-Series model turboprop engine from Pratt & Whitney Canada on GA-ASI's MQ-9B Remotely Piloted Aircraft (RPA). Multiple full-power engine tests were performed at GA-ASI's Desert Horizon flight operations facility in El Mirage, Calif.

"We've enjoyed a long-term relationship with Pratt & Whitney," said GA-ASI President David R. Alexander. "Integrating their PT6 E-Series engine onto our MQ-9B SkyGuardian® aircraft offers an alternate option for future customers that includes a 33 percent increase in power, dual channel electronic propeller and engine control system, as well as all the benefits of the PT6 engine family."

The PT6 E-Series is a reliable and versatile turboprop engine family that will deliver the performance characteristics required as GA-ASI continues its development of MQ-9B capabilities.

"Our PT6 E-series is the ideal engine for this mission and we look forward to working with General Atomics on this important program," said Jill Albertelli, president of Pratt & Whitney Military Engines.

MQ-9B represents the next generation of RPA system having demonstrated airborne endurance of more than 40 hours in certain configurations, automatic takeoffs and landings under SATCOM-only control, as well as a GA-ASI developed Detect and Avoid system. Its development is the result of a company-funded effort to deliver an RPA that can meet the stringent airworthiness certification requirements of various military and civil authorities.

GA-ASI has enjoyed a long-term collaboration with Pratt & Whitney for over a decade with their turbofan engine for GA-ASI's MQ-20 Avenger RPA.





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Pratt & Whitney Delivers 1,000th F135 Production Engine



Pratt & Whitney (P&W) announced that it has delivered the 1,000th F135 production engine for the 5th Generation F-35 Lightning II fighter to the U.S. Department of Defense. The milestone was marked by a celebration with employees, company leaders, Chair of the House Appropriations Committee Rosa DeLauro (CT-03) as well as representatives from the F-35 Joint Program Office.

“The 1,000th F135 delivery is a testament to the hard work of thousands of P&W employees and hundreds of suppliers who play a vital role in every engine that comes off the production line,” said Jen Latka, vice president for the F135 program. “This milestone underscores the maturity of the F135, which has been proven in the field as the safest, most capable fighter engine in the history of military aviation. As the only 5th Generation fighter engine in production today, the F135 provides the warfighter with a critical technological advantage. We are proud to support our men and women in uniform as a partner on the F-35.”

“Pratt & Whitney remains a global leader in advanced technology and defense manufacturing,” said House Appropriations Chair Rosa DeLauro. “To be here celebrating the delivery of the 1,000th F135 engine is truly exciting. This is a testament to the thousands of skilled workers, engineers, and manufacturers who are committed to excellence in manufacturing. Pratt & Whitney employs more than 11,000 people in East Hartford and Middletown

— countless jobs are supported by the aerospace industry in the region, and remains a core part of growing our state’s economy. You have my word that I will always fight to keep these jobs in Connecticut.”

Since delivering the first production engine in 2009, P&W has invested more than half a billion dollars in capital, process improvements and cost reduction initiatives to support the production ramp and reduce the average unit cost of the F135 by more than 50%. In addition to Middletown, F135 production sites include P&W’s West Palm Beach, FL facility as well as a Final Assembly & Check-Out (FACO) facility operated by IHI in Japan.

Evolved from the F119 engine powering the F-22 Raptor, the F135 delivers a step change in capability over the previous generation of engines. This includes 40,000+ pounds of thrust; a substantial increase in thermal management capacity enabling the full spectrum of F-35 weapons and sensor capabilities; a precise and responsive integrated engine control system allowing the pilot to focus squarely on the mission; and an unmatched low observable signature enabling the F-35 to conduct operations in modern Anti-Access/Area Denial (A2AD) environments.

From an availability perspective, the F135 has demonstrated a best-in-class safety record and the current production engine configuration is achieving double the specification for Mean Flight Hours Between Engine Removals (MFHBR). Additionally, the F135 sustainment network is maturing, and engine availability has improved by approximately 75% over the end of 2021.

“Every one of those 1,000 engines represents safe, affordable, reliable 5th Generation propulsion capability in the hands of our customers,” said Jill Albertelli, president, Pratt & Whitney Military Engines. “The F135 is the pinnacle of combat propulsion, ensuring our women and men in uniform can complete their missions in the most advanced threat environments and return home safely.”

Rolls-Royce Trent XWB-84 achieves milestone of 10 million engine flying hours



Rolls-Royce announced that the Trent XWB-84, which powers the Airbus A350-900, has now accumulated more than 10 million engine flying hours, achieving another impressive milestone for the engine programme.

Following its entry into service in 2015, the Trent XWB-84 has reached this landmark by supporting more than 30 airlines operating on a variety of different routes from short-range segments to ultra-long-range flights of more than 18 hours – demonstrating its versatility and capability.

Chris Cholerton, President Rolls-Royce Civil Aerospace, said: “Reaching 10 million flying hours is another great achievement for the Trent XWB. It is the latest in the Trent family to reach this milestone and has done so faster than any other Trent engine, in just over seven years of operation. We are incredibly proud of the Trent XWB as it continues to set new benchmarks on sustainability, reliability, and versatility.”

The Trent XWB is the world’s most efficient aero engine in service and supports airlines on their sustainability journey. The engine has a 15 per cent fuel consumption advantage over the first Trent engine, goes further on less fuel, and offers leading performance and noise levels. It is also ready to operate on 50% Sustainable Aviation Fuel, as they become more available to airlines in the future. In addition, the Trent XWB-84 has contributed to avoiding more than 15 million tonnes of CO2 since it launched in 2015 – that’s the same amount of CO2 it takes to provide electricity to nearly two million homes each year.

MTU Maintenance reaches 4,000 CF6 shop visits milestone

MTU Maintenance, global market leader in customized solutions for aero engines, celebrates the delivery of its 4,000th CF6 engine, a CF6-80C2 from customer Air Transport International, Inc., a wholly owned subsidiary of Air Transport Services Group, Inc. The shop visit was performed by MTU Maintenance’s North American branch in Vancouver.

MTU Maintenance has been supporting the CF6 since four decades, starting with CF6-50 in 1982. The CF6-80C2 version was introduced in its portfolio in 1989 and counts for more than half of shop visits performed thus far. While MTU stopped serving the CF6-50 in 2020, the company remains committed to the CF6-80C2 as MTU also provides MRO services for the military variant of the engine, the F138. Its long-term experience and its ability to serve both commercial and military customers makes MTU Maintenance a reliable MRO provider for this engine, also in the long-term. For Air Transport International, the company has already performed more than 40 shop visits since 2019.



“We are glad to celebrate this milestone with Air Transport International as the customer’s growing fleet allows us to further ramp-up our CF6-80C2 volume in the years to come,” says Michael Schreyögg, Chief Program Officer, MTU Aero Engines. “We are engine experts and dedicated to achieving maximum performance and optimal engine life for our customer’s engines. We thank all our customers for their trust in us in during the last 40 years. Without them, we would not have been able to reach such a milestone.”

“MTU has done a tremendous job supporting our CF6 engine maintenance program,” said Jim O’Grady, president of Air Transport International. “ATI provides the highest levels of service and expertise to our customers around the globe, so we demand the same commitment from our suppliers as well.”

Pratt & Whitney Canada Announces Certification of PW127XT-M Regional Turboprop Engine

Pratt & Whitney Canada, announced that Transport Canada Civil Aviation has type certified the PW127XT-M regional turboprop engine that will power new builds of ATR aircraft.

“The PW127XT-M engine is the new standard for operating economics, maintenance and sustainability for regional aircraft,” said Timothy Swail, vice president, Regional Aviation and APU Product Marketing & Sales for Pratt & Whitney Canada. “This certification is an important step toward the entry into service of new ATR aircraft and we continue to support ATR as it builds a strong order book.”



Revealed at the Dubai Airshow in November 2021, the PW127XT-M engine offers 40% extended time on wing, 20% lower maintenance costs and 3% improvement in fuel efficiency, due to engine improvements making the regional turboprop even more sustainable. Regional turboprops currently boast up to 40% improvement in fuel efficiency compared with similar missions for the 30-70 passenger regional jet aircraft market.

“We worked closely with ATR earlier this year on the flight testing of our new PW127XT-M and the previous generation PW127M engines using 100% sustainable aviation fuel (SAF),” said Swail. “Most notably, Braathens Regional Airlines flew one of its ATR 72-600 aircraft using 100% SAF in both its PW127M engines with excellent results.”

In June, Pratt & Whitney Canada announced that Deutsche Aircraft had selected the PW127XT engine to power the new D328eco. The selected engine model – the PW127XT-S – will be developed according to the D328eco timeline.

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INDIAIRPORT Exhibition to be organized on **Airport Technology**, Supported by **GATE – German Airport Technology & Equipment & Federal Ministry for Economic Affairs and Climate action of Germany**.

Radeecal Communications, India partnered with **IFW Expo Heidelberg GmbH, Germany** to organize **INDIAIRPORT Exhibition** as Pilot project at India Expo Center Mart, Noida, NCR, India during 22-24 November 2022. **GATE – German Airport Technology & Equipment & Federal Ministry for Economic Affairs and Climate action of Germany** announces their Supporting Partnership & Supporting authority respectively for the show. A formal announcement made from **PHD Chamber of Commerce & Industry** will join this initiative as Industry Partner.

After the impact of Covid Pandemic Civil Aviation, industry is looking to optimize and forcing itself to revive to pre-Covid numbers. Whereas **Government of India & PM launches Gati Shakti- National Master Plan** for infrastructure development in India with wide focus of developing and establishing domestic air connectivity via building new airport at revolutionary pace.

We aim **to support** the initiative of **Government of India and creating a platform**, IndiAirport as the first exclusive physical exhibition offering an ideal opportunity vide displaying of the latest technologies for the effective airport solutions and high quality services. The participants of the airport products, services and solutions to meet and engage with senior and middle management from **airports, airlines, government agencies, regulators, ground handlers, architects, engineers, consultancies, suppliers and the buyers will have an unparalleled access to all encompassing network opportunities**. This exhibition to witness around 200 exhibitors (National as well as International Private and Government Units/ Departments). These three days of Exhibition and Conference planned with the vision, **“Our government has the honor of bringing an aviation policy that is transforming the sector.” “Atma Nirbhar Bharat” and “Make In India”** in support of our Hon’ble Prime Minister- **Shri Narendra Modi**.

India is on the path to develop its greatest air connectivity since the independence, as per the Civil Aviation Minister Jyotiraditya Scindia, Indian Airport industry to attract 1 Trillion Rs. Of investment by Year 2024 and hoping the total passenger traffic to rise to 400 million by 2023-24. As per Civil Aviation Minister Jyotiraditya Scindia until 2014, only 74 airports were built in the country, following the new government in 2014 in next 7 years another 66 new airports were added to the list of **total 140 airports in the country**, which we resolve to take to 220 by 2025, he said.

Considering rising market for the companies related to airport development and contributors of airport technologies are highly encouraged to participate in the only, standalone show of the industry named **INDIAIRPORT** in the month of November 2022.


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**AVIATION
UPDATE**

Era of Algorithms in Aviation

- Rahul Verma



'Swavlamban', the maiden seminar of the Naval Innovation and Indigenisation Organisation (NIIO) and Technology Development Acceleration Cell, was held at New Delhi on 18-19 July 2022. Hon'ble Prime Minister Sh Narendra Modi graced the occasion as the Chief Guest. Shri Rajnath Singh, Hon'ble Defence Minister was the Guest of Honour. The third session of this seminar was with aviation as its focus, examined the Future of Aviation in the Era of Algorithmic Warfare. The idea of human and machine together is far more powerful than either the human or machine by themselves and that is why 15 Dec 2020 will be recorded in the history books. On this day US Air Force successfully flew an AI copilot on a U-2 spy plane in California and it was the first time that AI had controlled a U.S. military system.

For Star Wars fans like me, an X-Wing fighter isn't complete without R2-D2.

Whether you need to fire up the engines, boost power, or repair broken flaps, that dependable droid, full of lively hoots and screeches, is the definitive copilot. Accomplishing over a squillion training runs before, this pathbreaking flight was a small step for this Droid copilot, but it's a giant leap for "computerkind" in future military operations. Project Maven, also known as the algorithmic warfare cross-functional team, is a US unit dedicated to AI innovation, as the US DoD works to widen its knowledge base with innovative capabilities and free up its analysts from dull assignments. Project Maven's algorithms are meant to automate and enhance processes related to computer vision, data tracking and geo-registration. Presently, the project is talking about these algorithms being on the processing or exploitation workstations, but the end goal is aimed for these algorithms to also be at the tactical edge on platforms and sensors.

This is a time of enormous technological change. However, we often focus so much on knowledge for technology's sake that we ignore to analyze what this change indicates, where it can lead. It would be wise to consider that a military-technical revolution unfolds ever so often and is marked by a period of sharp, irregular shift. This shift always renders the very definition of warfare, in use presently, obsolete. This shift then leads to a profound and destabilizing effect on battlegrounds. It may be seen in the form of a new tactics, such as the 'Blitzkrieg' in World War II or, it may be seen as the emergence of a new strategic era, such as that brought about by Nuclear weapons, even as we saw the Drones taking on Armed Columns in Ukraine. Sometimes, these revolutions occur hand in hand with changing political agendas such as the Napoleonic revolution or the nuclear arms race. Revolution in Military Affairs (RMA) have occurred earlier

in the 1970s, 80s, and 90s. The 21st century brought about the trend of automation and unmanned systems, with militaries investing less in personnel and more in technologies such as networkization, UAS, UUVs and UAVs. Although automation has grown significantly but we are still learning to use these systems. We have a clearer knowledge of the tools to use, such as advanced computing, big data, robotics, miniaturization, artificial intelligence, and additive manufacturing but haven't been able to master any of these.

As with any major advance that promises to shift the status quo drastically, many are raising questions regarding the moral, political, legal, and ethical implications of algorithmic use in warfare, especially in instances where human lives are at stake. Generally speaking, legal issues surrounding the use of algorithms depend upon who is held responsible for the actions executed by an algorithm. When a person carries out an action, society can hold that person legally responsible for the results occurring as a result of that action. However, with algorithms, who holds the final responsibility? Big data, artificial intelligence, and algorithms are powerful tools that are currently being used in the world of warfare, and their ability to compensate for the humanly boundaries of soldiers make them ever more useful as world leaders strive to solve international conflicts. However, such technologies (algorithms in particular) are not the solution that many make them out to be. Though, there are few recommending algorithms should be in place to automatically act if certain conditions are met since this offers proactive protection and faster response times. While this is a utopian notion, algorithms are only as good as the people who create them, and their respective biases can creep into the code. In some cases, coders may not even be aware of their biases and therefore remain unaware that have hard-coded such into these software.

Many Nations are looking for manipulating the advantages of human strategic guidance coupled with the tactical perspicacity of human-machine combat teaming and machine-machine combat cooperation such as distributed lethality,

collaborative attack operations and swarming. All of this will result in more transparent battlefield and replace networks that do not have AI components integrated into them. This gives birth to the concept of 'Hyper War' or 'Wars of Cognition,' where combat decision making will be so rapid, accurate, and relevant it will replace the human element. Command, control, communications and intelligence, surveillance and reconnaissance (C4ISR) are becoming a most important aspect

in modern operations. Countries with artificial intelligence powered drone have puzzled their enemies in the war zone. AI powered drone swarms are the new tool of warfare and as of now are unregulated by weapons control regulations. Though US, Israel and Turkey have successfully used them, India too is not far behind. On November 17, 2021, the Defence Research and Development Organisation (DRDO) demonstrated offensive capabilities of its drone swarms at a three-day "Rashtra





Raksha Samarpan Parv" in Jhansi. It was an impressive beginning. Even during the Independence Day 2022 Speech, Hon'ble PM has emphasized the importance of Innovation for a self reliant India, by giving the call of "Jai Anushandhan".

The use of AI and ML in Civil Aviation has also started to creep in. These can increase speed, efficiency, workload, and safety to enable more complex technology like autonomous vision-based navigation and data ecosystems in civil and general aviation. Airbus has been utilising AI for observation tasks like computer vision, time series analysis, and natural language processing, predictions such as hybrid modeling, and decision making. Skywise, the Airbus data analytics platform, uses AI/ ML to gather data about all it's aircraft operations. It has helped Airbus respond to the COVID-19 by allowing them to analyze flight restrictions and air traffic variations. Airbus and EHang, a Chinese company making passenger autonomous aerial vehicles (AV) for urban air mobility (UAM), are both developing AI technology for intelligent navigation. Airbus completed

its first taxi, take-off, and landing using vision-based AI and EHang uses AI in its autonomous aircraft. Even the Varuna Drone, Personal Air Mobility Vehicle made by M/s Sagar Defence Engg, showcased at the Naval Seminar has elements of AI incorporated inside it. EASA published an AI Roadmap based on AI trustworthiness to confront the ethical and societal issues around AI and DGCA would most likely soon follow the suite. This AI Roadmap should incorporate ethical guidelines like accountability, technical robustness and safety, oversight, privacy and data governance, non-discrimination and fairness, transparency, and societal and environmental well-being. To design trustworthiness in AI, DGCA should focus on three building blocks, namely, learning assurance, AI explainability, and AI safety risk mitigation.

As AI/ ML help us in enhancing airspace capacity, which is drastically running out in India, the climate change crisis, digital transformation and new levels of complexity in the integration of unmanned aircraft in a now congested airspace could also

be solved. Algorithms have the potential to transform every facet of the aviation sector whether Civil or Military, enabling ATM functions to be performed in entirely different ways in the future. However, an ecosystem involving industry, research institutes, start-ups, policymakers and all relevant stakeholders be created. And as a first step, International Standards, data foundation and access to data be enabled for creation of AI-Aviation partnership

Advancement of AI is irreversible and use of AI/ML and deep tech in aviation cannot be stopped. Hence, Algorithms will become a disruption to the existing conventional aviation, military and commercial. Algorithms could trigger seamless integration of military assets, civil infrastructure with embedded tech and associated tasks. This would surely impact the design and development of not only weapon platforms but also commercial systems in the future. Hence, I would be so bold to suggest that in a very near future we would not induct any another aviation system without Artificial Intelligence embedded into it.

GMR Hyderabad International Airport rolls out DigiYatra-Digital Processing of Passengers Hyderabad

In line with the Govt. of India's signature DigiYatra programme, GMR Hyderabad International Airport will roll out the Digital processing of passengers as a proof of concept through the DigiYatra platform from 18th Aug for three months. DigiYatra will facilitate paperless travel and avoid multiple identity checks at the airport enabling seamless and hassle-free travel.

With DigiYatra, passengers will be automatically processed based on a facial recognition system at select checkpoints: one at the Departure Domestic Entry Gate 3 and another at the Security Hold Area (SHA) in the passenger terminal building. DigiYatra Technical Team has developed an exclusive mobile app for enrolment. The passengers need to download this app to enjoy the benefits offered by the DigiYatra programme. The app was launched on 15th August by the Hon'ble Prime Minister of India. The beta version of the DigiYatra app is presently available at Playstore (for Android platform). The same app will be available at App Store (for IOS platform) in a few weeks' time.

How the DigiYatra platform works -

- Passengers need to download DigiYatra mobile App available both on IOS and Android platforms
- Open DY-ID App/Airline or OTA App/ Airport App
- Enter Aadhar/Driving Licence (DL) Number for system authentication
- Passengers will receive OTP on their registered mobile/Email
- Enter the OTP in the app
- DigiYatra app will extract e-KYC data from Aadhar/DL Database
- Scan passport first page, Extract MRZ data, Read e-Chip by NFC (optional)
- DigiYatra app will extract reference face from Aadhar e-KYC/DL Data/e-Passport
- Passengers to take a Selfie; Facial Biometrics will be captured through the app
- Passenger's face is validated through

the Digilocker portal and associated with authenticated face photograph

- Passengers will then associate their DigiYatra IDs with their current or future flight bookings or Boarding Passes
- When the passenger Scan the boarding pass or upload the ticket the travel data will be fetched by the app
- DigiYatra app will share the duly encrypted Passenger's face and booking information to the airport, airline and Immigration (in case of International Travel) on the day of travel

Passenger flow at the airport with DigiYatra- Entry E-Gate at Airport

- Passenger arrives at the Entry E-gate
- He scans his Bar-Coded Boarding Passes
- He looks into the Facial Recognition System (FRS) camera installed on E-Gate
- System validates the Passenger's ID and travel document
- E-gate opens to allow the passenger into the Airport.

Entry to Security Hold Area (SHA):

- Passenger arrives at the PreSHA
- He will have to look into the FRS camera installed on e-Gate at Pre SHA-Location
- System validates Passenger's Biometric Template
- System accept/reject the passenger and according to passenger move to SHA

Key advantages of DigiYatra -

- Navigate seamlessly through the airport using digital guidance systems
- Get real-time notifications about congestion & delays to have greater visibility on the next step of the journey
- Stay connected during flights and indulge in immersive experiences. Also, book in-flight services and destination-based offerings digitally
- Enhance security at Indian airports using "DigiYatra ID" with real-time Biometrics
- Validate Boarding pass or e-ticket with the airline system in real-time

Mr Pradeep Panicker, CEO-GHIAL, said, "The DigiYatra initiative envisages airline

travellers, a speedy, hassle-free, digitally unified air travel experience across all stages of the journey. It is a milestone in the history of Indian aviation, and we are proud to be chosen as one of the airports for a proof of concept for Digi Yatra by the Government of India. GHIAL had earlier initiated face recognition trials which received wide acclaim across the airport ecosystem. This technology will enable passengers a paperless travel, and they will be able to use a face scan as a boarding pass."

Speaking on this occasion, Mr. SGK Kishore, ED-South and Chief Innovation Officer – GMR Airports said, "Hyderabad International Airport has been a pioneer in embracing the latest technology solutions and introducing many first-of-a-kind tech initiatives over the years. This airport was the first in the country to do a trial of the Face Recognition in the year 2019 and has already been tried and tested successfully. It is a known fact that Hyderabad Airport was the first in India to roll out end-to-end, fully paperless "E-Boarding" for all domestic passengers and for select international airlines. This is the only airport in India to offer "Express Security Check" facility for passengers which is one of great convenience and appreciated by many of our travellers. The DigiYatra scheme will make travel for a passenger easy and gradually lead to a gate free experience."

Since the DigiYatra Biometric Boarding System is integrated with the identity document, passengers will no longer need to show their tickets/ boarding passes and their physical Identity cards at the checkpoints of the Airport. This will lead to reduced queue waiting times, faster processing times and simpler processes enhancing passenger experience. DigiYatra also enables the passengers to receive relevant information about various facilities, protocols, airline timings, and queue waiting times at the airport.



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