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AVIATION TURKEY

DASSAULT AVIATION'S PRESENCE
IN BUSINESS JET INDUSTRY

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TUNISIAN-TURKISH ENGINEER PRINCE IBRAHIM BEN-AYAD

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Publisher & Editor in Chief
Ayşe Akalın
a.akalin@aviationturkey.com

News & Advertisement Director
Şebnem Akalın
sebnem.akalin@aviationturkey.com

Translation
Tanyel Akman

Graphic Design
Gülsemin Bolat
Görkem Elmas

Advisory Board
Aslıhan Aydemir
Lale Selamoğlu Kaplan
Assoc. Prof. Ferhan Kuyucak Şengür

Adress
Administrative Office
DT Medya LTD.STI
İlkbahar Mahallesi Galip Erdem Caddesi Sinpaş Altınoran Kule 3 No:142
Çankaya Ankara/Turkey

Tel: +90 (312) 557 9020
info@aviationturkey.com
www.aviationturkey.com

Managing Editor
Cem Akalın
cem.akalin@aviationturkey.com

Administrative Coordinator
Yeşim Bilginoğlu Yörük
y.bilginoglu@aviationturkey.com

Editors
Muhammed Yılmaz/
Aeronautical Engineer

İbrahim Sünnetçi
Şebnem Akalın
Saffet Uyanık

Photographer
Sinan Niyazi Kutsal

İmtiyaz Sahibi
Hatice Ayşe Evers

Basım Yeri
Demir Ofis Kırtasiye
Perpa Ticaret Merkezi B Blok Kat:8 No:936 Şişli / İstanbul

Tel: +90 212 222 26 36
demirofiskirtasiye@hotmail.com
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Ağustos-Eylül 2022

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nts

With COVID Driven Gains, a Rising Business Aviation Market...

COVID lockdowns eventually became an opportunity for business aviation. With COVID-driven gains in business aircraft usage and sales transactions, We have seen exceptional demand over the last 18-24 months which has created a backlog for manufacturers, as well as some shortages and declines in inventory.

Experts considered the permanency of business jet buying trends from 2020 and 2021 that were once seen as an anomaly, as well as the continued absence of aircraft from corporate fleets on the supply side and how that is impacting the size and quality of used inventory.

This demand continues for business jets, despite the lack of availability and the reduced quality of used inventory, This systemic shift in demand, compounded by global supply chain issues, is keeping used aircraft prices artificially high, and it is expected that it will continue until business flight departments release their aircraft into the used market.

Other parameters, including new model introductions and relatively consistent aircraft replacement patterns, should add further stability and resilience to the business aircraft marketplace

Analysts see stability in business aircraft transactions despite global uncertainties.

However, another shift in world events or economic patterns could alter that forecast significantly by impacting GDP, global trade, stock markets and other indicators of general economic health, with ripple effects to new aircraft backlogs and deliveries and used inventories.

The business jets market is projected to grow from an estimated USD 30.1 billion in 2022 to USD 41.8 billion by 2030, at a CAGR of 4.2% during the forecast period. An increasing number of high net worth personnel and the replacement of aging aircraft fleets are expected to drive the growth of the market.

According to Wingx Advance , the first half of the year set a new record for global business jet demand, and although the rebound is slowing, the gains on 2019 have held steady at around 20%. For the first 6 months of 2022 there were 2.7 million business aviation flights. Business jets and turboprops flew 22% more sectors than in the first half of 2021, 15% more than same period 2019. The turboprop rebound has been relatively weaker; business jet activity is up 27% compared to last year, 21% ahead of 2019.

Almost 300,000 business jet sectors were flown in Europe in H1 2022, 38% more than in H1 2021, and 17% more than H1 2019. Inevitably the rebound

on 2021 has slowed as the year has elapsed, with June's data showing a 21% increase on June 2021. Nevertheless, the increase on June 2019 has grown with 19% more bizjet activity in June 2022. June was a particularly strong month for the UK; 84% more bizjet departures year-on-year. Portugal, Turkey, The Netherlands, and Sweden all saw >40% more activity in June 2022 compared to June 2019. Bizjet activity in Russia stabilized in June at 60% below where it was pre-pandemic.

Outside Europe and North America, the rebound in bizjet activity H1 2022 grew 22% compared to H1 2021, and 17% in June 2022 versus June 2021. Saudi Arabia and Morocco have seen strong rebounds on their relatively travel-restricted 2021, with activity up almost 50% in 2022. The UAE, resilient throughout the pandemic, is up only 3% in H1 2022 compared to H1 2021. Nigeria, Argentina, South Africa and Philippines each recorded notable growth on their pre-pandemic levels.China's bizjet activity has tanked with the re-imposition of restrictions, down 40% on comparable flight activity in H1 2019.

Enjoy the issue...

Ayşe Akalın
Editor in Chief

Ayşe Akalın, Editor in Chief of Aviation Turkey Magazine

Talked with Alişan Soylu About

Dassault Aviation's Presence in Business Jet Industry

Ayşe Akalın: It is seen an increase in the use of business jets during coronavirus pandemic. What is your assessment on Business jet market in Turkey so far. How do you assess Dassault Falcon position in Turkey in terms of sales and deliveries?

Alişan Soylu: The coronavirus pandemic is unprecedented and is very different to earlier crises affecting the global aviation industry. During the global financial crisis of 2008/09, we saw some large corporates selling their business jets and encouraging their top executives to fly commercially. We have not seen that happen in this crisis. In fact, we have seen the opposite. Companies that own a business jet are holding onto their aircraft and are telling their top executives to use the business jet when they fly. The pandemic has led to heightened concerns about health and safety. Many people no longer feel comfortable flying on commercial airlines, so if they have the choice to fly on a business jet – where they are travelling in a more controlled environment and come in contact with fewer people – they will choose the business jet.

Commercial airlines have also scaled back their flights and network, so in many instances it is no longer possible to fly to certain destinations or on certain routes, unless you are flying on a business jet.

The situation in Turkey is no different than in the United States and in Europe where we are experiencing an increase in enquiries and sales since the second half of 2021. Part of these enquiries are from new customers who have never owned a business jet before.

Ayşe Akalın: Linked to the successive waves of the Covid epidemic, the anticipated year-end 2022 target for the entry into service of the Falcon 6X aircraft is shifting and is now forecast for mid-year 2023. Could you enlighten us about the sales of 6X and delivery process?

Alişan Soylu: Interest in the Falcon 6X is reflected in our growing order book. Total Falcon orders were 51 last year versus 15 in 2020, an especially tough year because of Covid. We don't break out orders by model, however. Our first 6X production aircraft, which has a full interior, has just successfully achieved a world proving tour to ensure system maturity and reliability at entry into service. Two 6X aircraft are already receiving interiors at our Little Rock, Arkansas completion center. They'll be delivered mid 2023. CAE is installing a Falcon 6X simulator at Burgess Hill in the UK and it will be producing a first class of pilots next year.

We'll have maintenance technicians trained then, as well. Spare parts are flowing to our worldwide service network to support entry into service. The airplane is performing very well in certification tests. Every pilot has given it high marks for handling. It has the most advanced version of Dassault's digital flight control system, first introduced on the company's civil side in 2005 with the Falcon 7X.

Ayşe Akalın: Dassault Aviation launched Falcon 10X, featuring "Industry's Largest Cabin and Most Advanced Technology on a Business Jet". Can you inform us about Falcon 10X and its technological competence? When will it enter service?

Alişan Soylu: Entry into service is planned for late 2025. The plane's development is well advanced. Detailed design is almost entirely complete. Structures, parts, systems, avionics and engines are all in production. Final assembly begins next year. Avionics have been installed on two test benches to give pilots a chance to refine the system and flight controls. The aircraft's super-efficient Rolls Royce Pearl 10X engine has been run for over 1,000 hours in a test cell, including on 100 percent sustainable aviation fuel. Both the engine and full aircraft will be certified to fly on 100 percent SAF.

The aircraft will be innovative in many respects, with an all-composite wing for low weight, efficiency and a smooth ride. New advanced safety features within the flight control system include a Smart Throttle for simplifying power management and an all-touch screen flight deck. It will represent a new level of technology and capability at entry into service.

Ayşe Akalın: Lately in EBACE, Dassault Introduces the Falcon Privacy Suite - A New Concept for Personal Space on Long-distance Flights. Could you please inform us about the new privacy suite?

Alişan Soylu: Our in-house Falcon Design Studio and Dassault Engineering have been collaborating on the Falcon Privacy Suite for two years. It is not easy to certify new seating and this was particularly complex, as it introduced an electrically controlled lie-flat seat for the first time within business aviation. As the name suggests, the seat is housed within a privacy enclosure. Most spaces on a business jet are shared, so privacy is at a premium. This is particularly the case when passengers want to get a good sleep. The Falcon Privacy Suite provides a new option for personal space, privacy, comfort throughout long flights and the ability to sleep on a lie-flat bed.

Ayşe Akalın: Recently, Bombardier unveiled Global 8000 called as "the world's fastest and longest-range purpose-built business jet." The business jets market is highly competitive with the presence of several major players Bombardier, Textron, Gulfstream, Embraer, and Dassault Aviation. How do you evaluate the situation and position of Dassault in this competitive market?

Alişan Soylu: The 10X has a range of 7,500 nm, which connects almost all major business routes nonstop. To use the full range capability of the aircraft entails 15-hour flights. Such long duration missions pose new challenges for all manufacturers, which is one reason Dassault has included advanced flight control and flight deck technology (much of it derived from the latest fighter design) to reduce workload and enhance safety, while also improving crew rest.

Even on shorter missions, passengers' highest wish is for comfort and personal space. The 10X cabin has 15 percent more cabin volume and that is a big difference, allowing layouts that are more like a flying penthouse than a typical business jet interior. Top speed is Mach .925, making this the fastest Falcon ever. Maximum operational speed difference will hardly be noticeable among competitors. In any case, it is a fair guess that drag rise and fuel consumption beyond about Mach .92 will be significant.

In addition, the 10X retains traditional Falcon features such as slats and flaps for low approach speed, providing the ability to fly long distances efficiently and then land at a wider range of airports, not just traditional big-city airports with long runways. Another traditional Falcon feature is a high maximum landing weight, which allows a combination of short and long legs without refuelling, which is quite useful in the real world of business aviation. The essential point is that aircraft utility is a combination of many factors, all of which purchasers will want to consider when considering an aircraft in this class.

Ayşe Akalın: With new major development in Kuala Lumpur and Dubai and new line service bases in several additional European cities, Dassault Aviation is leveraging recently acquired MRO capabilities to reorganize and consolidate its worldwide support network and bring Falcon expertise around the world AMAC Aerospace is the Turkey as a Falcon Authorized Service Center in Turkey. What is your assessment on Dassault MRO vision and activities?

Alişan Soylu: The goal of this organization, which has about doubled in size in the last few years, is to have one uniformly high standard of service close to customers wherever their aircraft are based and wherever they fly. Major inspection capability is closer, as are GoTeams, ready to dispatch in the event of an aircraft-on-ground (AOG) situation. Parts are closer at hand through this network of about 60 factory and authorized facilities worldwide. Long established facilities are able to share their expertise with newer ones. Customers appreciate this uniformity of service and standards, plus rapid response capability. It has helped keep Dassault at the top of independent industry surveys in recent years.

Ayşe Akalın: It is known that Dassault is cooperating with the many wsuppliers for the most advanced and capable aircraft in business aviation. Dou you consider that Turkish suppliers can take place in Dassault's supply chain?

Alişan Soylu: With the experience of the last couple of years, which has challenged the supply chains of all manufacturers, Dassault looks everywhere for technical quality, robust production capabilities, the flexibility to adapt to changing circumstances, and to work in close collaboration with Dassault


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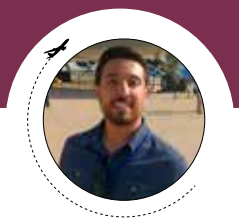
I Play Therefore I Am: Serious Games In Aviation English Training



by Gökhan Demirdöken, Researcher & English Language Instructor

Cogito ergo sum! French philosopher and mathematician René Descartes was no doubt a highly respected thinker in the development of Western notions of reason and science. Building his philosophy on the idea of radical doubt, Descartes argued nothing that is perceived or sensed is necessarily true. No matter how harshly his philosophy might have been criticized or highly praised, he has been quite an influential figure in history of thought. As such his ageless saying Cogito ergo sum, in other words "I think, therefore I am", has been adapted into and used in several other areas of life including art, literature, social media, and so on. Today, we can talk about another area of life where it can be used: Gaming. It is the shining star of the 21st century and is expected to reach US$293.2 Billion by 2027. Similarly, the number of gamers worldwide is expected to reach 3.07 billion people in less than a year. Although gamers have different preferences in terms of types of online video games they play, Battle Royale comes into prominence as the most played video game genre as of June 2022. In a similar vein, PUBG: Battlegrounds is the most played online video game in these days with approximately 1,2 billion active players worldwide; Crossfire, a first person shooter online video game, takes the second place, and Dungeon Fighter Online, a beat-them-up action role-playing game, is number three. Apart from these online video games preferred by the majority of players worldwide, there is a very distinct video game genre called simulation games.

Simulation is a stand-alone genre in video games and it attracts a more specific group of gamers. These games are designed to simulate real world as closely as possible and the gamers simulate the real world activities in the game for a number of different purposes that include training, analysis, prediction or pure entertainment. Accordingly, this type of games vary a lot in terms of their content ranging from the most popular life simulation game of SIMS to Formula 1, or from farming, trucking, construction to cooking. Yet, flight simulation games have always had their own "simmers" in history.

What we have and use for simulation purposes today in the form of video game has its origins back in 1929. Edwin Albert Link, an American inventor from Huntington, Indiana, is known as the inventor of the very first flight simulator in history. Also being the first private owner of Cessna, Link built his simulator in his father's basement by using parts of piano and organs, and named it The Pilot-Maker, also known as Link Trainer. Although it was not taken into consideration seriously by flight schools at first and Link had to sell it to an amusement park, the Link Trainer soon attracted attention with its use in the flight school Edwin Albert Link opened himself and offered flight training for only US$85. Having gained the reputation of cadets in Link's flight school, the Link Trainer received investment by the US Army Air Corps in 1934 and Link produced six more flight simulators for the army.

Apart from paving the way for effective flight training, Link's simulator also served as a source of inspiration for more developed flight simulators. During the 1960s humankind witnessed a new era for aviation industry with the introduction of flight simulators that could be run on computers. However the number of these simulators was limited since they could be run on high-end systems only. It took about a decade until the first flight simulator was publicly accessible on a public domain. This was only possible thanks to the hard work of an American software engineer Bruce Artwick who developed the publicly accessible flight simulator on a computer. He received his Bachelor's degree in electrical engineering at the University of Illinois in 1975. Artwick was also interested in aviation, and he completed his pilot training in the same year, which offered him a solid understanding of aviation. The following

year, Artwick published a thesis for the completion of Master's degree in the field of electrical engineering. Taking his interest in the field of aviation and electrical engineering into account, it does not come as a surprise to see that he named his thesis project "A Versatile Computer-Generated Dynamic Flight Display". What he achieved with his project was that he displayed a model of the flight of an aircraft on a computer screen. This was a breakthrough in history since he proved that it was possible to use microprocessors for computer-based flight simulation purposes. Founding Sublogic in 1977 and taking his thesis project a step further Artwick soon obtained a joint license for Flight Simulator with Microsoft in 1982. What he started as a thesis project turned out to be the foundations of computer-based flight training through flight simulation software and thus, it would be true to say that Bruce Artwick is the founding father of simulation games we have in the 21st century, particularly Microsoft Flight Simulator.

As Real As It Gets

Microsoft Flight Simulator is the best-selling flight simulation software today and simmers around the world enjoy the opportunity to control their favorite aircraft from their home. Having been developed from a thesis project in 1970s, fifteen different versions of Microsoft Flight Simulator have been released in its 40-year-long history. After its first release in 1982, the software received an update in 1984 for the first time and the update included joystick and mouse support as well as graphic updates. The following version of the simulator was named Flight Simulator 3.0 which enabled simmers to simulate a Learjet 25, a Cessna Skylane, and a Sopwith Camel aircraft. Although this had already been a great improvement in the simulation software, one of the largest series of add-on products was offered with version 4.0, also known as FS4, between 1989 and 1993. With this version, the users could even build custom sceneries as well as fly a Boeing 747 for the first time. Over the years, Microsoft released five more versions of flight simulator until version 8.0, also known as Flight Simulator 2002, was released in 2001. This version had significant improvements compared to previous versions since the simmers were introduced detailed graphics and an air traffic control (ATC) service as well as artificial intelligence (AI). In less than two years, Microsoft completed the integration

new features and released version 9.0, Flight Simulator: A Century of Flight, in July 2003. However, Microsoft's flight simulation software was yet to mark another cornerstone in the history of video games just three years later. In October 2006, version 10.0, also known as Flight Simulator X, was released by Microsoft. The software could now support multiplayers which enabled the interaction of simmers from different parts of the world. What's more two players could fly a single plane simultaneously. This version was so successful that over 1 million copies of it were sold in the US alone in less than two years. With the introduction of digital markets for selling video games in the following years, Microsoft's FSX sold even more and proved to be the best flight simulation software in history. Accordingly, Microsoft came up with its famous slogan of "As real as it gets" since FSX could offer an almost real flying experience for simmers. However, nobody knew that what we had experienced with FSX was just the beginning of a new era in flight simulation since Microsoft was in the pursuit of an even more realistic experience with the upcoming and latest version, Flight Simulator 2020. With the release of this latest version, simmer can now enjoy not only high definition sceneries with Google Maps integration but also virtual reality (VR). Since the day it was released in August 2020, it has already sold more than 2 million copies and it is no doubt that this version is going to be the best selling flight simulation video game of all times once again. Considering what Edwin Albert Link and Bruce Artwick did back in 1960s and 70s as well as what Microsoft has so far achieved in the video game industry with the iconic and historic Flight Simulator video game series thanks to these two great and passionate engineers, we are left with nothing but to say "I play, therefore I am."

Serious Games

The video game industry is by far one of the most rapidly growing industries in the world with millions of employees in the world. Although the industry designs video games that offer pure entertainment for players, the purpose of some of the video games sometimes go beyond entertainment and a pedagogical value is added to these games. That is, they use game elements for training purposes and thus, they become an instructional tool. This is called serious gaming which was first coined by Abt in 1970. He stated that "we are concerned with serious games in the sense that these games have an explicit and carefully thought-out educational purpose and are not intended to be played primarily for amusement." In this sense, it can be argued that serious games include more specific learning objectives and goals apart from having some fun in the game. In addition, serious games include some essential elements such as boundaries, invitation, game world, goals, materials, rules, and debriefing. As such, any serious game should have some kind of limitations in people, time, and space; it should trigger people to keep on playing; it should include an environment that is as close as possible to the real world; it should set explicit goals for the players; it should support the control devices that are used in the real setting as well; it should define the rules of the game explicitly; and it should offer a debrief at the end of the game. However, it is not limited to these elements; rather it also includes video game design elements, some game mechanics, and instructional design elements. That's why developing a serious game can be even more challenging than developing any other type of game. Even so, the video game industry has designed and published serious games in various fields such as health, science, politics, culture, advertising, security,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military, recruitment, art, product design, education, and of course aviation. Accordingly, serious games designed with all of these elements have been widely used in the training process of professionals like military officers, nurses, surgeons, security officers, and chemists. However, serious games alone are not used for training purposes; rather they are used as supplementary to high-end simulators. With regard to their effectiveness in offering the best flying experience, serious games have been proved to be effective in different fields, particularly health.

The aviation industry has a totally different story to tell about the use of serious games in flight training. Having its roots in the hard work of people like Link, Artwick, and many others, simulators have always been in the heart of flight training. Yet, a flight simulator has always been quite expensive to buy and place. That is, one cannot simply pay for it and put it in her home. Therefore, aviation enthusiasts, including children, have usually had their first flight on a serious game that simulates flying. In this sense, serious games are indispensable fellow travelers of many pilots today and they are going to be so in the future as well. In addition, Microsoft's Flight Simulator has not been the only "serious game" in the video game industry. Today, simmers have access to other video games that can be classified as serious games such as X-Plane 11 and Digital Combat Simulator. Despite being designed and developed by different video game design companies, they all have one thing in common: the flair to attract millions of people looking for a flying experience that is 'as real as it gets'. This feature of serious flight simulation games makes them a great instructional tool for aviation English training as well. For those who seek employment as pilots need to sit for ICAO Language Proficiency Tests and demonstrate English language proficiency at minimum Level 4 based on ICAO Language Proficiency Requirements (LPRs). The test assesses prospective pilots' English language proficiency in six areas, namely pronunciation, structure, vocabulary, fluency, comprehension, and interaction. Therefore the test takers need to have control on both receptive skills (listening and reading) and productive skill of speaking (except writing which is not assessed). This means that they should be given the opportunity to practice these skills through meaningful learning activities in English for Specific Purposes (ESP) courses. No matter how effective the ESP course can be, the learners of aviation English will still need more and more hands-on experience to succeed in ICAO exam. At this point, flight simulation games as serious gaming can be integrated into ESP curricula to implicitly teach aviation English while having fun in the game. The course designers or ESP practitioners have not done so yet, the researchers have not presented any scientific result regarding the possible role of serious games in aviation English training either. However, a pioneering study is about to take place in a pilotage program of a tertiary level institution in Turkey. Once we get the initial findings of this study, the pilot training programs may evolve significantly and we may even see the use of VR in aviation English training of prospective pilots. For now, all we can say is that the best is yet to come

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Inventor of Detachable Aircraft Cabin:
Tunisian-Turkish Engineer Prince Ibrahim Ben-Ayad (1881-1958)

by Dr. Emir Öngüner
Freelance Researcher in Aviation History

In the 21st century, the aviation industry is working intensively on new engineering solutions with a focus on safety. However, it is quite interesting that there is no information about the genius idea of a Turkish engineer in the 1930s. The inventor was engineer Emir Ibrahim Ben-Ayad, a Tunisian Prince born and grew up in the Ottoman Empire.[1]

Going by the name of Ibrahim Ayad in Turkey, he belonged to the Ben-Ayad family of Tunisian nobility and the Egyptian Kavalalı dynasty.[2] His father was Prince Mahmoud Ben-Ayad, a financier close to Mustafa Haznedar Pasha, Prime Minister of the Principality of Tunisia. 1850, Mahmoud Ben-Ayad defected to France for some political reasons. After a while, he became a French citizen, moved to Istanbul in 1857 and engaged in commercial activities. He allegedly owned high value real estate in France.[3] His mother was Princess Rukiye Hatice Hanım, the daughter of Mustafa Fazıl Pasha from the Kavalalı dynasty in Egypt.[4]

© Kais Ben Ayed

Ibrahim Ayad

Ibrahim Ayad was born in Istanbul in 1881. No detailed biography of him is available. He completed both his high school and undergraduate degrees in France. Which institutions he worked for after graduating are unknown. The information regarding his technical studies was first seen during the last year of World War I. He was granted a patent by the German Imperial Patent Office for an automatic-electric ship log in 1918 (Selbsttätiges elektrisches Schiffslot, No: 343744, 22.09.1918). His residence address was listed as Istanbul-Pera in the patent paperwork.

In 1934, Ibrahim Ayad was introduced in the Turkish press as an inventor in the field of aviation. With the U.S. patent (No: 1.923.963) he received on August 22, 1933, under the name of "Aerial safety device", he obtained legal protection for his idea of parachute rescue by detaching the cabin from the main body of an aircraft in case of danger. In the preamble of the patent text, he noted that none of the studies up to that time had been an effective effort to safely land the cabin to the ground:

"As a result of the many drawbacks that are inherent in individual parachutes, various devices of aerial safety have been imagined, such as detachable bodies and nacelles provided with parachutes. However, none of the known methods for ensuring the collective landing of the passengers and pilot of a disabled aircraft is capable of protecting the safety apparatus itself against the considerable risks of breaking which

[1]We appreciate Mr. Kais Ben Ayed for his contributions.

[2]For a short biography: http://palaisbenayed.com/ibrahim-ben-ayed-2, last accessed: 09.07.2022.

[3]For more details: Mohamed Lazhar Gharbi, "Mahmoud Ben Ayyed", Méditerranée, 124 | 2015, 21-27.

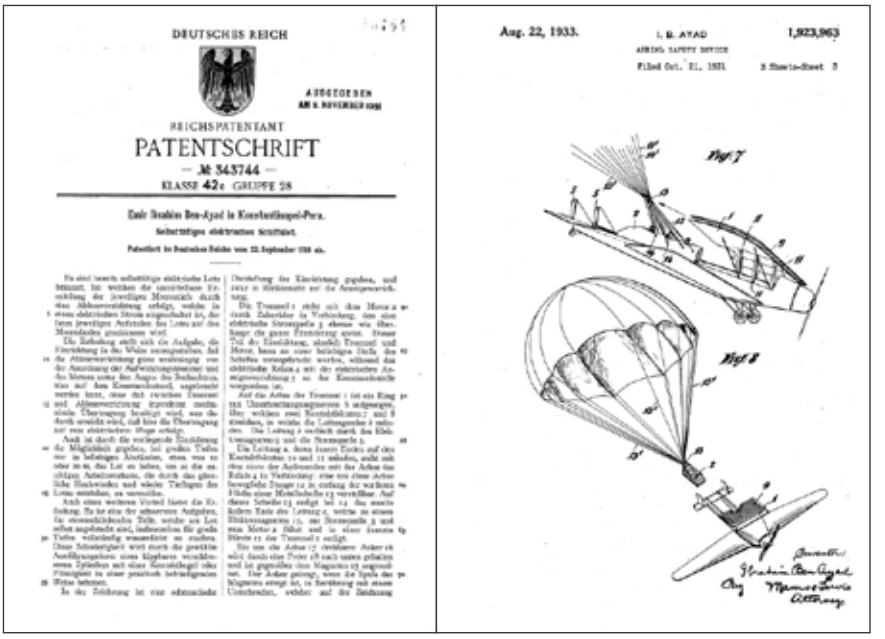
[4]For maternal genealogy: https://www.royalark.net/Egypt/egypt6.htm, last accessed: 10.07.2022.

will certainly result from a collision, or shocks, or sudden frictions between the detachable body or nacelle and the rear part of the fuselage, and the control planes, when said body or nacelle is being detached..."

The mechanism he created was first described as follows in an interview with the Cumhuriyet newspaper on June 23 and 24, 1934:

"...The invention of Mr. Ibrahim, an engineer who is proud to be at the same class as Gazi Mustafa Kemal at Turkish military academy, is a parachute to save the cabins of crashed aircraft from collapse... These large parachutes, which will be attached to the cabins with a special device, can be easily used by pilots. In the event of an accident, the pilot will activate the mechanism to open the parachute, and thus the cabin will be landed on the ground slowly by the parachute, together with the passengers inside the cabin..."

İbrahim Ayad, representing Turkey at the International Congress on Air Navigation held in Paris on December 10-23, 1930, stated that the congress's main focus was on flight safety and that he presented his invention there. Ayad tested his design in Paris on September 20, 1931,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PATENTSCHRIFT

— № 343744 —

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Aug. 22, 1933. L. B. AYAD 1,923,963

(left) The patent Ayad received from Germany in 1918, (right) Example from the drawings in the patent he received from the U.S. in 1933

utilizing state-owned facilities as part of an agreement with the French Ministry of Aviation. The innovation was examined on a small-scale prototype for three years before the ministry recognized it as an invention. Aerodynamic tests were conducted in the wind tunnel at the Institut Saint-Cyr and firing tests were carried out on vehicles of the military balloon detachment at Chalais-Meudon. The patent rights were transferred to France provided that the test costs would be covered by the French government.


Bir Türk mühendisinin mühim bir ihtirai

Mühendis İbrahim B., büyük bir tayyareyi düşmekten kurtaracak bir paraşüt icat etti, icadı Fransız hükûmeti tarafından kabul edildi

Türk mühendisinin icadı

İbrahim Bey ihtirai hakkında izahat veriyor

5 kişilik bir kamarayı ağır ağır yere indirmek için 16 metro kutrunda bir paraşüt kâfidir

Ayad's interview with the Turkish press about his studies in France (Cumhuriyet, June 23-24, 1934)

Ayad, with his design patented in France Ayad

When asked why he transferred the invention's rights to France rather than Turkey, Ayad responded as follows:

"The French Air Ministry's Research Division offered to support the execution of my idea's scientific experiments, but in exchange, they requested that I give the French government the exclusive right to use my invention in France. Three years ago, I would not have been able to conduct these studies in Turkey because our country did not then have the necessary scientific laboratories."

Ayad traveled to Germany in 1937 upon the invitation of Nuri Demirağ, who had started to establish a private aircraft workshop in Turkey, and they both visited the aviation industry institutions in Germany. He shared his findings as a series of four articles in Cumhuriyet newspaper. The following are the headlines:

- Competition of countries in aircraft construction (24.03.1937)
- Significant advances in aircraft construction (29.03.1937)
- Can we build fighter aircraft in our country? (08.05.1937)
- The first thing to do when establishing heavy industry in the country (28.06.1937)

In the first three articles, he focused on Germany, emphasizing arguments such as the state of the aircraft industry in Europe, innovations in engine technologies and a qualified workforce. In the final article, the path Turkey should follow was explained:

"The first thing to be done in establishing heavy industry in the country is to raise highly skilled and experienced workers. Only in this way will it be possible for us to build powerful and valuable fighter aircraft together with their engines in a short period of time."


Memlekette ağır sanayii kurarken yapılacak ilk iş

Her şeyden evvel hakkile usta ve çok tecrübeli bir işçi sınıfı yetiştirmektir

Ancak bu sayede az zaman zarfında yüksek kudret ve kaymette harb tayyarelerini motörlerile beraber inşa etmemiz imkân dahiline girer

Headline of Ayad's article in the newspaper explaining the significance of qualified workers

What Ayad mentioned in 1937 regarding technicians and workers employment is still relevant in 2022:

...Building impressive factories alone will never be enough for the industrial development of a country. In order for a factory to operate under economic conditions and produce valuable goods, it is not enough for its equipment to be flawless and even for the scientists who manage it to be highly specialized. The expertise and talent of the manufacturing workers and craftsmen determine the likelihood of success in this path...

The first technical book on aviation published in Turkey

...An engineer who does not have skilled craftsmen and workers under his supervision cannot perform any useful work in the sphere of operation. The main reason we haven't been able to reap the full benefits of the specialists we brought here from Europe at such expense is that we don't have enough people that are capable of carrying out the plans they have developed...

...In our opinion, the most beneficial action we can take in this regard is to establish a vocational school with the feature of a small factory fully outfitted with all necessary tools in each of our provinces.

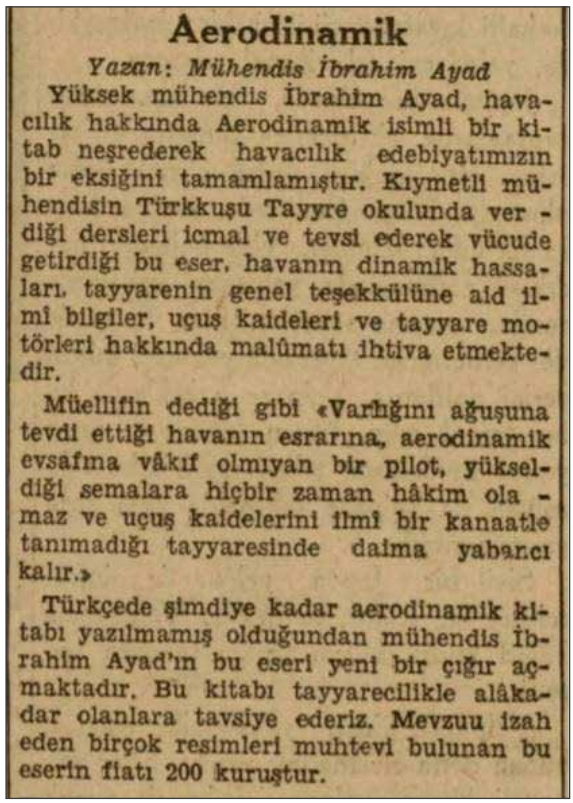
Offering a rightful solution, Ayad also provided interesting stats from Europe. According to Ayad, there were no vocational schools in Turkey at those times to train the necessary number of technicians and laborers. 18 million of Germany's 22 million workers were employed by industrial entities. This figure was 16 million in the UK and 13 million in France. Turkey's population in 1935 was 16 million, therefore the disparity between its employment potential and that of industrialized western countries is obvious.

İbrahim Ayad, who also worked as a teacher at the THK flight academy Türkkuşu, published the first technical book on aviation in Turkish in 1939. The book titled "Aerodynamics" consists of the following subtitles:

- Physical Properties of Air
- Practical Aerodynamics
- Load-carrying Structural Components
- Aerodynamic Institutes
- Balance and Control of the Aircraft
- Propeller
- Aircraft Engines
- Theory of Flight

The president of the THK, Fuat Bulca, personally asked Ibrahim Ayad to teach aerodynamics at the Türkkuşu Flight Academy in 1938, according to the book's foreword. Ayad chose to write a book that served as an overview of his lectures as he believed that every pilot candidate should be familiar with the science of aerodynamics. He also added that up to that point, Turkey had not produced any books on aerodynamics.

A brief article titled "The National Necessity and Benefits of Aerodynamic Institutes" took place following the foreword. According to Ayad, Turkey still lacked a wind tunnel, which prevented real progress in the scientific field of aviation from being made:



Aerodinamik

Yazan: Mühendis İbrahim Ayad

Yüksek mühendis İbrahim Ayad, havacılık hakkında Aerodinamik isimli bir kitab neşrederek havacılık edebiyatımızın bir eksiğini tamamlamıştır. Kıymetli mühendisin Türkkuşu Tayyre okulunda ver - diği dersleri icmal ve tevsi ederek vücude getirdiği bu eser, havanın dinamik hassaları, tayyarenin genel teşekkülüne aid ilmi bilgiler, uçuş kaideleri ve tayyare motörleri hakkında malûmatı ihtiva etmektedir.

Müellifin dediği gibi «Varlığını ağuşuna tevdi ettiği havanın esrarına, aerodinamik evsafına vâkıf olmıyan bir pilot, yükseldiği semalara hiçbir zaman hâkim ola - maz ve uçuş kaidelerini ilmî bir kanaatle tanımadığı tayyaresinde daima yabancı kalır.»

Türkçede şimdiye kadar aerodinamik kitabı yazılmamış olduğundan mühendis İbrahim Ayad'ın bu eseri yeni bir çığır açmaktadır. Bu kitabı tayyarecilikle alâkadar olanlara tavsiye ederiz. Mevzuu izah eden birçok resimleri muhtevi bulunan bu eserin fiatı 200 kuruştur.

The promotion of Ayad's book in the newspaper (Cumhuriyet, March 23, 1939)

"...The principles regarding the construction of an airplane are based not only on projects, but also on some moderate experiments carried out in the tunnels and laboratories of aviation institutes. For this reason, countries that do not have an aeronautical institute lack the privilege of building a national prototype of an airplane and are unable to contribute in any manner, no matter its effectiveness, to the advancement and development of aeronautics on a global scale.

All formal licenses and permits provided to builders by the technical departments of the government in countries that have excelled in aviation are based on the results of experiments conducted at aerodynamic institutes. This demonstrates that no advancement in aviation can be realized without the practical and scientific involvement of an aerodynamic institute."

The newspapers at the time also promoted Ayad's book. The book was published by the Cumhuriyet Printing House in Istanbul and cost 200 kurus. It was recommended to anyone interested in aviation.

The ideas of Ibrahim Ayad, who passed away on December 9, 1958, in Istanbul, should be considered in the context of the conditions of the time. The observations made by Ayad still hold true in 2022. He correctly analyzed that a country without experimental infrastructure and a technician class would not be able to advance in aviation and any other industrial field. Unfortunately, Turkey lagged behind in terms of facilities and technical education. The first academy to train engineers in the field of aviation was opened in 1941. The foundations of the first wind tunnel were laid in 1944, but it was not finished even until the 1950s. There is no historical research on the steps taken to train technicians.

The statements of Ayad that have been outlined above help us comprehend the causes of the failure of Turkey's early Republican aviation efforts. It should be noted once more that the detachable cabin airplane's inventor is Turkish, although all prototype development was completed outside of Turkey due to technical limitations. It is crucial to remember Ibrahim Ayad and his ideas in the history of Turkish aviation, which will undoubtedly serve as a major source of inspiration for next generations

Kabinesi havada ayrılabilen

Paraşütlü Tayyare

Zamanımızda tayyarecilik ehemmiyetli inkişaflara nail olmaktadır. Günden güne hava hatlarının sayısı, gördükleri hizmetler ve muhtelif memleket hatta kıt'alar arasında temin ettikleri yeni münasebeti ticcariye yolları nisbetinde fazlalaşıyor.

Şümullü bir görüşle tayyare, istikbal mefkûresini zahir bir vazia olarak kabul edilmektedir. Bundan dolayı mühtediler ne derlerse desinler, tayyareciliğin tevessüünü âlâtın mukavemetine ve cihazın yolculara için temin ettikleri ve edecekleri emniyete istinaden muvafık bulup ta menfi ifkârı reddedecekler çoktur.

Halihazırda tayyare mühendislerini meşgul eden en mühim meselelerden biride, âni tevekkuf tehlikesi karşısında şahsın tahlisi meselesidir.

Şimdiye kadar bu mesele zaman zaman ölümü intaceden hadiselerin henüz ne kadar iptidai bir kurtuluş vasıtası olduğunu gösterdiği ve kat'i bir selâmet temin etmekten uzak olan paraşütle halledilmiş bilindi.

Tayyarenin nakletteği mühim âlâta gelince, gayri sahil vasıtalarını istimalindeki güçlüğe binaen bunların selâmeti meselesini halletmek gayet güçtür. Bu âlât için muhtelif tahlisiye usulleri ileri sürülüb, bilhassa bu usullerden biri hava nazırının dikkatini celbetti. Bu «Ben Ayad» usulidir.

Mucit «Ben Ayad» icadettiği âlet üzerinde bize izahat vermiş ve onun küçük bir nümunesini sezetmiştir. Bu nümune, tayyarenin üstüne, içabında geriye itilerek kuyruk mevkiinden çıkacak bir suretle yerleştirilmiş ve kendisini kaldırmıya muktedir cesamette bir paraşütü müteahhiz bir odadır, ki tayyare memurlarile yolcuları alabilir; aynı zamanda müdiriliğin bütün emirleri oraya varır.

Daima odaya bağlı olan paraşüt, alt kısmı istenildiği zaman açılan bir kapaklı kapalı bir muavin kanat dahilindedir. Kaza vukuunda tayyareci bu kapağı açar ve o zaman paraşütün havalanması için süratin hasıl ettiği rüzgâr tarafından itilmesi kâfidir. Derhal açılan paraşüt odayı muhteviyatile birlikte çeker ve yerde parçalanacak olan tayyareden ayrılır «kurtarır». Hattâ bu tahlisiye âletinin istenildiği vaziyete gelmesi pilotun arzusuna bağlıdır.

Halihazırda sadece tahta ve mukavvadan bir küçük nümune karşısındayız. Fakat temenni ederiz ki bu ve buna müsaadi keşifler mühendislerin emellerini muvaffakiyetle neticelendirdiği nisbette hava kazalarının kırmızı listesine bir nihayet verilir ve tayyareciliğin inkişafına elzem olan itimadı temin olunur.

Uçuş esnasında tayyarenin ve ayrılan kabinesinin umumî görünüşü.

Tayyareden ayrılan yüz kilosuz bir büyük bir parçada asılı ölüm

Küçük, müteharrik resimde nasıl ayrıldığını görüyoruz.

ŞİİR

AKŞAMA DOĞRU

Yolumda ıpıklar bir soluk çiçek,
Üstümde geceler böyle geçecek:
Hep böyle geçecek bozardanarak...

Görümde halkalar, pınbalar var,
Uzakta dizilen bütün mor dağlar:
Bir duman oluyor sensiz yanarak...

Yollar can veriyor seni anarak...

S. Behzat

AVIATION HISTORY
WITH
AVIATION
TURKEY

Ayşem Sargın, Boeing Turkey Managing Director and Country Executive

"We are Pioneering to Make Sustainable Aviation Fuels a Reality!"

Aviation Turkey: Boeing is the world's largest aerospace company and leading manufacturer of commercial jetliners and defense, space and security systems. A top U.S. exporter, the company supports airlines and U.S. and allied government customers in 150 countries. How would you best describe Boeing in the field of commercial jetliners? Could you please provide some key facts (such as market share in commercial airplanes, number of airplanes delivered so far and commercial airplane backlog) about the company for our readers?

Ayşem Sargın: Boeing Commercial Airplanes, a business unit of The Boeing Company, is committed to being the leader in commercial aviation by offering airplanes that deliver superior design, efficiency and value to customers around the world. There are more than 10,000 Boeing commercial jetliners in service, flying passengers and freight more efficiently than competing models in the market. More than 5,700 Boeing airplanes are currently on order. Boeing Commercial Airplanes' backlog is 4,239 airplanes through June 30, 2022. Our backlog continues to support multiple years of production and is diverse by geographic region and business model.

Aviation Turkey: In November 2020 Boeing received approval from the Federal Aviation Administration (FAA) to return the 737 MAX to operations. According to Boeing's 2022 Q1 results the 737 MAX production and deliveries have been increased, the 737 production rate is expected to increase to 31 airplanes per month during the 2022 Q2 and the fleet has flown more than one million total flight hours since late 2020. Can you elaborate on the current status of efforts regarding the global safe return to service of the 737 MAX? How many airlines around the world are currently flying with 737 MAX and what kind of feedbacks have you received so far on the global safe return to service of the 737 MAX?

Ayşem Sargın: There has remained no question mark over the flight safety of MAX planes after the detailed work carried out. Since the FAA's ungrounding in Nov. 2020, airlines have safely flown more than 500,000 revenue flights, totaling more than 1.2 million flight hours with schedule reliability above 99 percent. We continue to work with regulators and our customers to ensure the continued safe return of the 737 MAX to service worldwide. 190 out of 195 countries have approved a return to service. More than 40 operators have more than 600 737 MAX in revenue service.

Aviation Turkey: Boeing is a pioneer in creating new technologies and solutions to ensure aerospace is sustainable for future generations. Can you elaborate on Boeing's efforts and projects that focused on safe and sustainable aerospace? How would you summarize Boeing's ongoing sustainability projects with global partners?

AyşemSargın: As Boeing, we support and align with the aviation industry goals for carbon neutral growth from 2020 going forward and commitment to achieve net zero carbon emission by 2050. This emission trajectory aligns with the 2 degree scenario of the Paris Agreement. Achieving that trajectory relies on continued innovation in future airplane technology, deployment of modernized air traffic management infrastructure, and the scale-up of production and use of sustainable aviation fuel.

Designing and building more advanced products with greater fuel efficiency and lower carbon emissions is a key tenet of our business. Since 2003, we have invested $60 billion in new technologies to improve efficiency. This investment helps meet aviation's environmental goals and its business needs. We've also made substantial progress in reducing greenhouse gas emissions from our worksites and manufacturing facilities as well as building new generations of aircraft. Our operations achieved net-zero emissions at manufacturing and worksites in 2020 by expanding conservation and renewable energy use while tapping responsible offsets for the remaining greenhouse gas emissions. "Everything for Zero" is our multi-pronged approach to reducing emissions.

Fleet renewal has a great impact on the objectives of increared efficiency and sustainability in aviation. New airplanes provide significant efficiency gains and the airplanes that we deliver this year are as much as 25 to 40 percent more fuel efficient than the airplanes they are replacing. Fully deploying the latest generation airplanes is the most significant contribution to carbon emissions reduction available over the next decade.

In parallel, we work with airlines, government customers, air navigation service providers and airports on efficiency improvements. These include procedures such as continous descent approaches and equipment upgrades such as GPS-based navigation for more direct routings. We also develop services to leverage data for fuel efficiency, help customers optimize flight planning, and provide pilots with real time weather and traffic information. All these collaborative efforts of the aviation industry collectively can reduce emissions by 12 percent.

Besides, sustainable fuels are key to long term, large scale CO2 emissions reductions that airplane technology cannot achieve, and offer the best potential to significantly reduce emissions on larger, longer range airplens for the next several decades. Sustainably produced jet fuel reduces CO2 emissions by as mush as 80 percent on a gallon for gallon basis.

Aviation Turkey: The use of biofuels in commercial airplanes has gained critical ground during last two decades and Boeing has been an industry leader in fostering the development of biofuels. In this context aided by Boeing's technical expertise, Virgin Atlantic flew the world's first airline biofuel test flight on a 20% blend made from coconut and babassu oil in one fuel tank of a Boeing 747-400 from London to Amsterdam on Feb. 24, 2008 and in 2018, Boeing flew the world's first 100% biofuel flight on the ecoDemonstrator's FedEx Express 777 Freighter flight-test airplane. What can you tell us about Boeing's efforts to develop sustainable aviation fuels and to encourage the adoption of sustainable fuels in commercial aviation to reduce the environmental damage from fossil fuels? When

do you plan to start deliveries of commercial airplanes capable of flying on 100% biofuel?

Ayşem Sargın: We are pioneering to make sustainable aviation fuels a reality, partnering globally with airlines, industry, governments and research institutions to expand limited supplies and reduce the fuels' cost. We have been working with airlines, engine manufacturers and others to certify and conduct biofuel test flights since 2008 and gain approval for commercial use in 2011. In 2018, our ecoDemonstrator flight test program made the world's first commercial airplane flight using 100% sustainable fuels with a 777 Freighter, in collaboration with FedEx Express. We partnered with Rolls-Royce and World Energy to carry out a successful test flight of the Rolls-Royce Flying Testbed aircraft using 100% Sustainable Aviation Fuel (SAF) on a Trent 1000 engine. This illustrates that SAF can fully replace conventional jet fuel over the long term and is a viable renewable energy solution to decarbonize aviation over the next 20-30 years. To accelerate innovation for current and future airplane efficiency, our ecoDemonstrator flying test bed program uses partnerships, to take promising features and services out of the lab and tests them in the air. The ecoDemonstrator has tested over 200 projects on eight airplanes.

As an another example, we signed a supply agreement with EPIC Fuels for two million gallons of blended SAF to power our Commercial Airplanes operations in Washington state and South Carolina through 2022. It is the largest announced SAF procurement agreement by an airframer, showing our commitment to decarbonizing aviation. In this scope, we also announced a partnership last year in July with Sky NRG to scale the availability and use of SAF globally, and we will also invest in SkyNRG Americas' SAF production project. Ultimaltely, we have committed that our commercial airplanes will be capable and certified to fly on 100 percent SAF by 2030.

Aviation Turkey: The COVID-19 pandemic has caused huge global disruption on both commercial and defense operations and programs. The aviation industry has been slowly recovering from coronavirus pandemic-induced downturn starting from 2021. How and to what extent has the COVID-19 pandemic impacted Boeing's commercial aviation business operations including production, manufacturing, and supply chain as well as your domestic and international programs? When do you expect to return to pre-pandemic levels?

Ayşem Sargın: The aerospace industry has made important progress in the recovery. As the flying public and governments have confidence in health and safety during air travel, the passenger traffic rebounds swiftly in the past two years and we have recovered to the pre-pandemic levels especially in short haul flights in many parts of the world. Our industry continues to serve an essential role of bringing people together and transporting critical supplies.

The global market is recovering largely as we projected in 2021. Demand for domestic air travel had led the recovery, with intra-regional markets have followed as health and travel restrictions ease. We have also seen an increase in long-haul travel and expect it to return to pre-pandemic levels by 2023 to 2024.

We've seen this phased recovery translate into demand for more than 1,000 737 MAX orders since Nov. 2020, mainly supporting domestic and regional international markets. We anticipate demand for widebody aircraft to take longer to return in line with the international traffic recovery.

Aviation Turkey: How is Boeing addressing the future of commercial aviation? What kind of new products do you see a demand for in the coming years? What can the industry expect to see on the horizon as new products and services from Boeing to further strengthen its market-leading product lineup and meet the evolving needs of global customers?

Ayşem Sargın: As an aviation pioneer and industry leader, we are always looking for future technologies to move people, goods and ideas around the world. We are testing uncrewed electric-powered aerial vehicles for passengers and cargo aimed at market segments that will reduce urban congestion and emissions from vehicles on the ground. For example, we have made a $450 Million investment in Wisk to advance certified autonomous electric flight (future pilotless flying taxis).

Wisk is an advanced air mobility (AAM) company dedicated to delivering safe, everyday flight for everyone. Wisk's self-flying, eVTOL (electric vertical takeoff and landing) air taxi, will make it possible for passengers to skip the traffic and get to their destination faster. Based in the San Francisco Bay Area and New Zealand, Wisk is an independent company backed by The Boeing Company and Kitty Hawk Corporation. With over a decade of experience and over 1500 test flights, Wisk is shaping the future of daily commutes and urban travel, safely and sustainably. Wisk is on a journey to deliver safe, autonomous, all-electric, everyday flight.

Aviation Turkey: Supporting both airline operators with commercial jetliners and the Government with defense platforms Boeing has a strong, long-standing partnership with Turkey for 77 years. How would you summarize Boeing's involvement in Turkey over the last decades? Can you elaborate on the footprint of Boeing in Turkish commercial aviation sector?

Ayşem Sargın: We are proud of our long-standing relationship with Turkey for more than 70 years, supporting both airline operators with commercial jets and the government with defense platforms. This partnership continues to grow and develop as we deliver high technology products to our Turkish customers and partners supported by ever-growing number of Turkish companies in various programs.

We launched a strategic partnership program with Turkey in a few years ago, which is called the "Boeing Turkey National Aerospace Initiative (NAI)." With this program, we aim to support Turkey's rise as a global player in aviaiton and increase Turkey's contribution to Boeing's global competitiveness. Accordingly, we identified mutually beneficial areas for collaboration between Turkey and Boeing, including industry, technology, services and training. We have taken our collaboration with Turkey to a different dimension through this program. We opened our first engineering center in Turkey. We have increased the number of our Turkish suppliers and the supply volume from Turkey with an increasing collaboration with the Turkish industry. I believe that our strategic partnership with Turkey under NAI will continue and develop further.

Aviation Turkey: What are your predictions for commercial aviation in Turkey in terms of growth, challenges and opportunities? How do you see the commercial airplanes market developing in Turkey and how does Boeing provide support services in country?

Ayşem Sargın: Turkey is among our priority growth markets. As the world's 19th largest economy, Turkey has a peculiar advantage of being at a very unique geography between the East and West. In aviation, geography is a very important asset for countries. Turkey's convenient location makes it a natural hub for aviation. Istanbul is optimally situated within a 4-hour flying range from 55 countries. This means 1.59 Billion people, $39 Trillion GDP, and $7.6 Trillion trade volume at a 4-hour flight distance. The opening of the New Istanbul Airport is a landmark in Turkey's growth in this industry.

The growth of Turkish aviation sector outpaced most of the market in the past decade, this is remarkable and owes to Turkey's focused steps towards the growth of aviation in every respect. Of course, we saw a slowdown in air travel during the pandemic. Nevertheless, it is a great success that Turkish Airlines resumed flights with correct measures even during such hard times, and made a strong start this year with a swift recovery after the pandemic. As the Turkish aviation industry proved its resilience amid the pandemic in every field including industrial production and air transport, we believe that this high value-added industry will strenghten Turkey's positioning in the global avation ecosystem and continue to contribute increasingly to Turkey's economic growth.

Aviation Turkey: Considering the facts that 65% of Boeing's supply is outsourced and the company makes over US$40 Billion in purchases per year, What can you tell us about the current status of your technological cooperation with Turkish suppliers and Boeing's supply chain here in Turkey? Can you elaborate on the current value of annual purchases from Turkey/ Turkish suppliers and targets for the future?

Ayşem Sargın: I am proud to say that all our next generation commercial aircraft have parts coming from the Turkish industry. We have more than 20 suppliers in Turkey and we are continuing to grow our supply base here. Under Boeing Turkey National Aerospace Initiative, we had launched its Turkey Supplier Development Program (SDP), a unique program designed to support Turkey's global competitiveness in aerospace. SDP aims to increase Turkey's share in the Boeing supply chain, and at a larger scale, Turkish industry's share in the global aerospace supply chain through industrial training, capability assessment, and mentoring and targeted development activities. We procure various parts that require advanced manufacturing techniques from Turkish suppliers. These parts include but not limited to 787 elevator, cargo barrier and horizontal leading edge; 737 wing tips, elevator, tab assemblies and fan cowl; 777X turning parts and up lock assembly.

More than 300 aerospace professionals from 80 Turkish suppliers (aerospace companies) were trained by Boeing since the launch of Supplier Development Program. Our pool of suppliers that are bid ready has increased from two to six. In paralle, these new bid ready suppliers also received their first direct RFQs from Boeing. Also, both Turkish Aerospace and Kale are part of the Boeing Premier Bidder Program.

In March this year, Boeing signed a direct supply agreement with HMS Makina, one of the Turkish companies producing for the aviation division. HMS Makina started manufacturing various modules for Boeing 737 and 787 Dreamliner aircraft within the scope of the contract. In addition to this contract, the company continues to supply components to Boeing's other manufacturing partners. This agreement we signed with HMS Makina is a clear statement of our belief in Turkey and the world-class capability of our partners in the Turkish aviation industry.

As of today, we annually place 200 million dollars supply chain work in Turkey and believe that this figure will increse with the programs that we have implement. As our Turkish suppliers acquire certification capabilities to manufacture not only for Boeing but also many other manufacturers through these programs, I think that we will see the multiplier effect of these programs on the Turkish aerospace exportation.

Aviation Turkey: Can you elaborate on where Turkey falls in the strategies of Boeing, in out-sourcing and building up a global supplier network and how could Turkey contribute better?

Ayşem Sargın: Beyond its growing capacity as an aviation hub, Turkey is also a major resource country for us. As Boeing, we have witnessed the high capability and growth potential of the Turkish aerospace industry for years. aerospace industry is always growing and need investment for new technologies. It is very crucial to remain competitive in the global system, and we have many successful suppliers that have achieved this. Our Turkish partners and suppliers in aerospace industry and services contribute to Boeing's global success by helping us increase our quality, lower our costs, and thereby help enhance our productivity.

Similarly, our research and technology partnerships in Turkey help us be at the forefront of cutting edge technologies, such as composites, thermoplastics, additive manufacturing, and data analytics. Today, Boeing's Turkish engineers are working the systems that are used in all Boeing planes, and we are getting very positive results in terms of technical expertise, knowledge, efficiency and diversity.

Aviation Turkey: In 2017, Boeing Turkey launched the National Aerospace Initiative (NAI), jointly with the Presidency of Defense Industries. As a strategic partnership that contributes to both the growth of Boeing in Turkey and the growth and competitiveness of Turkey's aerospace sector, in conjunction with targets set by Turkey's Vision 2023 the NAI is also an indication of Boeing's belief in the future of Turkey. How would you summarize the efforts and projects realized within the scope of NAI so far?

Ayşem Sargın: Boeing Turkey National Aerospace Initiative outlines a strategic framework that aligns our investment and programs with our stakeholders and business partners around four key areas: industrial development, technology acceleration, services collaboration and advanced skilling.

In the area of technology acceleration, we established our first Engineering and Technology Center in Istanbul in December 2018. This center develops technologies that Boeing adopts globally, while adding to the existing engineering capabilities in Turkey, bringing the country closer to its target to become a global player in aerospace. Our engineering and R&D partnership with Turkey also covers joint research programs with universities.

In the area of services collaboration, we positioned Turkish Technic as a strategic regional supplier for Boeing for line maintenance and heavy maintenance of airplanes, as well as component services and repair in 2018. We believe that our partnership with Turkish Technic will continue and develop further in the future.

Our Supplier Development Program is a key component of the industrial development pillar of NAI. This collaboration envisions a greater share for the Turkish aviation industry in the global aerospace supply chain. Our supply chain work placements in Turkey reached 2 billion dollars in the last 10 years.

In the area of advance skilling, we have many projects that include pilot training, training of existing and potential suppliers, university collaboration programs, R&D activities, and education programs that encourage next generations to get into the aerospace industy. With these programs, we aim to contribute to the talent pipeline that Turkey's growing aviation industry needs.

Our collaboration with Istanbul Technical University (ITU) received high level recognition through the "High Honor Award" granted by the Council of Higher Education in 2018 for its contribution to aerospace research, technology, education and human resource development. Also, M.Sc. program on Aerospace Structures and Material which was jointly launched by Boeing, TAI and ITU in 2019, Boeing-THY Pilot Training Partnership Initiative launched in March 2019 are among the investments that we have been making in line with this pillar.

Aviation Turkey: With an aim to increase the participation of its supplier network in Turkey prior to the 737 MAX crisis Boeing launched a "Supplier Development Program" in late 2017 and then established an "Engineering and Technology Center" that focusing on design engineering and R&D activities at Teknopark Istanbul in late 2018. Can you elaborate on the importance of Boeing Turkey Engineering and Technology Center, and the projects performed at this Center during last 4 years?

Ayşem Sargın: Located in Teknopark Istanbul, we carry out engineering activities in various fields as well as focusing on technology development and material-oriented research. I believe that this center plays an important role in enriching Turkey's aerospace ecosystem and connecting it to the global aerospace industry.

The diversity of engineering capabilities in Turkey enables us to focus on different projects at this center. For that reason, engineering comes to the fore as being among the fields with highest growth potential in Turkey. Also, the strong aerospace ecosystem in Turkey and its local manufacturing capabilities support the growth of our center with collaborations in the fields of research and technology development. Now, we are developing together with our partners in Turkey the next generation technologies on Boeing's agenda. We have industry partners like Turkish Aerospace Industries (TAI), that we develop composite and thermoplastic technologies together, as well as university partners like Istanbul Technical University and Sabancı University.

Aviation Turkey: As part of its Corporate Social Responsibility (CSR) policy Boeing Turkey has been focusing on corporate citizenship projects in a wide variety of fields from education to health, human services and arts and culture since 2000 in Turkey. How would you summarize the efforts and corporate citizenship projects realized during last decade and to be carried out in 2022?

Ayşem Sargın: We have a long-standing corporate citizenship program in Turkey primarily focused on education, training, and skills development today. Our education programs encompass a wide range of fields including early learning, K–12 education, vocational training, and entrepreneurial training. We partner with non-governmental organizations in Turkey to develop and implement these programs.

We recently partnered with FIRST Scandinavia and the Science Heroes Association to bring the Mobile Newton Room concept to Turkey to support the development of strategic skills needed in Turkey's growing aviation sector. As part of this project, the mobile classroom which is currently placed at Süleyman Nazif Anatolian High School in Avcılar, Istanbul, will tour educational sites in different cities of Turkey and introduce STEM education geared towards aviation to high school students. Through this project, students aged between 13-16 are learning the essentials about flying and the fundamental science and mathematics involved in flight and improving their 21st century skills.

We also support initiatives to enhance entrepreneurial and employability skills of the university youth in our country. In 2017, we collaborated with Turkish Entrepreneurship Foundation to start the "Airpreneurs" program, which aims to inspire university students on aerospace entrepreneurship. Since the start of the program, Airpreneurs has reached 350,000 people all around Turkey and made the dreams of more than 700 youth in seven cities come true. We recently launched the fourth edition of the Airpreneurs program. This year's program focuses on innovative solutions for human health and flight safety as well as new needs in the post-pandemic aviation sector.

Some past examples of our programs include the establishment of a composite laboratory at Ege University in Izmir and the construction of an aircraft maintenance mechanical workshop at a vocational high school in Izmir. In collaboration with Anadolu University, we also supported vocational training for teachers and students at the aircraft maintenance vocational high schools across the country.

In additon to all these, we supported Turkey's cultural heritage through sponsoring archaeological sites. After supporting the archaeological digs at Gordion for several years, we became one of the main sponsors of the Çatalhöyük excavations in Konya --an important 9,000-year-old Neolithic site for almost 20 years starting from 1998. This site was then recognized as World Heritage by UNESCO. We supported the archaeological excavation in Kalehöyük, which is located in Kaman district of Kırşehir, and Kaman Kalehöyük Archeology Museum. We also supported the Bathonea excavations around the Istanbul area in 2014.

Aviation Turkey: Can you elaborate on your collaboration with TURKISH TECHNIC and local airline operators in MRO & Overhaul and Repairs services?

Ayşem Sargın: Turkish Technic successfully provides technical and maintenance services for Boeing planes. With the signing of the Global Fleet Care Agreement in May 2018, we positioned Turkish Technic as a strategic regional supplier for Boeing for line maintenance and heavy maintenance of airplanes, as well as component services and repair. Besides, our partnership for the training and certification of aircraft technicians from all corners of the world continues. Turkish Technic is an MRO center center with significant advantages including its capabilities, the wide reach of Turkish Airlines flights, and logistic optimization.

Finally, we announced last year in June with Turkish Technic a renewed tailored parts package agreement, extending their contract by three years. It enables Turkish Technic to reinforce its efficiency, reliability and access to a global network of parts and component services. With this agreement, Turkish Technic has continued to streamline maintenance operations with price and availability benefits from the renewal agreement. It also expanded its previous agreement with 9,000 part numbers, including a range of Boeing and supplier parts sourced through both Boeing and partner entities.

Ayşe Sargın and Ayşe Akalın

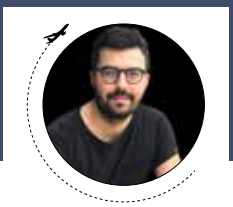
Aviation Turkey: How would you summarize the Boeing Commercial Market Outlook (CMO) 2021-2040? Can you share some CMO forecast highlights with our readers?

Ayşem Sargın: Aws I already mentioned, the global market is recovering largely as we projected in our 2021 forecast. We see increase in long-haul flight traffic and expect it to return pre-pandemic levels by 2023 to 2024.

When it comes to the long-term projectory, the total number of aircraft will reach 43,610 by 2040. There will be need for 8,700 new aircraft just in Europe between 2021-2040, which amounts to 20 percent of the global demand. Freighter fleet will grow by 70 percent by 2040 and 2,610 new aircraft will be delivered. European airlines will need 1.6 trillion euro in services and more than 400,000 in new personnel including 115,000 pilots and 178,000 cabin crew memners over the next 20 years.

By 2050, we project over 10 billion passengers will use air travel annually– supporting 180 million jobs and generating nearly $9 trillion in economic activity

Caution: Exhausted Pilots Alarming!



by Muhammed Yilmaz

On August 15, 2022, on Ethiopian Airlines flight ET343 from Khartoum to Addis Ababa, Africa's largest airline, a deeply concerning incident occurred. While the 12-year-old Boeing 737 (ET-AOB) was overflying Addis Ababa, it was still at the cruising altitude of 37,000 ft due to both pilots onboard falling asleep.

The air traffic control tower made multiple attempts to contact the pilots but was unsuccessful. Meanwhile, the aircraft continued its approach to runway 25L, which was recorded in the Flight Monitoring Computer (FMC). In other words, despite making the proper approach, the aircraft did not descend at all because its altitude settings had to be separately programmed. Fortunately, the pilots, who had fallen asleep in the cockpit, were awakened by the sound of the autopilot's alarm as it disengaged due to the altitude being too high for landing, and they were able to land the aircraft successfully with a 25-minute delay. An investigation was launched after the incident and the pilots were suspended until the investigation is completed. The duration of the pilots' slumber is unknown for the time being.

Although Ethiopian Airlines has been a major success for African aviation, the reputation of the company for its treatment of pilots or its general safety culture is very troublesome. The fact that pilots fly more than 100 hours each month has been the subject of countless reports and complaints. However, this is not an issue that only concerns Ethiopian Airlines. Pilot fatigue is one of the most pressing issues in the global aviation industry.

Why Pilots Falling Asleep Is Risky?

In May 1927, Charles Lindbergh struggled to stay awake in his aircraft named Spirit of St. Louis, the first non-stop solo flight across the Atlantic Ocean, a 33.5-hour flight from New York to Paris. Pilot fatigue and insomnia is a problem that the aviation industry has been fighting ever since.

One of the biggest threats to aviation safety is a scenario where both pilots fall asleep while the aircraft is in flight. Although the airplane is flying along under the supervision of the autopilot, the pilots must continuously check the weather, the aircraft's fuel level, and any other flight instruments in front of them throughout the flight and be ready for any emergency that might occur.

According to scientists, fatigue and sleep deprivation reduce attention, memory, problem solving, judgment, awareness, and decision-making skills. The pilot's state between sleeping and being awake impairs situational awareness, psychomotor performance and therefore control over the aircraft, and increases the tendency to make errors. All this creates significant safety issues.

Lengthy commutes, extremely long flights, irregular living, eating, and sleeping schedule, prolonged wait times in airport lounges, and probable physiologic rhythm abnormalities brought on by time zones all add to the stress of a pilot working ten hours a day and raise operational hazards. Night flights putting a strain on the biological rhythms of the pilots also make them more fatigued.

What Causes the Pilot Shortage?

As COVID-19 spread quickly over the world in 2020 and 2021, flight operations nearly came to a halt, and people huddled indoors. To reduce expenses, airlines gave early retirement packages to thousands of pilots. Also, a lot of pilots lost their jobs. Processes for training and licensing in pilot training programs were suspended.

Airlines across the world are currently dealing with a severe staff shortage with travel normalizing faster than expected in the post-pandemic period. Thus, flight crews are working very hard to prepare their schedules. Airlines are pushing the limits of their cockpit and cabin crews. Despite this, some of the scheduled flights have to be canceled due to lack of flight crew.

The safety of flights is greatly endangered by cumulative fatigue and the effects of fast and insufficient training. Pilot fatigue is among the root causes of the 16 major fatal plane crashes that have been recorded so far.

In other words, fatigued pilots unwittingly invite catastrophic accidents these days.

Companies increasing compensation to attract new pilots also fail because this action encourages active pilots to transfer to airlines that offer higher pay.

Airlines are free to employ as many people as they like. But pilot training and licensing processes take a long time. Moreover, for airlines, this process is not only a time commitment, but also a financial commitment for a long-term investment in pilots. In conclusion, the consequences of certain extreme actions made during the pandemic are now being felt.

ITA Pilot Fired for Falling Asleep During Flight

During the New York-Rome flight of Italy's national airline ITA Airways with an Airbus A330 on April 30, both pilots onboard fell asleep. As a result of the investigation following the incident, the captain pilot was fired. This was because the captain and co-pilot had shared certain hours of the flight to rest alternately, and the captain had fallen asleep when he should have been in control.

Recently, more than 1,100 pilots from Southwest Airlines organized protests

in front of Love Field Airport to raise awareness about their complaints of excessive fatigue and stress.

The situation in Türkiye is not much different from that of the rest of the world. The cockpit and cabin crews of Turkish Airlines and Pegasus are also complaining about extremely busy flight schedules. The crew, who performs flights with exhaustion, claims that rest hours are kept to a minimum.

What Do Airlines and Executives Say?

In order to maximize profits in highly competitive market conditions, airline executives frequently disregard the potentially fatal consequences of fatigue and disregard human factors and limitations.

A few months ago, Josef Varadi, CEO of Wizz Air, made an interesting statement: “We cannot run this business when every fifth person of a base reports sickness, because the person is fatigued. Sometimes it is required to take the extra mile. The damage is huge when we are canceling the flight.” He drew great reaction. Varadi may have overstepped his bounds with his statement, but it is difficult to say that other companies and their executives think differently.

All airlines want to maximize their flights and earnings by filling the staffing gap as soon as possible, integrating them into the system, and completing the training that needs to be given to current employees. To heal the severe wounds they sustained during the pandemic as quickly as possible and to fulfill increased demand, they see no harm in pushing the limits.

Pilots are Afraid and not Reporting!

Important research is being conducted in the U.S. and Europe on pilot fatigue and its solution. The successful implementation of plans created to maximize crew performance and get the most out of each pilot falls mostly on airline companies. Planning tens of thousands of hours for hundreds of flight crews each month is a difficult endeavor. It is not easy to plan tens of thousands of hours for thousands of flight crews every month. Making no concessions on the principle of “putting people front and center, rather than the system” and

evaluating the complaints meticulously are among the most critical issues for the solution of this issue. In addition to official reporting, all airlines should design and adopt a confidential reporting system, which is used by several airlines, to allow pilots to express their concerns without fear of repercussions. This might have a positive impact on finding long-lasting solutions.

Qatar Airways pilots' raising alarm under cover names "Your body is just screaming for rest. You feel the pain inside of your chest, and you're unable to keep your eyes open," reported in the worldwide press is extremely frightful.

However, there is another aspect in this case that is just as horrific as the wording. Despite the fact that many of their coworkers have lost their jobs due to the pandemic, not a single Qatar Airways pilot has filed an official report on these abnormal working conditions!

For this reason, pilot fatigue is one of the most critical concerns the industry needs to address. Companies must be more adamant about managing fatigue risk. The International Air Transport Association (IATA) and the International Civil Aviation Organization (ICAO) both need to adopt a firm stance on the matter.

Certainly, in the long run, developing strong personnel planning system and making decisions to use their resources more efficiently may be more beneficial for airlines. Airlines trying to quickly fix the pilot shortage issue today may have to deal with severe problems in the near future, both economically and in terms of flight safety.

Pilot fatigue should not, however, be viewed in isolation from the pilots themselves. Regulators can mitigate the risks associated with pilot fatigue by taking actions like training, changing the flight time limits, and implementing other fatigue management programs. However, it is the pilots' responsibility to manage their own levels of fatigue. This must not be overlooked.

Final Message for Passengers!

Being informed that our flights have been canceled is the last thing any traveler wants to hear. The primary thing we all want, though, is a safe flight and to get where we're going without any issues. Therefore, it seems healthier to understand the decisions of airlines such as canceling some flights, reducing frequencies on some routes, and even to request this as passengers from them.

This is the only way airlines can project how many flights they can operate with the available aircraft and crew. Greater planning can help everyone's expectations line up and lessen unforeseen cancellations and delays.

In the short run, this situation might make travel a little bit more challenging, possibly more expensive, and possibly more crowded—all of which could be annoying for passengers. But it will undoubtedly help in rebalancing the sector and raising the bar for flight safety. Don't get so upset if you arrive at the airport and learn that your flight has been canceled. I'm sure you wouldn't want to choose a terrible flight experience over a canceled flight.

In conclusion, one of the core issues facing the aviation sector that needs immediate attention is pilot fatigue. To change something and make things correct, there is no need to wait for another disaster to result in hundreds of casualties. Everyone must shoulder responsibility on this matter!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Honey

Uygar Doyuran: Honeywell President, High Growth Regions, Turkey, Israel & Central Asia: "As we recaptured 2019 figures, all of our major customers are targeting growth"

Aviation Turkey: In April 2021 Honeywell appointed you as President of High Growth Regions, Turkey, Israel & Central Asia. How would you sum up your role? As a manager who has been leading the digital transformation of companies for many years, what kind of work have you focused on so far, what are your predictions for the short and medium term?

Uygar Doyuran: Over the years in my career, I've had the opportunity to get deeply involved in digital transformation in almost every industry. From Finance to Education, Retail to Consumer World, Industrial to Defense. We've seen the transformational effects of digital technologies such as Internet of Things, cloud computing, artificial intelligence, big data, digital twins and others in these industries.

Today at Honeywell we leverage all of these technologies across our solutions portfolio. What is more important than the technologies themselves is to translate them to business outcomes for the specific customer needs. In a manufacturing plant, digital technologies help managers monitor their whole operations providing a single source of truth tailored to their primary focus of interest. The CEO would want to see key operations and high-level financials in real-time, while a Plant Manager would want to check asset performance and manufacturing yield. At Honeywell we provide the full infrastructure to enable these, ranging from control systems to IoT devices and advanced software solutions to provide these outcomes. We help optimize plant-wide operations, reduce energy consumption, increase reliability with predictive maintenance for many customers in Turkey and Central Asia.

Industrial Digital Transformation is a key requirement that, in the near-term and beyond, will continue to accelerate. In order to get the benefit out of digital transformation efforts, industrial customers should be working with companies that have strong experience in their specific industries – as most of the time, this is a tailored-made solution specific to customer environment, A combination of increasing quantities of data and processing power, a need to maximize productivity and competitiveness as we return to growth following the pandemic, a broader range of competing priorities for businesses to deliver against, and an increasingly remote or hybridized workforce, means digital transformation is now more important than ever. Digitalization is of vital importance for businesses to stay competitive and stay ahead.

Aviation Turkey: The COVID-19 pandemic has caused huge global disruption on both commercial and defense operations and programs. The aviation industry has been slowly recovering from coronavirus pandemic-induced downturn starting from 2021. How and to what extent has the COVID-19 pandemic affected Honeywell's High Growth Regions, Turkey, Israel & Central Asia Branch? When do you expect to return to pre-pandemic levels?

Uygar Doyuran: All over the world, the aviation industry has been one of the sectors that was worstly affected by the negative effects of the Covid-19 pandemic. In parallel, our after-market business were particularly affected as the airplanes remained on the ground, so we had to stop the shipments of some parts that we would receive from our own suppliers. We took precautions against this situation by making the right planning and adjusting our stock levels accordingly. As of January 2020, we started to take our measures. We talked to all our customers and learned their plans, and we ensured constant coordination with our customers through weekly meetings.

Domestic flights started slowly in the 3rd quarter of 2020 and all operators thought that 2021 would start very quickly thanks to the vaccine. However, this did not happen when new variants emerged. This situation continued until June 2021. As Turkey was considered a high-risk region at that time, flights to and from Germany and England were especially suspended or minimized. Russia also opened flights later than expected - only at the end of August 2021. However, as a result of the rapid increase in Covid-19 vaccination rates in Turkey and the vaccination of all tourism workers, flights started to increase again and capacities were filled up to 60 % during the third quarter of 2021.

As of this date, flights have continued to increase, capacities have returned to normal levels and our deliveries have started to return to normal. Airlines in our country have reached pre-pandemic levels, and in the same way, our business have reached pre-pandemic levels.

Aviation Turkey: What are your predictions for Commercial Aviation in High Growth Regions, Turkey, Israel & Central Asia in terms of growth, challenges and opportunities?

Uygar Doyuran: As we recaptured 2019 figures, all of our major customers are targeting growth. Turkish Airlines opened multiple new lines, Pegasus and Sun Express bought new planes and enlarged their fleets. Turkey is a very attractive country in terms of tourism and has become a transit hub. Therefore, airlines are constantly on the path of growth. All airlines in Turkey such as Turkish Airlines, Pegasus and Sun Express use Honeywell components to a very large extent. All airline companies in our country have very high service quality. They fly to many different destinations, including small cities, and offer the best service in their category at competitive prices. Turkish Technic is our solution partner and has the "Honeywell channel partner" license. As this is also has a global license, Turkish Technic is authorized to serve all airlines on behalf of Honeywell. In addition, although passenger transportation was reduced during the pandemic, Turkish Cargo and other airlines quickly adapted to cargo transportation and Turkish Cargo became the number one cargo company in Europe. These market dynamics put our airlines ahead of the competition. For all these reasons, we aim for a rapid growth with our strategic partners in Turkey.

Aviation Turkey: What are Honeywell's core capabilities, technologies, products that are focused on aviation sector? What makes Honeywell's products and services stand out in the field of aviation?

Uygar Doyuran: From nose to tail, our products and services are found on virtually every commercial, defense and space aircraft in the world. We provide one of the industry's broadest and most advanced portfolios from weather radars in the nose cone; avionics, recorders and transmitters in the cockpit; satellite communications on the fuselage that provide enhanced connectivity for both cockpit and cabin; to world-class engines, wheels and brakes; to environmental control systems; through to the auxiliary power units in the tail and other solutions in between.

Aviation Turkey: What kind of new products do you see a demand for in the coming years? Honeywell is a company that specializes in "industry-specific" solutions to aid in developing sustainable aircraft, buildings, manufacturing plants, supply chains, and workers. How would you summarize Honeywell's ongoing sustainability projects in the field of aerospace industry with global partners?

Uygar Doyuran: We were the first to commercialize the production of sustainable aviation fuel (SAF) in 2016, providing our customers a simple solution today and one that we expect will continue to be scaled at pace in the coming years. Honeywell Green Jet Fuel meets or exceeds critical specifications for flight and can reduce greenhouse gas emissions by 65-85% compared with petroleum-based fuels. It allows aircraft to fly farther on less fuel and can be used as a drop-in replacement requiring no changes to aircraft technology or fuel infrastructure.

Solutions like our hydrogen fuel cells, which are already available for use in the urban air mobility space,

enable greater range than typical battery or gasoline-based propulsion systems. And while the scalability of technology like hydrogen is not there today, we believe that this technology will continue to have a big impact to the industry in the future.

As bandwidths increase, Honeywell Anthem is another exciting solution that can be brought into almost anything that's currently flying or will fly in the future. Anthem's smartphone-like, easy-to-use interface is more intuitive than any other cockpit available today. Aircraft, helicopters and new electric and multirotor vehicles of all shapes, sizes and missions can benefit from safer, smarter, and more connected flights. It's already been selected by Vertical Aerospace and Lilium for their vertical take-off and landing, all-electric aircraft, the VA-X4 and 7-Seater Lilium Jet, respectively.

We also work with airports to improve the safe and efficient routing of planes. Honeywell's NAVITAS™ software suite is a collection of task-oriented systems that enable airports to more seamlessly digitize, visualize and automate everyday operations such as orchestrating an aircraft's final approach, landing, taxi-in for arrivals, turnaround, pushback, taxi-out, line-up and take-off for departures.

We also anticipate airports themselves will evolve to provide passengers with a seamless curb to curb experience with a greater deployment of frictionless technology to make it easier to go from security to boarding, without even having to take out your phone.

Aviation Turkey: What can you tell about Honeywell's digital transformation (from hardware to software-focused) strategy? Honeywell is extremely active in the aviation sector. Can we get your personal assessment on the potential applications of Honeywell Forge in the Commercial & Business Aviation? Thanks to its ability to manage and process terabytes of data from a flight Honeywell Forge can be a difference-maker when it comes to flight management and predictive maintenance of commercial/business aircraft?

Uygar Doyuran: While we have a history that is rooted in hardware, software has become another integral part of our value proposition. Around 50% of our 18,000 engineers are software engineers. We are proud to solve big, complex problems to help shape the future of industries, including aviation. Particularly, we add our strong domain knowledge and expertise to our software-based solutions, and that make a difference.

A major part of our digital transformation story is the success of our Honeywell Forge enterprise performance management software solution. For aviation, our solution helps improve the connectivity and efficiency of the aircraft.

Modern aircraft generate a lot of data. Commercial aircraft generate terabytes of data each day. Honeywell Forge allows operators the benefit of capturing, analyzing and applying the data in a purposeful and meaningful way, utilizing this business intelligence to reduce downtime and improve operations while also enhancing flight safety and passenger experience. Thanks to improvements in air-to-ground connectivity our Honeywell Forge analytics can optimize aircraft operations and routing, saving up to five percent of energy use per flight.

With Honeywell Forge, operators can access a single system of record and use advanced analytics to plan more efficient routes at the fleet level. They can also identify maintenance issues in the air while managing usage and security permissions. Passengers can access the connectivity they need while keeping costs to operators low.

Aviation Turkey: How has Honeywell assisted airports to keep their systems operational amid the COVID-19 crisis when access to most sites was difficult?

Uygar Doyuran: At Honeywell, we enable the digital transformation of airports and have helped them become healthier and more efficient through solutions that increase operational efficiency, reduce energy use and improve the passenger experience. As the airport industry works towards a sustainable recovery, Honeywell is working with airports to support three major trends that were accelerated during the pandemic:

-Passenger experience: the need to create healthier, safer environments to restore traveler confidence and mitigate risks;

-Sustainability: the imperative to commit to sustainability strategies that are embedded in the business model; and

-Operational efficiency, cost control and new revenue streams that help enable long-term business continuity.

With IATA and its members committing to an ambitious target to make flying net zero by 2050, there is also pressure to deliver on sustainability. We help by deploying advanced, connected building solutions that drive energy efficiency and support sustainability outcomes such as reducing overall energy consumption of airport operations.

Honeywell has deployed dedicated solutions to help airports improve energy efficiency and accelerate their sustainability goals based on real-time analytics and artificial intelligence (AI). In the complex airport eco-system, technology can help streamline the use of existing airport assets such as gates and runways, improving the real-time readiness of the terminal for flows of passengers, baggage and aircrafts, and by using intelligent energy management throughout the airport. Integrated airport technology solutions can leverage airport operational database information, which can improve aircraft ground movement management and turnaround for on-time departures, decrease CO2 footprint, and improve terminal preparedness. Integration can aid efficiency in optimizing airside runway systems, offering the ability to control, and send aircraft on the most efficient route, for easy and safe docking.

Aviation Turkey: Can you elaborate on

Honeywell's state-of-the-art technology solutions that are required for safer and more efficient flight operations for the business aviation industry?

Uygar Doyuran: At Honeywell, our commitment to safety extends across business aviation, commercial airlines and defense. With the rising number of arriving and departing aircraft, we can see increased importance on air traffic management systems and utilizing air space capacity, with improved communication between air and ground. We are proud to create technologies that support these areas.

Technology will help optimize routes, making airline travel faster and more efficient, improving on-time performance and reducing fuel consumption. Essentials like hydrogen and sustainable aviation fuels will be readily available worldwide to support sustainable flight operations. Our latest updates enable automation and digitalization of air traffic services to help achieve efficient ground movement, improve situational awareness, control and monitoring of airside and Air Traffic Management (ATM) equipment, information management and integration.

Uygar Doyuran & Ayşe Akalın

Aviation Turkey: Would you like to add anything as a message to our readers?

Uygar Doyuran: This year, as Honeywell Turkey, we are celebrating our 30th anniversary. In these 30 years, we have brought the most advanced technology to our country with our experienced staff and engineers and we have always stood by our customers. We will continue to support our customers in the same way in the future, while sustainability and digital transformation will be our top priorities.

Sustainability is the top of mind for us and we attach great importance to it along with digital transformation. Our pledge to become carbon neutral in our operations and facilities by 2035 is just the latest milestone in a long-standing commitment to improving our own environmental and sustainability profile while providing innovative products and services that improve our customers' profiles as well.

For example, since 2004 we have reduced our greenhouse gas intensity by 90%, between 2004 and 2011 we exceeded our goal of improving energy efficiency by more than 20% and since 2010 have deployed more than 5,700 efficiency projects, including building automation and controls, lighting, and mechanical upgrades at our facilities.

We have been able to achieve these milestones in part through the deployment of our own technologies, which are already on the market and available today, across our facilities and operations – from intelligent building systems to cloud-based data analytics that we, and our customers, can use to find new efficiency gains across our processes.

We are bringing the advanced technologies we developed for Sustainable Solutions to Turkey with key customers. These include producing Sustainable Aviation Fuel, Advanced Recycling of Plastic Waste, capturing carbon in industries like steel and cement, advanced battery storage solutions for renewable energy. Each of these technologies are transformational in reaching a greener world

Digitalization In Aviation Also Concerns The MRO World

by Muhammed Yılmaz

Based on the cliché "There are no old aircraft, there are poorly maintained aircraft!", it is obvious that not paying the necessary attention to the maintenance and repair of aircraft can have fatal consequences. The size of the global aviation MRO market reached USD 6.73 billion in 2021, despite the Covid-19 crisis that shook the world. The growth in the market is expected to continue in the same way.

Industry reports predict that the market size, which is expected to reach USD 6.95 billion in 2022, will reach USD 9.76 billion by 2029, with an average annual growth rate of approximately 4.93%.

As a result of technological advances in commercial and military aviation, the aviation industry has become dominated by more data-driven and digital-based systems. As expected, the MRO world is also taking its share of these developments.

Global Airlines Successful in Logistics!

Turkish Airlines, our national airline, had the busiest day in its history on July 15, 2022, with 260,632 passengers on 1543 flights and broke a record. The fact that Turkish Airlines flies millions of passengers to over 350 destinations in 128 countries around the world with 386 aircraft in its fleet is a remarkable logistics achievement.

One of the features that transforms the smooth execution of this operational process into a great success is undoubtedly the capacity to carry out routine and non-routine maintenance operations of the aircraft in the fleet in a well-adjusted manner, without disrupting flight schedules.

All aircraft, their engines and other critical components have different maintenance requirements and periods. To be able to carry out all such maintenance without affecting commercial

flights (or at least with minimal effect) requires being like a symphony orchestra performing in excellent synchronization. This is certainly a complex and challenging task not only for Turkish Airlines, but for all the global airlines around the world.

In the post-pandemic period, demand for air travel is bouncing back much faster than expected. With the increase in the number of airplanes and passengers in the skies going much ahead of the estimated schedule, all mechanisms of the aviation sector, which was caught unprepared for the circumstance, started to show various problems. Hundreds of meters long queues at airports, canceled flights and long delays, quick hiring processes to replace missing staff, addressing existing staff's training gaps, completing the maintenance of aircraft that have been grounded for a long time and getting them back in the air as soon as possible to increase operations, and many other things can be listed as the most critical reasons for the crisis that the industry is going through.

As more and more airplanes take to the skies, the maintenance processes required to keep them airworthy have become a serious challenge due to limited time. Technological advancements, which have always been an integral part of aviation, are ready to help the industry. At this point, the selection and inclusion of MRO software, which monitors the maintenance and repair processes of aircraft, plays a critical role for global airlines.

Let's briefly examine the potential issues that global airlines may encounter with the systems and software they use to monitor aircraft maintenance and repair processes in the next days, when we anticipate an increase in demand for air travel, as well as the steps they must take to address them.

Renew the system as the fleet grows and minimize digital risks!

The aviation industry is, by its very nature, one of the biggest beneficiaries of the technology and digitalization. Every new technology that is developed addresses some aspects of the aviation industry, both to prove its functionality and to fill a gap or deficiency in the sector. At least, it speeds up and facilitates existing operations. In this regard, the win-win situation between technology and aviation is much stronger than in other sectors. However, as the maintenance processes of aircraft, which are very complex to monitor, are left in the hands of various software, it is necessary to better manage the risks and threats in terms of cyber security. The larger the airline's fleet grows, the more complicated it becomes to keep track of aircraft maintenance. As growth continues, the demand placed on MRO software increases. As the software grows, the vulnerabilities of the system come to light. This makes you become a much more potential target for cyber-attacks.

The key to mitigating threats is to be able to easily adapt the entire system to each new update and innovation. This requires frequent scanning for vulnerabilities.

Testing software alone is undoubtedly insufficient. Vendors of MRO software need to adopt a clear security concept and create designs that close security gaps in the first place. Having done all this, it makes sense to leave the rest to customers to address less risky security issues as they come up with frequent updates.

Don't undervalue any data, it can be very useful!

The tracking and system limitations of airplane maintenance and repairs can be managed manually by airlines and operators with a small to medium-sized fleet. However, this is not possible for a business with hundreds of aircraft and thousands of maintenance employees.

Airlines with larger fleets need sophisticated automation systems in their maintenance and repair systems to ensure that engineering, planning and maintenance work together in the most efficient way possible. This is essential in order to analyze all the data in detail and make it meaningful, to model new business plans and to achieve deeper functionality through various simulations, thus creating optimal operating conditions.

A small improvement that can save one technician time in the

course of their work, when applied to hundreds of technicians, can lead to a significant improvement in productivity. The potential outcomes of an apparently insignificant and unimportant contribution are proportional to the size of the business and indicate a truly organic improvement. Considering the big picture, that modest action could end up being a crucial improvement step for the entire operational process.

Simply said, as the organizational structure and business grows, the lack of a system that takes advantage of the possibilities of technology and fully integrates all processes can lead to a dead end. The largest airlines need all team members to work with the same performance data and produce the same results in all processes in order to compete with their rivals in today's challenging market. In other words, the system has to run like clockwork. The key to success is being able to anticipate when a process will conclude once it has begun, regardless of all other factors.

You have expanded the fleet, so how will you fly it?

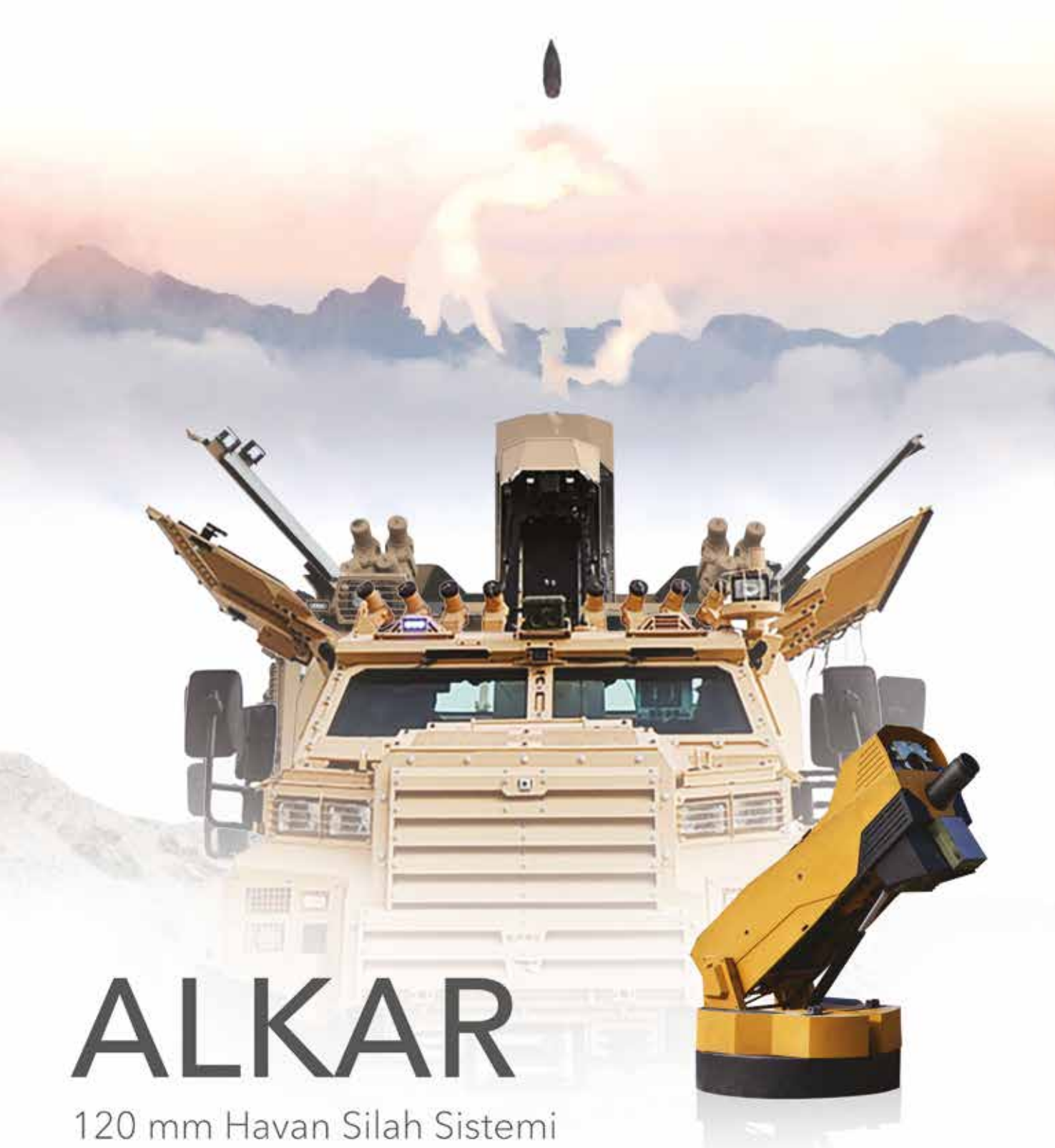
With digitalization becoming inevitable and the fight against global climate change, each airline is striving for a paperless workflow model in all its processes. The function of MRO software is becoming much more critical for all businesses adopting a paperless maintenance and repair approach where work can be monitored in real time.

MRO software and systems designed to manage a smaller fleet can cause serious problems, especially when adapted for businesses with over 300 aircraft. Excessive data entry into the system can bring all MRO operations to a halt. This means an increase in the number of AOG incidents, extended maintenance, delayed aircraft rollout from the hangar, disrupted operations and, of course, high stress level. Keep in mind that, airplane on the ground costs money. We don't want the airplane to stay on the ground even one second longer.

Considering the principle of scalability and healthy growth targets for the future, it is essential to take appropriate steps for MRO solutions. Expanding the fleet alone may not be sufficient. Much more is required to keep that fleet airworthy and to carry out maintenance processes without affecting operations.

To ensure that the MRO software and solutions consistently meet the desired performance criteria, it is critical to test them at various scales. It is of great importance that you don't overlook the stakeholders who will take the steps necessary for you to fly that fleet smoothly as you expand your fleet.

In conclusion, investments in MRO process management software are essential for an airline to develop and gain market share in today's aviation. With a well-structured MRO process, the business will save time, reduce costs, and significantly increase passenger satisfaction by maximizing the lifespan and performance of the aircraft. Naturally, this signals significant business gains



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Is the Most – Tracked Live Flight of All the Time a Harbinger of World War III?

by Muhammed Yılmaz

U.S. House Speaker Nancy Pelosi was the first American official to make the highest-level visit to Taiwan since 1997. Almost 3 million people tracked the 7-hour flight of the plane carrying Pelosi from Kuala Lumpur to Taipei. Pelosi's flight, which infuriated China and signaled growing American backing for Taiwan, became the most-tracked flight of all time on FlightRadar24.com. The intensity caused the app to crash from time to time. But were the effects of this flight on the aviation industry limited to the fact that it was the most-tracked live flight?

The plane carrying Nancy Pelosi departed from Kuala Lumpur, the capital of Malaysia, at 15:42 local time on August 2, despite the Chinese government's threat that such a visit "could have grave consequences" given the escalating tensions between the U.S. and China.

The U.S. Air Force's Boeing C-40C aircraft carrying Pelosi is in fact a Boeing 737 with special military conversion modifications.

The C-40C, with the flight number SPAR19, has been the most followed live flight on Flightradar24 since its take-off. The number of users following this historic live flight grew steadily over the course of the flight. 2.92 million users were actively following the seven-hour flight from Kuala Lumpur to Taipei at any given time. When the plane landed in Taipei, 708,000 people were watching those moments live at the same time. The heavy traffic on the FlightRadar24.com website and app caused some technical problems.

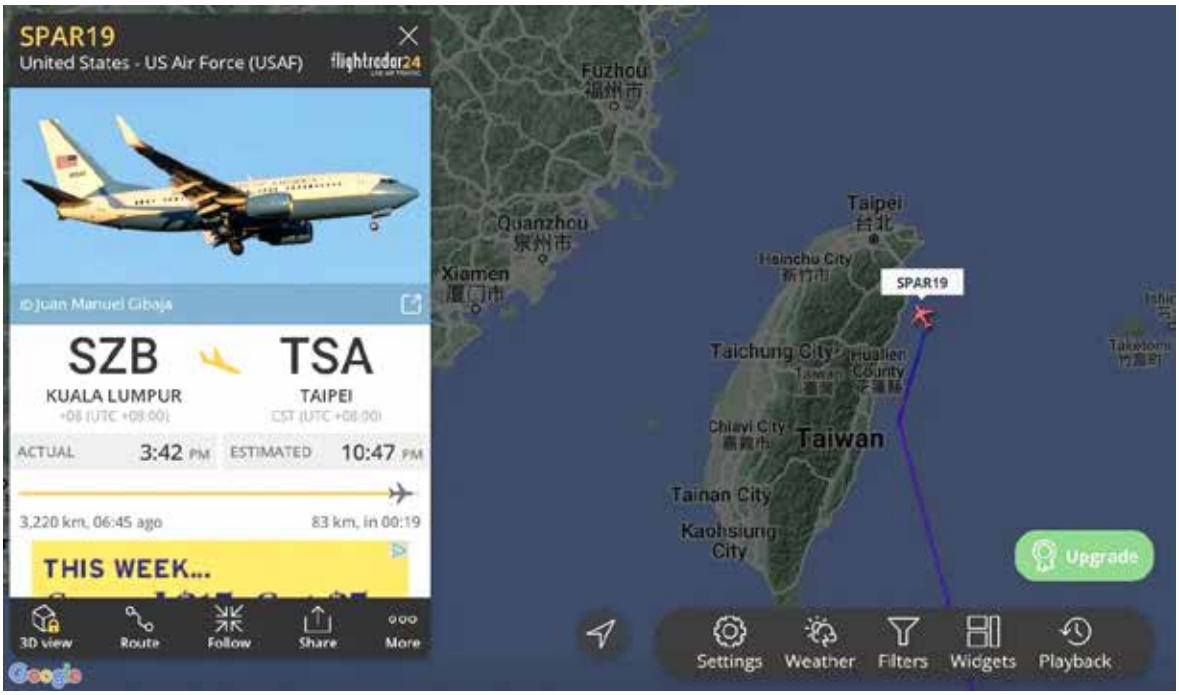
Why did SPAR19 Receive So Much Attention?

SPAR19 was a significant flight in world history. It was recorded as the highest U.S. visit to Taiwan in the last 25 years.

Although the visit to Taiwan was not part of Pelosi's official program for her Asia tour, it was confirmed a day before the visit that Pelosi would make a stop in Taiwan. Pelosi's visit to Taiwan was interpreted as a firm declaration to the world that the U.S. "will not abandon" the democratically governed island. Pelosi was welcomed by Taiwan President Tsai Ing-wen in a ceremony broadcast live on TV. Tsai Ing-wen thanked Pelosi for her visit and praised her commitment to democracy. He bestowed upon Pelosi Taiwan's highest civilian honor.

The visit of the U.S. House Speaker further heightened tensions between the United States and China. China condemned Pelosi's visit to Taiwan and threatened military action against the U.S., declaring that such visit was a threat to peace and stability in the Taiwan Strait.

On its flight from Kuala Lumpur to Taipei, the path of House Speaker Nancy Pelosi's plane to Taiwan was notable for how carefully it avoided the South China Sea in case of possible



interference by Chinese fighter jets. The plane approached Taiwan from the east.

During the flight, there were allegations that the Chinese military sent fighter jets flying over the Taiwan Strait. During and after the visit, footage of Chinese military drills at the border of Taiwan was shared. Taiwan's Ministry of Defense also announced that 21 Chinese warplanes entered Taiwan's air defense identification zone and then returned to China.

Immediately after Pelosi's visit, the Chinese military announced that a series of live-fire military drills at six locations around Taiwan would take place. It was also announced that flight and supply chain disruptions were expected due to the military drills. Airlines operating in the Asian region were warned to avoid flights in the Taiwan Strait region. Korean Air, Cathay Pacific and Xiamen Airlines took action to make necessary adjustments to their flights following the airspace restriction. There were no changes to the Istanbul-Taipei flights operated by Turkish Airlines.

How Will Pelosi's Visit Affect Global Aviation?

Taipei Taoyuan Airport was the 11th busiest airport in the world in terms of international traffic prior to the pandemic. However, with quarantine still in place for travelers entering the country, the number of flights landing in Taiwan keeps decreasing. This significantly minimizes the effect of the airspace closure.

Taiwan's airspace, which was prohibited to civilian flights during the exercise, is not very large. For instance, the recent closure of Russian airspace resulting from the conflict with Ukraine has had a significantly greater effect on the global aviation industry.

Numerous airlines are able to conduct many flights over longer routes and for considerably longer periods of time. This leads to higher fuel costs and environmental problems. The closure of Russian airspace causes Finnair's flights between Helsinki and Tokyo to take 4 hours longer than usual. Additionally, some airlines had to stop flying to some routes.

A longer-than-expected continuance of the Chinese military exercise in the Taiwan Strait could increase the extent of the impact on aviation, further disrupting the already slow post-pandemic recovery of the entire region. It might limit people's ability to travel freely. All eyes are now on the U.S. and China. If they continue to escalate the crisis and Chinese pressure on Taiwan increases, it could spark a new turmoil that could require other airspace closures. More civilian flights are impacted by airspace closures around the world. We need politicians to take steps to open closed airspace, not to close it...

MRO BEER 2022 Held in Istanbul

by Şebnem Akalın

Focused on commercial aviation maintenance, repair and overhaul, MRO Baltics and Eastern European Region (BEER), the 2022 edition of MRO BEER was held in Istanbul on June 15-16, 2022.

MRO BEER provides a forum for the commercial air transport MRO (maintenance, repair, and overhaul) industry to forge new partnerships and cement existing relationships. Hosted by the Aviation Week Network, the event is a premier gathering place for operators, airlines, OEMs (original equipment manufacturers), suppliers, and service providers, and offer a relaxed and informal networking conference for industry representatives from the Baltics and Eastern Europe region.

Organized in person for the first time since 2019, MRO BEER provides a world class venue for all those involved in the MRO sector to exchange ideas and best practices, share experiences, debate issues and challenges and gather knowledge.

More than 90 percent of the 400+ registered attendees are purchasing decision makers and influencers, including more than 100 representatives from airlines. The event hosted more than 30 service providers and representatives from 60+ countries.

The two-day event featured airline-led discussion sessions that address partnership and business opportunities, critical insight on regional issues, idea exchange and networking with industry peers, and expert opinion on key trends and forecast and revenue growth. The event also featured networking receptions hosted by LOT AMS and Turkish Technic.

The MRO BEER showcase provided attendees with the opportunity to source suppliers and get hands-on with the latest technologies, tools, and resources and translate the practical knowledge of the conference into real-life solutions.

The MRO BEER host sponsor is Turkish Technic. Premium sponsors are Boeing, LOT AMS, myTechnic, and Setna iO. FL Technics, OMS Aero Group, and Wencor are serving as sponsors. Turkish Airlines is the official carrier with additional support from Airlines for America, IATA, and TABA-AmCham.

Emirates Launches Humanitarian Airbridge to Pakistan, Offers Free Cargo Capacity for Flood-Relief Aid

Emirates SkyCargo sets up an airbridge between Dubai and Pakistan to offer cargo capacity free of charge on flights to transport relief aid to people grappling with the damage caused by the devastating floods.

From today, cargo capacity on all Emirates' passenger flights to Pakistan will be available to organisations based at the world's largest humanitarian hub, International Humanitarian City (IHC), to transport critical equipment and supplies, food and other emergency relief goods directly to the five airports – Karachi, Islamabad, Lahore, Peshawar, and Sialkot.

HH Sheikh Ahmed bin Saeed Al Maktoum, Emirates Group Chairman and Chief Executive said: "Emirates is deeply connected and committed to Pakistan. From our very first flight in 1985 to Karachi until today, we've steadily grown the mutually beneficial air links that facilitate business, tourism and trade between the UAE and Pakistan. HH Sheikh Mohammad bin Zayed al Nahyan, President of the UAE, and HH Sheikh Mohammed bin Rashid al Maktoum, UAE's Vice President and Prime Minister and Ruler of Dubai, have directed urgent aid to Pakistan, mobilising people and businesses across the UAE, and Emirates is ready to play our part."

Emirates operates 53 scheduled passenger flights per week to Pakistan, where recent heavy rainfall has caused catastrophic flash flooding across the country, tragically leaving over 1,100 people dead and millions homeless.

His Excellency Mohammed Ibrahim Al Shaibani, Chairman of the Supreme Committee for the Supervision of IHC, said: "Times of crisis are a true test of spirit and once again, we are working with Emirates to respond to a devastating humanitarian crisis, this time in Pakistan, where floods have caused unimaginable losses and damages. We are grateful for the long-standing support of Emirates to the IHC community and its honourable commitment to alleviate the suffering of the victims of these extraordinary floods. Together, we are proud to deliver this vital support to the people of Pakistan."

New A320neo Orders From **easyJet**

easyJet has confirmed a firm order for 56 A320neo Family aircraft following shareholder approval. The order is part of easyJet's fleet renewal and up-gauging, cost and sustainability enhancements to the business. The agreement includes an upsizing of 18 A320neo to the larger A321neo model.

Kenton Jarvis, CFO for easyJet, said: "We believe this order will support positive returns for the business and the delivery of our strategic objectives. The new aircraft are aligned with easyJet's sustainability strategy, with the adoption of the more efficient new technology aircraft being a core component of easyJet's path to net zero emissions. Alongside this, the new aircraft are significantly quieter, with half the noise footprint of the older aircraft they are replacing."

"easyJet has democratised flying for millions of travellers and we are delighted this latest agreement for 56 A320neo Family aircraft not only future proofs its growth as traffic rebounds, but also lays the foundations for its sustainability journey", said Christian Scherer, Chief Commercial Officer and Head of Airbus International.

easyJet currently operates a fleet of over 300 A320 Family including the A319, A320ceo, A320neo and A321neo. easyJet serves over 130 European airports in some 31 countries operating over 1,000 routes.

The A320neo Family incorporates the very latest technologies including new generation engines and Sharklets, which together deliver at least 20 percent fuel saving. With more than 8,100 orders from more than 130 customers, the A320neo Family is the world's most popular aircraft.

Collins Aerospace to Develop Unmanned Flight Ecosystem in Ireland

Collins Aerospace has received a three-year funding award from the European Climate Infrastructure and Environment Executive Agency (EU CINEA) and SESAR 3 Joint Undertaking (JU) to develop an unmanned flight ecosystem in Ireland by delivering a Digital Sky Demonstrator on U-Space.

In conjunction with several Irish aviation companies, Collins Aerospace will work to build an end-to-end ecosystem at a vertiport in Shannon that supports safe operations of unmanned flight. The new ecosystem will leverage a variety of products from across the Collins Aerospace portfolios to help both conventional and unmanned aircraft safely integrate their operations.

The ecosystem's engineering work will be conducted in Ireland and France in conjunction with Future Mobility Campus Ireland, Avtrain, Irish Aviation Authority, Shannon Airport, Manna Drone Delivery and Deep Blue. These companies from France, Ireland and Italy have come together with Collins as the ÉALÚ-AER (Irish for Escape-Air, Enhanced Automation for U-Space/ATM integration) consortium to support unmanned aviation and U-Space capabilities to build the future of air-mobility. Those capabilities then will be delivered through SESAR 3 and further collaborative efforts in Europe.

"This award will help us work with our partners to create new opportunities in Ireland to support safe and connected unmanned flight," said Boe Svatek, Unmanned Systems Value Stream leader for Collins Aerospace. "As a founding member of the SESAR 3 JU, we can actively support its quest to modernize European air traffic management."

The SESAR 3 Joint Undertaking is an institutionalized European partnership between private and public sector partners set up to accelerate through research and innovation the delivery of the Digital European Sky.

Boeing Delivers Two Commercial Satellites to SES for ULA Launch

Boeing has delivered two satellites for leading global content connectivity service provider SES to their launch site in Cape Canaveral, Florida, ahead of the upcoming launch of the twin spacecraft on a United Launch Alliance (ULA) Atlas V rocket.

"SES-20 and SES-21 are the first commercial satellites we've delivered since the start of the global pandemic," said Ryan Reid, president of Boeing Satellite Systems International. "It was challenging, but we found ways to be responsive to emerging customer demands and timelines. As a result, we went from contract signing to delivery of two satellites in little over two years."

The pair of all-electric 702SP (small platform) satellites are equipped with C-band payloads that will operate over the continental United States and help usher in the Federal Communications Commission's 5G Fast initiative, which requires satellite operators such as SES to transition services from the lower 300 MHz to the upper 200 MHz of C-band spectrum for 5G mobile services.

The new Boeing satellites are designed and intended to enable SES's continued delivery of its C-band broadcast and radio services as well as critical data networks services in the coming months. SES-20 and SES-21 are the 14th and 15th satellites built by Boeing for SES.

"The delivery of SES-20 and SES-21 marks yet another big milestone for our C-band spectrum clearing project in the U.S. Thanks to our trusted and long-term partner Boeing, we remain on track to migrate our customers to these new satellites so that we can continue to provide services seamlessly without disruptions," said Ruy Pinto, Chief Technology Officer at SES.

SES-20 and SES-21 went through rigorous environmental testing at Boeing's satellite factory in El Segundo, California, including vibration, thermal vacuum, electromagnetic interference and acoustic testing. After arriving at their launch site in Cape Canaveral, Florida, the satellites will be encapsulated in their payload fairing for launch. They've already been integrated into a dual-launch configuration platform built by Boeing.

"This will be our third dual-launch configuration of 702SPs, so it's a proven way to get more to orbit, and faster, for our customers," said Jim Peterka, Boeing's SES-20 and SES-21 program manager.

Boeing has delivered more than 300 satellites to commercial and government customers globally, and continues to build adaptable satellites to meet changing business cases and fulfill even the most demanding missions.

American Airlines Announces Agreement to Purchase Boom Supersonic Overture Aircraft, Places Deposit on 20 Overtures

American Airlines and Boom Supersonic announced the airline's agreement to purchase up to 20 Overture aircraft, with an option for an additional 40 on August 16 2022. American has paid a non-refundable deposit on the initial 20 aircraft. Overture is expected to carry passengers at twice the speed of today's fastest commercial aircraft.

Boom Supersonic's Overture would introduce an important new speed advantage to American's fleet, which is currently the simplest, youngest and most efficient among U.S. network carriers. Under the terms of the agreement, Boom must meet industry-standard operating, performance and safety requirements as well as American's other customary conditions before delivery of any Overtures.

"Looking to the future, supersonic travel will be an important part of our ability to deliver for our customers," said Derek Kerr, American's Chief Financial Officer. "We are excited about how Boom will shape the future of travel both for our company and our customers."

Overture is being designed to carry 65 to 80 passengers at Mach 1.7 over water — or twice the speed of today's fastest commercial aircraft — with a range of 4,250 nautical miles. Optimized for speed, safety and sustainability, Overture is also being designed to fly more than 600 routes around the world in as little as half the time. Flying from Miami to London in just under five hours and Los Angeles to Honolulu in three hours are among the many possibilities.

"We are proud to share our vision of a more connected and sustainable world with American Airlines," said Blake Scholl, Founder and CEO of Boom. "We believe Overture can help American deepen its competitive advantage on network, loyalty and overall airline preference through the paradigm-changing benefits of cutting travel times in half."

In July, Boom revealed the final production design of Overture, which is slated to roll out in 2025 and carry its first passengers by 2029.

Welcome on Board; **Southwind Airlines**

Southwind Airlines headquartered in Antalya,started their operations in the beginning of August with 4 aircrafts, 2 wide body Airbus A330 and 2 narrow body Airbus A321 in the first stage.

Stating that they have undertaken an important initiative on behalf of the Turkish aviation industry, Southwind Airlines Chairman of the Board Mustafa Tolga Demirci said, "We established Southwind Airlines by combining our vision and mission with our global, young and dynamic perspective in order to take an important position in global civil aviation on behalf of our country.

Our goal is; To provide active service to carry our flag in the skies on the lines of Germany, England, France, Russia, Scandinavian countries and Israel. We will focus primarily on charter flights to contribute to Turkish tourism by cooperating with tour operators in these countries and evaluating today's dynamics. Thus, we aim to increase the number of tourists who will visit our country. In addition, by reviewing our connections in various countries before and after the season, we will carry out flights between the Middle East and Saudi Arabia and Turkey on the hajj and umrah routes."

Airbus and CFM International Launch a Flight Test Demonstrator for Advanced Open Fan Architecture

Airbus and CFM International, a 50/50 joint company between GE and Safran Aircraft Engines, are collaborating to flight test CFM's cutting-edge open fan engine architecture.

The Flight Test Demonstrator aims to mature and accelerate the development of advanced propulsion technologies, as part of CFM's Revolutionary Innovation for Sustainable Engine (RISE) demonstration programme, on board an Airbus A380. The flight test campaign will be performed in the second half of this decade from the Airbus Flight Test facility in Toulouse, France. Ahead of the A380 test flights, CFM will perform engine ground tests, along with flight test validation at GE Aviation's Flight Test Operations centre in Victorville, CA, USA.

The flight test program will achieve several objectives that could contribute to future engine and aircraft efficiency improvements, including: enhanced understanding of engine/wing integration and aerodynamic performance as well as propulsive system efficiency gains; validating performance benefits, including better fuel efficiency that would provide a 20%* reduction in CO2 emissions compared to today's most efficient engines; evaluating acoustic models; and ensuring compatibility with 100% Sustainable Aviation Fuels (SAF).

"New propulsion technologies will play an important role in achieving aviation's net-zero objectives, along with new aircraft designs and sustainable energy sources," said Sabine Klauke, Airbus Chief Technical Officer. "By evaluating, maturing and validating open fan engine architecture using a dedicated flight test demonstrator, we are collaboratively making yet another significant contribution to the advancement of technology bricks that will enable us to reach our industry-wide decarbonisation targets."

"The CFM RISE Program is all about pushing the technology envelope, redefining the art of the possible, and helping to achieve more sustainable long-term growth for our industry," said Gaël Méheust, President and CEO of CFM International. "CFM, its parent companies, and Airbus all share the same vision and commitment for the future; the open fan flight test demonstration programme is an exciting next step toward achieving the industry's net-zero goals."

This collaboration with CFM highlights the diversity of Airbus' technology demonstrator portfolio and complements the work being carried out to evaluate concepts and mature technologies for Airbus' zero-emission ambition. In February 2022, the two companies announced a joint flight test program to validate hydrogen propulsion capability.

Airbus and CFM, along with parent companies GE and Safran, share the ambition of fulfilling the promise they made in signing the Air Transport Action Group goal in October 2021 to achieve aviation industry net-zero carbon emissions by 2050 by developing and testing the technology necessary to make zero emissions aircraft a reality within the ambitious timeline defined.

Multi-Billion Dollar Investment to Elevate Customer Experience

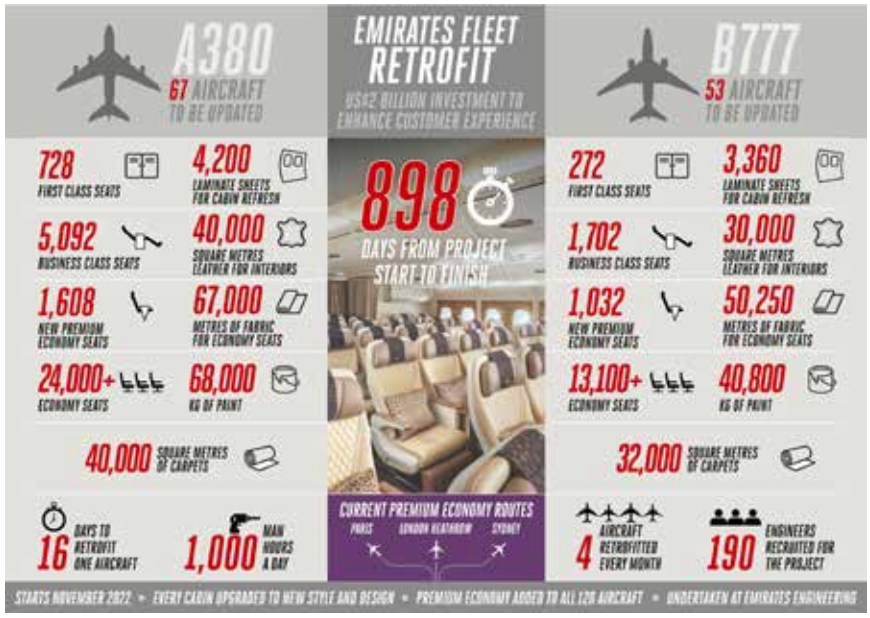
Emirates has kick-started its plans to upgrade the entire interior cabins of 120 Airbus A380 and Boeing 777 aircraft – two of the largest commercial aircraft types in service today.

This project, representing a multi-billion dollar investment to ensure Emirates' customers "fly better" for the coming years, officially commences in November and is managed entirely by Emirates' Engineering team.

The target is to completely retrofit four Emirates aircraft from start to finish every month, continuously for over 2 years. Once the 67 earmarked A380s are refreshed and back in service, 53 777s will undergo their facelift. This will see nearly 4,000 brand new Premium Economy seats installed, 728 First Class suites refurbished and over 5,000 Business Class seats upgraded to a new style and design when the project is complete in April 2025.

In addition, carpets and stairs will be upgraded, and cabin interior panels refreshed with new tones and design motifs including the iconic ghaf trees which are native to the UAE.

No other airline has handled a retrofit of this magnitude in-house, and there's no blueprint for such an undertaking. Therefore Emirates Engineering teams have been planning and testing extensively, to establish and streamline processes, and identify and address any possible snags.



Trials began on an A380 in July, where experienced engineers literally took each cabin apart piece-by-piece and logged every step. From removing seats and panelling to bolts and screws, every action was tested, timed and mapped out. Potential impediments to completing the installation of Emirates' new Premium Economy Class or the retrofit of the remaining three cabins in just 16 days were flagged and documented for expert teams to review and address.

As part of the programme, new purpose-built workshops will be set up at Emirates Engineering to repaint, re-trim and re-upholster Business and Economy Class seats with new covers and cushioning. First Class suites will be carefully disassembled and sent to a specialised company to replace the leather, arm rests and other materials.

From the trials, Engineers discovered several unexpected solutions for instance: that existing food catering trucks could be easily repurposed to move parts destined for refurbishment from the aircraft to the workshop for their refresh, as these vehicles had doors of the right width and offer sufficient space.

Until the retrofit programme starts in earnest in November, a cross-disciplinary team has been assembled to regularly review the planning process, address any issues, and track updates on various aspects of the project such as procurement, staffing, and training.

Emirates' new Premium Economy cabin class, which offers luxurious seats, more legroom, and a service to rival many airlines' business offering, is currently available to Emirates customers travelling on popular A380 routes to London, Paris, Sydney. More customers will be able to experience the airline's new Premium Economy cabins starting from year end, as the retrofit programme picks up momentum.

Honeywell Anthem, the New Modular Flight Deck

The new modular flight deck that lets pilots customize their displays based on mission and phase of flight. Each flight crew and mission are different, and pilots like to set up their cockpits in ways that are optimized for them and their needs. Present-day avionics systems expect pilots to conform to their limited-design layouts, forcing them to think the way engineers think they should. The future must be better.

"With Honeywell Anthem, pilots can quickly and easily position the primary flight display, navigation maps, charts, radio controls and other information and tools anywhere they want on any display," said Jason Bialek, Product Line Director for Honeywell Anthem.

"The most relevant information is always right at their fingertips when they need it, which aligns with our promise to make Honeywell Anthem easy to use, easy to learn, and fun to fly," he added.

The world's most modular and customizable flight deck appeals to aircraft manufacturers, too. "We have had a lot of great feedback from the OEMs," Bialek said. "With Honeywell Anthem, they can design a cockpit that is both functional and aesthetically pleasing, regardless of the aircraft type or size. Honeywell Anthem can be configured for small general aviation aircraft, helicopters, urban air mobility (UAM) vehicles, high-end business jets, large passenger aircraft or anything in between."

Honeywell Anthem uses intuitive technology that is familiar to pilots who use Electronic Flight Bag apps and smartphones every day.

Unlike traditional interfaces based on text-entry or basic graphical menus, Honeywell Anthem uses visualization and modern graphical and gesture-based methods, making the flight deck much easier to use. For example, pilots can modify their flight plan simply by clicking on a new waypoint on the map display, or they can establish a hold on certain inbound courses with specific leg distances via touch instead of the less intuitive, more traditional, text-based menu methods. If pilots want to enter everything via menu pull downs and text entry, they can do that, too. Generally, once pilots see how fast and easy the newer methods are they stop doing it the traditional way."

As the first flight deck to feature always-on cloud connectivity, Honeywell Anthem enables innovations like the Connected Mission Manager, which anticipates what major tasks are next like the next logical radio frequency to tune, or the appropriate chart to display, along with which normal checklist to display and complete. Honeywell Anthem minimizes the number of touches or clicks required to get key tasks done by anticipating the pilot's needs and providing a simplified time-based view, which is much easier to use and interpret than complicated waypoint lists seen in traditional cockpits. If a less experienced pilot is behind the airplane and fails to complete the After Takeoff or Climb checklists those icons remain on the timeline and present an obvious next "to do" item for the pilot, helping the pilot prevent errors from becoming more serious incidents.

"Always-on connectivity, Connected Mission Manager, Smart Scratch Pad and other unique features reduce complexity and improve the flying experience for pilots of all experience levels," Bialek said.

TAV Technologies' Track Record and Experience Includes Several of the Largest Airports in Europe and the Middle East

Air Marakanda, operator of the newly modernized Samarkand International Airport ("SKD"), announces the completion of the first phase of work under a contract with TAV Technologies to fully digitalize the airport's operations. TAV Technologies is a subsidiary of TAV Airports Holding, which is a member of Groupe ADP – the international airport operator.

Signatories and company representatives attended a signing ceremony indicating the next phase of the work at the CIP lounge of Samarkand International Airport's new terminal. The company officials included Franck Mereyde, Chairman of Executive Committee & Executive of the Board of Directors of TAV Airports; M. Kerem Ozturk, General Manager of TAV Technologies; and Gairat Neimatov, CEO of Air Marakanda.

Modernization works incorporate TAV Technologies' software and hardware solutions and are being implemented across all levels of the airport's business.

Gairat Neimatov, CEO of Air Marakanda, said: "We are delighted to take the final step to fully digitalize Samarkand International Airport's operations, which will provide an unprecedented level of service in Uzbekistan's aviation industry.

"The new phase of work follows the recent opening of the Airport's new terminal. With its modern infrastructure, streamlined processes, and technology-enabled service offering, Samarkand International Airport is a new standard for travel to Uzbekistan's most famous historic city. We are grateful for TAV Technologies' support with its market-leading expertise in airport management technology solutions."

M. Kerem Öztürk, General Manager of TAV Technologies, commented: "We are glad to be the technology partner of Samarkand International Airport in such a significant project that aims at full digitalization of airport and passenger operations. The product implementations will both directly improve passenger experience and enhance operational efficiency."

The exciting digitalization progress follows the newly expanded and redesigned Samarkand International Airport, having opened the doors of its modern terminal building in March 2022.

The airport will positively impact Uzbekistan's economic growth and create many jobs in the region. The impact on regional development is closely connected to the increased attraction of international tourists. As well as historic Silk Road city Samarkand, many popular Uzbekistan tourist sites can be easily accessed by travelers entering via the expanded airport. To cope with this new demand, the airport has tripled its passenger capacity post-modernization. Air Marakanda is also actively pursuing new route plans and cooperation with airlines to increase the number of available destinations.

TAV Technologies' service portfolio includes major international hubs in over 15 countries such as Turkey, Qatar, Saudi Arabia, Georgia and Kazakhstan.

Advanced technology solutions implemented will support seamless airport experience and operation, and include: Modern check-in desks and boarding gates, Air stairs, Passport control booths, E-gates for departing passengers; and Passport control booths to provide easy passenger access.

TAV Technologies' software solutions employ AI-based algorithms to increase productivity and performance of these new airport resources.

TAV Technologies' Total Airport Management Suite (TAMS) will support SKD to manage land-side and air-side processes aligned with existing systems. The TAMS platform will control each step of airport operations, covering flight management, resource management, SLOT management, flight information display, and ground handling management. Moreover, TAV Technologies Passenger Flow Management module eases the passenger journey, whilst its Commercial Management module improves cost management and invoice tracking.

Other innovative systems included in Air Marakanda's partnership with TAV Technologies are Common Use Passenger Processing System (CUPPS) and Common Use Self Service (CUSS) solutions to facilitate passenger transactions.

The IATA certified CUPPS solution eliminates the need for various check-in desks for each airline. CUSS will positively transform the passenger experience via self-service opportunities, for multiple airlines, at shared kiosks, without the need on-the-ground employees.

JETMS Completions Receives FAA Approval for Embraer 505 Seat Maintenance and Modification

JETMS Completions an established and respected aircraft interior, exterior, and completions company, subsidiary of JETMS, and a family member of Avia Solutions Group, has received the U.S. Federal Aviation Administration (FAA) approval for the Embraer 505 Phenom 300 maintenance and modification.

JETMS Completions now holds capabilities for all three supplement type certificates (STC) from FAA, European Aviation Safety Agency (EASA), and the UK Civil Aviation Agency (CAA).

The newly approved seat modifications for Phenom 300 include headrest, backrest, seat base foam and cover replacements, arm cap renewals and refurbishments, seat base panel refurbishments, and painted surfaces refurbishments.

This also couples with JETMS approved repairs for seat pan crack repairs and seat base panel attachment bracket replacements.

"After 18 months of hard work and application submissions to EASA, CAA and FAA, we have finally achieved and received the FAA STC validation for the Phenom 300 type light business jet seat modifications," said Kevin Hann CEng FRAeS, Head of Design at JETMS Completions. "This is a very big step for us and we are extremely happy to be able to proceed with interior completions for the Phenom 300 jets."

The overall seat maintenance and modifications for the Embraer 505 Phenom 300 now cover the replacement of headrest, seat base, and seat back foams and leather or fabric covers, armrest assembly to include plastic moulding, foam and leather or fabric covers, all metal parts to be refinished as required, lower shrouds and back panel to be covered in leather or to customer requirements, seatbelts replaces or re-webbed, with change in the plated finish, if required, and EASA approved processes for metal structure repairs. Additionally, modifications for the lavatory seat and head strike pad are available, to match the new seat decors.

Transavia Airlines Starts Flights to IGA Istanbul Airport

Transavia Airlines, owned by the Air France-KLM partnership, starts direct flights from Paris Orly Airport 4 days a week and from Lyon Saint Exupery Airport to IGA Istanbul Airport 2 days a week.

IGA Istanbul Airport continues to host new airlines. Recently, IGA Istanbul Airport, which started to serve the airline companies FlyOne, Fly Dubai, Air Arabia, HiSky, Skyup, Pobeda Airlines, Azimuth Airlines, UT Air Aviation, Ural Airlines, Nordwind Pegas/Ikar, and now Transavia Airlines has joined.

According to this agreement; Transavia Airlines will start direct flights from the end of October 2022.

Qatar Airways Selects Inmarsat as Inflight Broadband Provider

Inmarsat has been selected as the inflight connectivity (IFC) provider for Qatar Airways' Boeing 787-9 and 737-10 fleet, marking an expansion of its partnership with the Doha-based national carrier.

GX Aviation, Inmarsat's high-speed global inflight broadband service, has been rolled out successfully on other aircraft within the Qatar Airways fleet and, under the new agreement, it has already been activated on the first seven Boeing 787-9s.

Qatar Airways provides one hour of free access to its 'Super Wi-Fi', powered by GX Aviation, with the option to purchase full access for the remainder of each flight. The seamless and reliable broadband will be available across the airline's aircraft and flight routes, allowing passengers to stay connected to family and friends, browse the internet, stream video and audio, enjoy social media, shop online and more.

The announcement comes as Qatar prepares to host the 2022 FIFA World Cup in November, with a huge influx of tourists set to travel by air into Doha's Hamad International Airport. With a fully connected fleet, Qatar Airways passengers will be able to stay up-to-date with match scores, watch video replays and even livestream games from 30,000 feet, enhancing their onboard experience. Inmarsat is committed to meeting the bandwidth requirements generated by this forthcoming event and, alongside its partner Safran Passenger Innovations, installed and activated GX Aviation on the first Qatar Airways 787-9 aircraft in less than five months from contract award.

His Excellency Mr. Akbar Al Baker, Qatar Airways Group Chief Executive, said "Over the years, Qatar Airways has pioneered a range of game-changing innovations as part of our exceptional five-star passenger experience. This, in turn, has resulted in the international air transport rating organisation Skytrax naming us 'Airline of the Year' an unprecedented six times. The launch of our Super Wi-Fi, powered by Inmarsat's GX Aviation, is a prime example. We were amongst the first airlines in the world to adopt this technology and remain the largest operator of GX-equipped aircraft in the Middle East and North Africa.

"Making Super Wi-Fi available across our fleet is an important milestone at a time when staying connected with loved ones and friends has never been more important for passengers. As the 2022 FIFA World Cup approaches, Inmarsat is the perfect partner we need to ensure Qatar Airways can offer unrivalled inflight connectivity to each and every passenger, continuing our track record of service excellence."

Niels Steenstrup, President of Inmarsat Aviation, said "It has been more than four years since Qatar Airways became the launch customer for Inmarsat's GX Aviation in the Middle East and North Africa and, during that time, millions of passengers have enjoyed access to its Super Wi-Fi service. We are delighted to expand our important partnership even further.

"Qatar Airways' decision to select GX Aviation is testament to its continued satisfaction with our global, consistent, and reliable connectivity, as well as the positive feedback it has received from passengers. It has been a pleasure working with the airline on this rollout."

GX Aviation is powered by Global Xpress (GX), the world's first and only globally available broadband network, offering superior inflight connectivity on par with mobile Wi-Fi on the ground. The GX network currently consists of five Ka-band satellites and will be further enhanced with the addition of seven more satellites as part of Inmarsat's fully-funded technology roadmap. This includes two Inmarsat-6s, the most sophisticated commercial communications satellites ever built, both of which are scheduled to enter service next year and will be followed by three additional satellites in geostationary orbit – adding speed, capacity and resilience – and two in highly elliptical orbit, enabling the world's only commercial mobile broadband service for aircraft flying in higher elevations and across the Arctic.

The GX network will also play a crucial role in the ongoing growth of Inmarsat's unique ORCHESTRA dynamic mesh network, which will bring existing geosynchronous (GEO) satellites together with low earth orbit satellites (LEO) and terrestrial 5G to form an integrated, high-performance solution, unmatched by any existing or planned competitor offering.

The 15th IATA World Cargo Symposium (WCS) Taking Place in London from 27 – 29 September 2022

Worls Cargo Symposium will focus on building resilience to further strengthen air cargo's post-pandemic prospects.

COVID-19 tested the resilience of the air cargo business. Despite challenging conditions, air cargo delivered critical medical supplies and vaccines across the globe and kept international supply chains open.

For many airlines, as passenger numbers plummeted, air cargo was a crucial source of revenue. In 2021, air cargo revenues reached a record $204 billion, which was more than double as compared to

2019 and accounted for some 40% of total airline revenues in 2021. In 2022 demand is expected to exceed pre-crisis (2019) levels by 13% and generate $169 billion in revenue. But the business environment is challenging. Inflation topped 10.3% in the OECD in June. The World Bank expects energy prices to soar 50% compared with 2021. And global growth is slowing. There is no way to sugar coat the bitter economic and political realities we face.

But the desire to move goods is strong. And air cargo is resilient in a crisis. Our businesses were challenged and tested during the pandemic and we emerged stronger.

The challenge now is to retain the momentum achieved even as economic and geopolitical uncertainty grows. This is the theme of this year's WCS. Under the banner of "Maintaining momentum, building resilience" the event focuses on how the industry can capitalize on this resilience to build an even more promising and sustainable future.

Sustainability, digitalization, and safety will be at the forefront of conference discussions, as will one of the biggest challenges facing us today, the severe shortage of ground handling personnel. Identifying new ways to attract and retain talent will be priority.

The symposium will feature an Economic & Market Insights presentation from IATA's Chief Economist Marie Owens Thomsen and from Marco Bloemen Managing Director from Seabury Cargo and a keynote address from David Shepherd, Managing Director, IAG Cargo and many more.

The WCS program will also be complemented by a series of workshops, including a first-time workshop focusing on improving the efficiency of the billing settlements between airlines and freight forwarders using CASS (the Cargo Accounts Settlement System) and a workshop focused on improving performance on key market segments using IATA CEIV programs (CEIV Pharma, CEIV Live Animals, CEIV Lithium Batteries and CEIV Fresh).

The Future Air Cargo Executives Summit (FACES), which is a forum for future air cargo executives to network and share insights on career development, will also be held on the sidelines of the conference.

Millions of Turkish Airlines Guests Above the Clouds

Turkish Airlines carried 6.9 million passengers in June. Announcing the passenger and cargo traffic results in June, Turkish Airlines carried a total of 6.9 million passengers in this month, increasing its supplied capacity by 17.2 percent compared to 2019, and reached an occupancy rate of 83.6 percent.

Expressing his views on the company's June figures, Turkish Airlines Chairman of the Board and the Executive Committee Prof. Dr. Ahmet Bolat; “As the Turkish Airlines family, we knew that a summer period with high passenger demand awaited us and we were ready for it. While we are performing better day by day, we are achieving even better results than the optimistic forecasts of international authorities for the post-pandemic period. This success is possible thanks to the privileged travel experience we offer with Turkish hospitality and the efforts of our colleagues who reflect their excitement and energy to the sky. I would like to thank both our Turkish Airlines family and our 6.9 million guests who met us above the clouds.”

Pegasus Receives "Risk Management and Resilience" Award From EuroFinance

Pegasus Receives "Risk Management and Resilience" Award From EuroFinance.

Barbaros Kubatoğlu, chief financial officer of Pegasus Airlines, said: "Aviation is one of the sectors most affected by the pandemic. At the height of the pandemic, there were months when we had to halt all our flights due to travel restrictions. During this challenging period, as we managed our treasury operations, our focus areas were the protection of our equity and the effective management of our cash flow in case the pandemic continued. We believe that we successfully navigated through this period by managing our treasury position on a day-to-day basis. We continually updated our hedging policy, especially by closely monitoring brent oil prices. In order to keep our cash position under control and meet our funding needs, we used loans, issued USD-denominated Eurobonds and TL-denominated bonds." And continued: "All of this was accomplished in one year and with our balance sheet results nearing 2019 year-end figures, we are now an airline that came out of the pandemic stronger. This significant award that we receive from EuroFinance is a great source of pride for us.”

IATA WORLD CARGO SYMPOSIUM

London, England
27 - 29 September 2022

MAINTAINING MOMENTUM, BUILDING RESILIENCE.

The count-down is on, there is still time to register for the upcoming IATA World Cargo Symposium, taking place at the Excel Center, London, from 27 to 29 September 2022.

"Air cargo proved its resilience during the pandemic, and it is emerging stronger. The challenge now is to retain the momentum achieved in digitalization and other customer-centric efficiency gains. There is good reason to be optimistic. Air cargo is maintaining its strength even as economic and geo-political uncertainty grows. And this year's WCS will focus on how the industry can capitalize on this resilience to build an even more promising and sustainable future for global air cargo."

Brendan Sullivan, IATA's Global Head of Cargo

Some keynote speakers and panellists to note include:

- **Brendan Sullivan** - Global Head of Cargo - IATA
- **Ashok Rajan - Sr Vice President** - Global Head - Cargo & Logistics Solutions at IBS Software
- **Robert Kunen** - Vice President Distribution & Customer Service, Air France KLM Martinair Cargo
- **Steve Townes** - CEO ACL Airshop
- **Magali Beauregard** - Chief Commercial Officer, CargoAi
- **Susanne Bouma** - Head of Programs & Partnerships, Renewable Aviation, Neste
- **James Golding** - Head of Cargo, Heathrow Airport
- **Huw Phillips** - VP, Global Head of Real Estate Excellence & Sustainability, DHL
- **Stan Martens** - Chief, Aviation Security Policy, Transport Canada

Conference will cover subjects including:

Economic outlook: Maintaining momentum; building resilience

Sustainability in air cargo: Customer demand & industry options

The sustainable cargo facility of the future

Attracting & retaining talent in the air cargo industry

The role and opportunity for IT platforms

REGISTER NOW ON IATA.ORG/EVENTS

For more details please contact: iatawcs@gl-events.com

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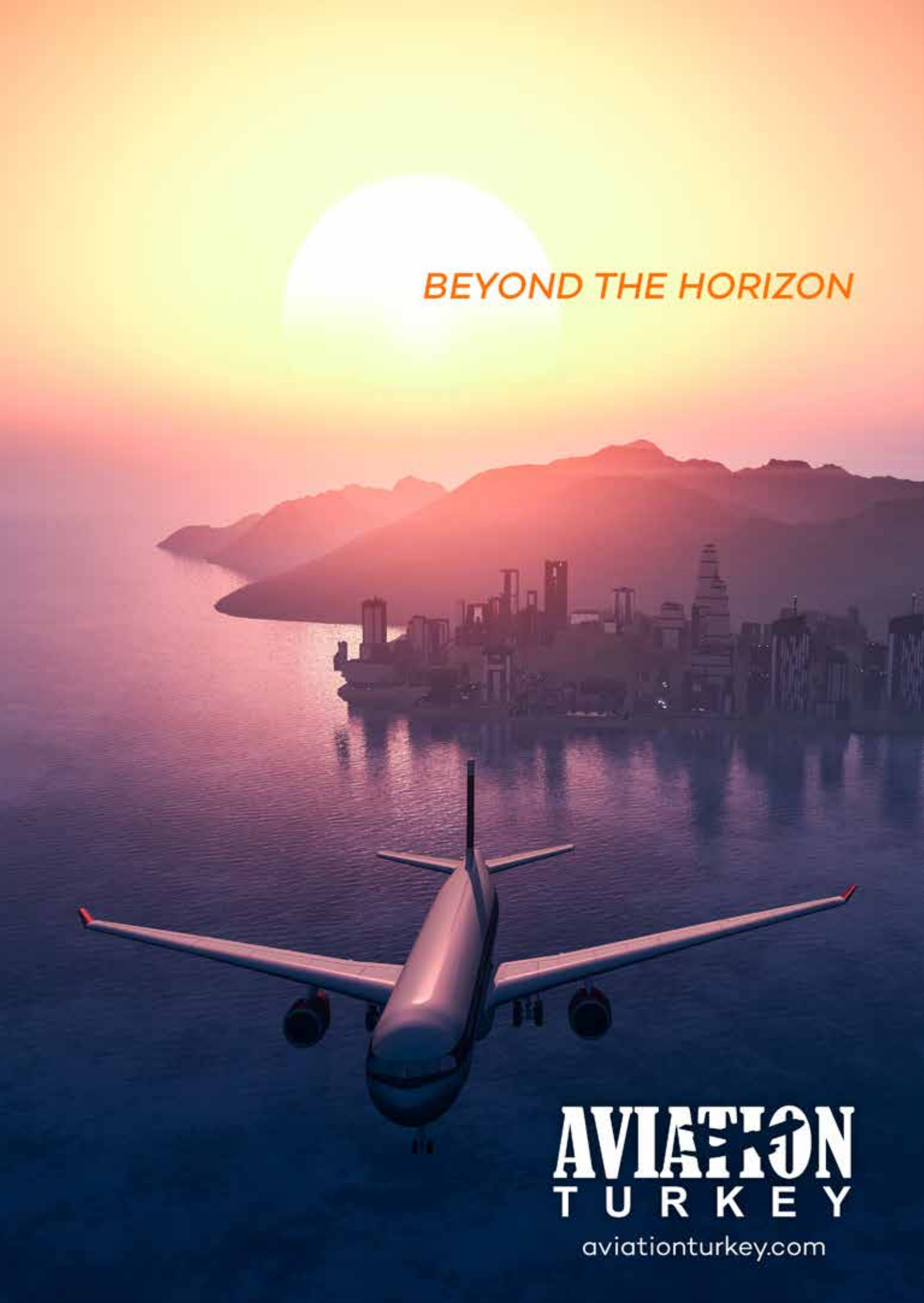
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