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Yesterday's Dreams Shape the Future

"Yesterday, the sunlight trickled through the clouds ...

Today, as we ascend, it shines on our faces with all of its brilliance...

Tomorrow, we will soar together into the future..."

With Aviation Turkey Magazine, the dream we had yesterday is radiant with a new beginning today, and we all embrace the future with open arms and ascend together. Our journey that we started with Defense Turkey Magazine 14 years ago gains momentum today with our new publication Aviation Turkey Magazine.

United with our deep sectoral knowledge and the experience that we have acquired over the years, I think our greatest success has been to become a harmonious team with the stakeholders in the sector. This perspective and approach encouraged us to be the voice of the Turkish aviation industry on global platforms and at the same time to be a publication providing a two-way information flow by following developments regarding the global aviation industry. For this reason, our magazine will

be published in English and will be regarded by both Turkish and global aviation professionals.

As a media institution active especially in the field of the aviation industry we will also present our readers with advancing technological developments by transferring our knowledge, experience and network to our new magazine Aviation Turkey.

We will launch the first issue of our magazine at the Paris Airshow, as we were proudly selected as the only media partner from Turkey at this prestigious international aviation event. Aviation Turkey will continue to participate in international fairs with the Dubai Airshow after the Paris Airshow in 2019 and in other reputable aviation events in the coming period.

I would like to take this opportunity to thank our Managing Editor Cem

Akalın, who is my valued partner and beloved brother, with his deep knowledge, meticulous approach, respect for his work and the kindness he shows to everyone on the team; Şebnem Akalın, our International Relations Director, who has devoted herself to aviation as an amateur for many years evolving into a true professional with her previous experience of cooperation with global companies; Yeşim Bilginoğlu Yörük, our Administrative Director, who has been managing all kinds of administrative services for our publications for years, having a deep sense of belonging and does her job perfectly and delicately; Chief Advisor to the Editorial Board Can Erel, who encouraged us for this publication, with his years of experience and has set his heart on aviation; our Editor Muhammed Yılmaz, who is

very much a favorite in the aviation sector despite his young age; our other Editors İbrahim Sünnetçi and Saffet Uyanık, who are "gurus" in aviation technologies and work devotedly with dedication; our Designers Gülsemin Bolat and Görkem Elmas, who work day and night without a single complaint even in the dead of night while preparing a new design version;





our Photographer Sinan Kutsal, who does wonders even in small spaces and perspectives; our translator Tanyel Akman, who is painstaking, reliable and will take the time to research hours for a single technical term; Mona Melleberg Yükseltürk, our creative editing professional and proofreader who ensures the exceptional quality of our English content;our

Advisory Board Members Ferhan Kuyucak Şengür, Lale Selamoğlu Kaplan and Aslıhan Aydemir, who are very precious airwomen and I have felt as a team member among them from day one, and Serdar Çora, Murat Keleş and Renan Gökyay who have devoted and made great efforts in aviation.

During the first days of

our journey, one of my first visits was made to Güliz Öztürk, the Chief Commercial Officer of Pegasus Airlines. After discussing our projects, I felt that she appreciated my enthusiasm, she displayed empathy and paused for a moment, smiled at me, and looked into my eyes with sincerity and said, "Welcome Aboard". This left an impression on me, as the

way I felt at that moment is really indescribable.

"Welcome Everyone, One and All"

Ayşe EVERS
Editor in Chief

A handwritten signature in black ink, appearing to read 'Ayşe EVERS'.

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Turkey's Local and International Civil Aviation Potential Soars The Future is in the Skies

In an exclusive interview Mr. Bahri Kesici, Director General of the Directorate General of Civil Aviation (DGCA) discusses the aim to strengthen Turkey's position through bilateral cooperation. Turkish Civil Aviation Academy has the capacity to fulfill Turkey's training requirements for the countries of the region.

✈️ Aviation Turkey: Dear Mr. Kesici, first of all we would like to thank you for your time. As the Director General of the DGCA, last year we conducted an interview with you for our sister magazine Defence Turkey. This time, we come together once more for the first issue of Aviation Turkey magazine. During the past one-year period, Istanbul Airport officially launched its services after the great move. You assumed a critical role in this process as the DGCA. Could you please share with us your activities regarding the airport certification in line with the international civil aviation rules and the terminal licensing, the difficulties you faced, the solutions you put forward as well as the experiences you gained?

Bahri Kesici: Firstly, I would like to wish all the success to Aviation Turkey Magazine which recently started its publication life. Our move to Istanbul Airport was a process closely followed by the world and required extreme attention, and our country achieved this successfully. In addition to the physical changing of the location to which we refer as the “great move” without doubt this process is the outcome of a grand endeavor that required coordinated and simultaneous planning of various processes such as



operational preparation stages and launching the airport to the flights. As the Directorate General, prior to the opening, we exerted great efforts in order to maintain that all standards were and continue to be provided at the maximum level, with examinations and maintenance supervision of the airport providing its services in accordance with the international safety and security standards.

We conducted many activities in various areas of civil aviation, such as the authorization of the enterprises during the opening process of the Istanbul Airport, licensing, airport certification, aviation security and cargo operations. While launching the legislation and the required legal regulations, our Directorate General conducted the airport certification process for

maintaining the launch of the airport in line with the international standards. The DGCA's certification commission finalized the process by tracking all the requirements regarding the physical conditions of the airport, security, aviation safety and navigation services fields every day for four months and prior to its launch on October 29, 2018, the license was delivered to the operator by our Dear Minister M. Cahit Turhan.

Of course, we faced challenges, actually time was the greatest difficulty, on the other hand the ongoing construction at certain parts was also a challenge but we managed to overcome these through building close coordination with the Local Authorities, General Directorate of State Airports Authority, IGA, THY and with other airlines. In this way we accumulated great experiences as well.

✈️ Aviation Turkey: In respect to passenger and cargo transportation, we observe that the number of aircraft in Turkey increased by 200% in the last fifteen years, exceeding 500 and that in parallel the number of passengers and cargo capacity are continuously increasing. Upon the launch of the first two phases, what are your assessments on the impacts of Istanbul Airport which was structured as a global Aviation Hub in 2019 and in the future?

Bahri Kesici: The year 2003 and the following years deemed the Istanbul Airport a necessity as many critical advances were achieved in civil aviation in our country and the developments in civil aviation came to a point of explosion, yet we were facing capacity problems in Istanbul, particularly at the Atatürk Airport.

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In fact, the launch of the Istanbul Airport is a new milestone for the Turkish Civil Aviation. When all phases are completed it will be the world's greatest airport at the center of global civil aviation. By the end of 2019 and thereafter, Istanbul's central position for passengers and cargo in the world will be certified and we will witness development with a continuous impetus. In the following process, Istanbul will become a crucial center of attraction in Global Civil Aviation.

Actually, this airport was built as a city, and with the employment opportunities it provided and its contribution to our country's tourism and economy, the fact that it's a center of global civil aviation and as a mark in our country's civil aviation history, Istanbul Airport is enshrined in our history.

✈️ Aviation Turkey: By achieving growth at a record-breaking level of 428 percent in the last 15 years, as of 2018 we've arrived at a point where we are capable of reaching 318 points in 124 countries in cargo and passenger transportation in international flights. What are your comments on the sustainability of this development this year?

Bahri Kesici: The performance and record-breaking growth figures of our country's aviation

sector in the last 15 years are the outcomes of the courageous and correct steps taken by our Dear President and government. With the liberalization of domestic and international flights and the investments made in the civil aviation infrastructure on one hand, the adoption of the "air ways nation's ways" policy on the other, Turkish Airlines has become the airline conducting flights to the highest number of countries in the world. In addition to THY, our other airlines increased the number of destinations they conduct flights to in a record-breaking level during this process and became companies with strong competitive power in our region and in the world. Overcoming the turbulence experienced in 2016 without any damage, our industry rapidly recovered and, in a sense passed a crucial endurance and flexibility test successfully. In 2017, the figures of 2016 were exceeded and the year 2018 witnessed a remarkable 210 million passengers. It is possible to say that for 2019 with what we acquired in the last period through negotiations and with the momentum brought by the Istanbul Airport, we expect to surpass the figure of 2018. Our Istanbul Airport gained flexibility in terms of planning and operations to our airlines with a capacity increase by nearly 25% compared

with the Atatürk Airport while with the elimination of slot problems it started to host new foreign airlines. Currently, with the full launch of Istanbul Airport, 7 new airlines from 6 different countries started flying to Istanbul. As Directorate General of Civil Aviation, with the consciousness of regulating a very dynamic and rapidly growing sector, our activities towards fulfilling the demands of our airlines as well as offering comfortable alternatives to our citizens and developing the flight networks of our airlines through bilateral negotiations continue in 2019. In this respect, we expect the second half of 2019 to be very intense.

✈️ Aviation Turkey: Could you please tell about the latest developments acquired as a result of bilateral negotiations conducted by the Directorate General of Civil Aviation and the recent status regarding the increase in direct flights between capital cities within this scope?

Bahri Kesici: During previous years, our country hosted the Turkey - Africa and Turkey - America conferences and many Air Transportation Agreements were signed. As a result, Africa has become the continent with the highest number of new flights conducted from our country. The flights to Central and

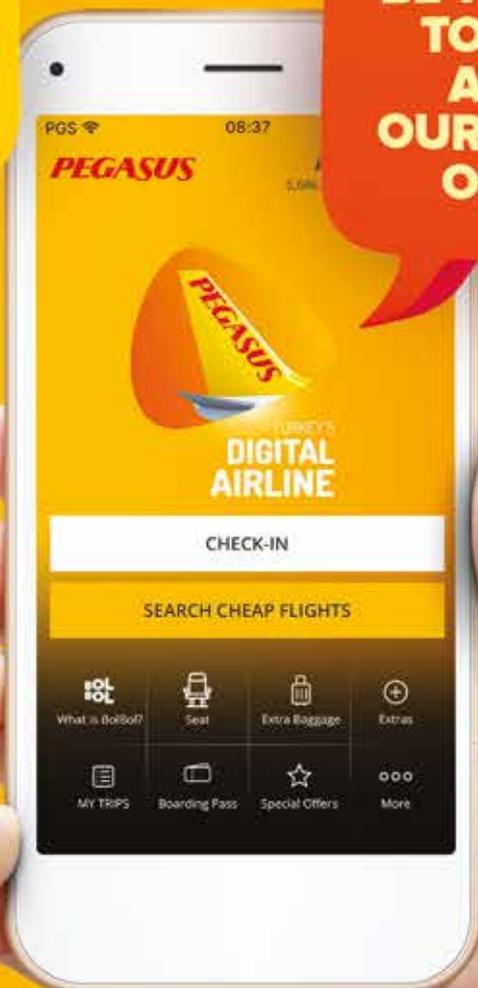
Latin American countries have started to increase as well. Europe is already the continent with the highest number of flights conducted. Presently, within the framework of bilateral negotiations, our priority is the countries where no flights or an insufficient number of flights are conducted by our airlines. To this end, South East Asian and Middle Asian countries have been a focus for us in terms of the air transportation agreements in the latest period. When we particularly take into consideration the population power and economic growth level especially in the South East Asia region and our relations with the friendly and sister societies in the Middle East as well as the economic opportunities, the activities of our airlines were deemed more crucial. Within this scope, we have already made quite significant acquisitions primarily in the Middle East Region, Azerbaijan, Kirghizstan and Uzbekistan. The number of flights with the 3 aforementioned countries and our country have doubled or tripled compared to 2017. In order to reach the same achievement with South East Asian countries, our contacts and activities continue in a coordinated manner, with our relevant institutions and associations.

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In concern with the capital cities, I would like to state that we are trying to persuade our counterparts on this subject by referring to the importance of flights between the capital cities in each of our bilateral negotiation discussions. In this respect, there is the Kiev - Ankara line in which we reached an agreement and in which the flights continue in an orderly manner, and the Baku - Ankara line could also be regarded as exemplary lines in which the flights that recently started are being executed successfully. Moreover, the recently launched lines such as Ankara - Rome, Ankara - London, Ankara - Paris, Ankara - Frankfurt may be given as examples toward the crucial steps taken in this respect. Connecting our capital city Ankara directly with the capital cities of other countries will continue to be one of our most critical priorities in the upcoming period as well.

✈️ Aviation Turkey: The DGCA seems to involve industrial activities in the scope of its bilateral negotiations as well. For instance, the consensus reached with Russia and Brazil in 2018, the negotiations launched with Ukraine and China indicate that both academic and industrial cooperation is going to be developed. What are your comments on the current status and for the future, within this context?

Bahri Kesici: As is known, we gather periodically with various countries to discuss air transportation issues when required and where negotiations on civil aviation are executed. Especially in the recent period, we have been exerting efforts to transform these platforms in which merely commercial issues are negotiated into platforms where multi - dimensional cooperation could be reached.

Now, at this point at which we have arrived, our Directorate General started conducting activities in terms of both internal structuring and institutional cooperation, and international bilateral and multiple relations in productive aviation instead of just consumptive aviation. Within the scope of such activities, in addition to commercial issues, negotiations are being executed with the responding countries on areas such as the mutual recognition of certificates, security, safety and maintenance, with cooperation purposes and from time to time these negotiations are finalized by the signing of agreements. In 2018, agreements on technical cooperation and mutual recognition of certificates were signed with South Korea, Brazil and the Russian Federation, and

we plan to sign a contract with Ukraine in June, and to sign a similar agreement as soon as possible with China with whom we continue to negotiate.

Our efforts launched in 2018 to establish international academic cooperation continue rapidly with the help of our Turkish Civil Aviation Academy which has the capacity to fulfill the training requirements of both our country and the countries of the region. The training provided to the countries of near regions and African countries with which we built close relations in line with the ICAO's "Leave no country behind" principle and the cooperation conducted compose the first steps taken in our activities. In terms of maintenance, our country is regarded as a critical maintenance center with its experienced engineers, technicians and modern maintenance facilities. We aim to strengthen our position again with the bilateral cooperation in this context.

✈️ Aviation Turkey: Beyond the usual governmental practice, the DGCA's cooperation with certain associations with the capability of supporting the development of the aviation industry started to appear at the agenda. It was underlined that the DGCA will be developing activities in "Productive

Aviation" as much as "Consumptive Aviation" and announced that the DGCA signed cooperation protocols with STM, TrTest and Teknopark Ankara. Within the scope of the protocols signed, in which areas will cooperation be made and how will the industry benefit from this cooperation? What would you like to say about the schedule of the activities to be conducted in the short and medium term?

Bahri Kesici: The development in aviation is not a topic to be assessed merely based on statistics regarding airway transportation. In recent years, our country has made remarkable progress in the aviation industry by launching many indigenous projects on air vehicle design and production processes as well. We reached a level of capability where we are able to manufacture and certify air vehicles with our associations active in this area. In the essence of this development, the extension of existing facilities through cooperation and joint activities is as important as much as the sharing of knowledge. With this understanding, as the Directorate General by cooperating with our associations, we exert efforts to take the steps required towards the sustainable growth of aviation.

This year, within the scope of the main protocol that we signed with STM, we launched three cooperation agreements in the areas of “cyber security”, “aviation safety” and “air worthiness”. On account of this main protocol, we reached an understanding on the main cooperation areas mainly in training, accomplishment of joint R&D activities, technology development and execution and design, production and sales of the products as well as the identification of the strategies of processes. This agreement is in fact a framework agreement and based on this agreement, we signed protocols for more concrete cooperation on these three areas I mentioned. For instance, in accordance with the Cyber Security Cooperation Agreement, a joint working group will be established, and we will be conducting joint activities in cyber security operations, penetration tests, cyber intelligence and cyber security training. Our cooperation in the area of Aviation Safety is composed of subjects such as safety devices and technologies and the certification of these technologies, security training, risk and threat assessment, explosive detection dogs, behavior analysis, scanner competences and certification, awareness raising of passengers, biometrical systems and

machine-readable travel documents. Regarding the area of air worthiness, the execution of technical consultancy activities exist to strengthen our Directorate General’s certification infrastructure, supporting the activities to be conducted as part of enlightening the sector and our cooperation with international workgroups.

As you know, TRtest is a company built with the partnership of our institutions such as the SSB, TSE, TÜBİTAK and TSKGV and companies such as STM for the efficient utilization of Turkey’s existing test infrastructure. This company has been structured in a way to fill a critical gap in our country in terms of the establishment and operation of the compatibility evaluation infrastructures such as analysis, certification, calibration and qualification. Within this scope, we also signed a protocol with TRtest in order to build cooperation in the test and evaluation processes required in the aviation area. In the area of Aviation Safety, cooperation will be made in areas such as the establishment of test and certification centers for security devices, maintaining the accreditation of these centers to the ECAC, capability reporting to the civil aviation authorities in foreign countries of the test



centers to be established in Turkey, safety devices and technologies and the certification of these technologies, design and production certification of the calibration testing material for security equipment, Anti - Drone system tests and certification. Moreover, we signed a cooperation protocol with Teknopark Ankara in the area of “Unmanned Air Vehicle Systems”. This cooperation protocol envisions joint activities in aviation safety, cyber security, certification/ air worthiness consultancy services, UAV/autonomous system solutions and civil aviation safety areas.

Actually, through the aforementioned activities we aim to strengthen the technological and industrial bases of Turkish Civil Aviation, increase our internal and international potential as well as take our share from these areas. What is essential is to achieve this target.

✈️ Aviation Turkey: At this point, attention needs to be drawn to the point that Turkey reached in the design, production and utilization of Unmanned Aerial Vehicles. You have recently organized a conference on the legal regulations regarding UAV operations as well. Could you please tell about the details of the content of the legislation update which is soon to be implemented?

Bahri Kesici: Unmanned Aerial Vehicle (UAV) Systems have become an area in civil aviation with increasing importance. We witness the extension of the areas of UAV utilization in the fulfilment of certain services in our daily lives. The number of UAV pilots in our country reached 35 thousand by the end of last year and the number of UAVs reached 27 thousand. 7 thousand more UAVs were added to the registries of the Directorate General of Civil Aviation just within

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a year, while the number of UAV pilots displayed record breaking growth by increasing to 13 thousand.

In addition to the increase in the number of UAVs and their operators, we witness an expansion in their production and new areas of utilization. Besides their utilization for civilian and commercial purposes, the usage of UAVs in military, security and intelligence areas, as well as public services such as customs and the fight against forest fires is rapidly increasing. This requires the immediate launch of systematic studies, training, risk analysis and legal regulations about UAVs. The numbers of our associations providing UAV training reached 29 by the end of 2018 and only last year over 10 seminars and panels were held by our UAV Coordination Unit in cooperation with universities and authorized organizations. The activities towards the regulation of standards by the international aviation associations regarding the security and safety risks of UAVs are underway. The DGCA launched the risk assessment implementation regarding UAV Systems in order to minimize such risks. Pilots have to conduct a risk analysis in order to determine whether the flights they planned are at an acceptable safety level or not.

We made significant progress by launching our activities regarding the regulations and legislative studies for UAVs before many countries in the world. As I mentioned previously, in line with the protocol we signed with Teknopark Ankara on UAV systems, we decided to cooperate on UAV certification activities, preparation of UAV design and production standards, development of the facilities and infrastructure, development of national and international standards, identification of autonomous flight requirement standards and their tests, identification of common cyber security criteria specific to UAV systems and in respect of the legislation activities required and we are executing them.

Within this scope, we prepared a draft directive that reregulates the UAV directive. One of the most crucial novelties in this legislative change is enabling enterprises that fulfil the criteria brought by the definition of UAV Operator to become UAV Operators, just like the airlines. A certificate of Light UAV Operator will be issued to enterprises fulfilling the requirements, and a definition for a Light UAV Operator that contains certain exemptions was made. To the authorized UAV Training Associations, the obligation to acquire a

“Private UAV Pilot Training Course Opening License” from the Ministry of National Education will be imposed and universities will be exempted from this obligation. Another critical change is the removal of crowded, very crowded and uncrowded zone definitions and placement of green zone, zone subject to special permit (red), zone subject to license and no - fly zone definitions. Moreover, with the new regulation, the local authorities, General Staff and DHMI officials in coordination will be registered in the UAV Registration System and their coordination will be enabled over the system, thus reducing the response time for UAV flight permit applications.

✈️ Aviation Turkey: There will be a remarkable increase in employment with the opening of the Istanbul Airport as well. Which activities are planned to be conducted in order to support this increase? Could you please share your road map regarding this point with us?

Bahri Kesici: Fulfilment of the requirements and expectations of the aviation sector and covering the increasing need for qualified staff are amongst the most critical issues regarding aviation. The ICAO approaches these issues with great sensitivity. Our aviation sector is getting ready for a new employment boom with the new airport. With the first phase of

the Istanbul Airport, the annual employment of 100 thousand people is projected and with the launch of the full capacity in 2025, employment will reach 225 thousand people. Its contribution to the Gross Domestic Product of our country is expected to be around 4.9% at the same time. Therefore, in terms of achieving sustainable growth in aviation, in addition to extending the civil aviation departments in our universities with the cooperation we made with YÖK (Council of Higher Education) in relation with human resources requirements, we aim to contribute to the increasing need for qualified labor with the training we will provide under the auspices of the Turkish Civil Aviation Academy. With its capacity of providing training to an annual number of around 2 thousand domestic and foreign trainees, we aim for our Training Center to be built with EU funds to become a leader in civil aviation training in the Middle East, African and Asian countries. In addition to the training we will provide as the DGCA, many universities, academies and special training institutions have been providing civil aviation training required by our country. This issue is linked with market forces and fulfilling the demand and opening to the world are amongst our targets.



100 MİLYON YOLCUMUZLA 27 YILDIR GÖKLERDEYİZ

14 Mayıs 1992'den bugüne, 100 milyon yolcumuzu güvenle ve uygun fiyatla uçurmanın Onur'unu yaşıyoruz. Bizi tercih eden ve bugünlere uçuran tüm yolcularımıza teşekkür ederiz.

INTERVIEW

✈️ Aviation Turkey: In line with the ICAO's slogan of "no country left behind", you opened the Turkish Civil Aviation Academy (TCAA) (EU funded project) which will be utilized for the development of Turkey and the countries of the region in aviation training and security areas. During this process, how was the year 2018 in terms of the trainers' training and the training provided to domestic and foreign trainees?

Bahri Kesici: The activities accomplished in the first year of the Turkish Civil Aviation Academy can be evaluated under four main categories. A large portion of these activities are those related with the establishment of the facility conducted to render the academy building and campus fully operational. All the processes and operations required for the final acceptance of the academy facilities which were provisionally accepted during the opening were fulfilled under the supervision of the Central Finance and Contracts Unit and the DGCA. The first of these operations was the process of enabling the completion of the deficiencies identified during the provisional acceptance of the building by the contractor company. At the same time, the full accomplishment of the protocol, all the equipment, furniture, workplace safety

and security devices, facility safety equipment and the related maintenance and support contracts were maintained. Also, throughout this period, a radar training center for the training of the air traffic staff was established. The academy campus grounds were afforested, and the landscape was supported with components such as park benches, gazebos and the TCAA was turned into a green campus. Finally, the TCAA was transformed into a sustainable training ecosystem that provides the most modern and disabled friendly and environmentally friendly solutions conducive to a healthy 'atmosphere' which functions as a critical component overall.

In addition to facility establishment activities, great efforts were exerted in terms of issues such as facility management and institutionalization. Areas such as the successful implementation of a quality management system, the establishment of relevant procedures, documentation, staff employment and corporate communication and brand management were also main areas of focus. Besides the aforementioned points, activities on training design and management were conducted as well. At the point of training design, the TCAA Trainers Pool started to be built and focus was given to the establishment

of the legislation and processes required for the authorization of such trainers. During the period we accomplished numerous national training activities that were realized by the TCAA, and in international arena, training on various subjects were provided to the staff of the Civil Aviation Authorities in countries of the region such as Azerbaijan, Kirghizstan and Macedonia. As of the second quarter of 2019, the TCAA will launch its own training. Furthermore, as part of the protocol made with Turkish Airlines, TCAA hosted numerous training activities and the foundation for the international recognition of our Academy started to be laid with training and workshops that were held jointly with institutions such as the ECAC, the ICAO, and the European Bank of Reconstruction and Development.

It is appropriate to mention that the TCAA has hosted many activities regarding representation and foreign affairs in addition to its activities in building bilateral relations. Many executive level authorities such as our Minister of Transportation and Infrastructure, foreign delegations at Ministerial level, EU Delegation Embassy, the ICAO delegation were hosted, and the academy hosted certain aviation negotiations conducted by the DGCA

with other countries. The academy also took part as a critical factor in areas of cooperation in the aforesaid negotiations. Additionally, the exams realized by our Directorate General are being held at the Exam Center of the DGCA within the Academy. Finally, in order to give a statistical figure, within the last year, as a result of all activities held within the borders of the academy, the TCAA hosted a total of twenty thousand people.

✈️ Aviation Turkey: The Turkish Civil Aviation started coming up on the agenda with its aviation safety implementations, the details of which are not quite known by the general public. Its appearance especially in international regulation platforms and its implementations (cyber security survey, etc.) were referenced in the invitations and publications for the ECAC and the ICAO meetings. What are your activities in the area of aviation security, in respect to the organization of a new academic and industrial sector for Turkey?

Bahri Kesici: In 2016, within the scope of our Directive regarding Institutional Cyber Incidents (SHT - SIBER), we issued our circular on the establishment of the Institutional Cyber Incidents Intervention Centers that are required for developing defense

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capabilities in institutions and associations active in aviation sector against cyber-attacks. This, in fact, was the first and most critical step taken towards the organization of the sector in the cyber security area, following the aforementioned Directive. Then, a joint study group was established in compliance with the Cyber Security Cooperation Agreement we signed last year with STM, and we pursued cooperation in cyber security operations, penetration tests, cyber intelligence and SOC (Cyber Operation Center) services, cyber security training services and execution of joint activities at international platforms. Turkey has covered critical ground as indicated by our implementations such as the cyber security survey, etc. and the presentations we make at international organizations as well as our acceptance to the cyber security task forces ICAO and ECAC.

✈️ Aviation Turkey: Another distinctive development about the DGCA are the air vehicle certification activities, compared to the previous years. Could you please share with us the developments projected to be achieved in industrial activities with the certification group, the organizational structure of which was improved with the latest regulations?

Bahri Kesici: One of the areas in which we achieved critical progress is our activities executed regarding air vehicle certifications. In line with the aviation infrastructure and increasing international capabilities of our country, we aim to develop our aviation and space industries further and wish to become a technology manufacturing, developing and exporting country instead of one that imports technology. To this end, we primarily aim to extend the Aviation Certification Experts Team under our Directorate General which will operate in this area. Our first group of aviation certification experts took office in November 2018. In compliance with the rules of International Civil Aviation, the air vehicle certification processes are conducted by the Civil Aviation Authorities of the manufacturer countries and the process is completed with the recognition of these certifications by other authorities. Our Directorate General has reached a capacity to execute the certification of the indigenously designed and produced air vehicles within this process. We executed the certification process of HÜRKUŞ, and the certification process of the T625 Utility Helicopter is underway. Within this scope, our execution of all processes by strengthening our certification capability as well as our

air vehicle designing, and manufacturing capacities bear great importance in terms of gaining indigenous air vehicles to our aviation sector and the development of our aviation industry.

Within the framework of the protocol we signed in the area of "Air Worthiness" with TR Air Worthiness Services Inc., we decided to build cooperation in the areas that will create added value in the aviation sector of our country, such as air worthiness, certification processes of the air vehicle products, parts and devices. In this way, we maintained the legal basis required for joint activities in projects that require civil certification, most recently with the example of the T625 Indigenous Helicopter (GÖKBEY) Project conducted by TUSAŞ.

While we are utilizing our own facilities for certification, we also aim to develop the existing certification potential of our country.

✈️ Aviation Turkey: Dear Mr. Kesici, what would you like to say as a final remark to the readers of Aviation Turkey?

Bahri Kesici: While aviation is a mysterious and exciting realm attracting everyone since their childhood, flying has always been the greatest passion of humankind since their first existence. Especially, our young readers should

never lose contact with this mysterious realm; they should at least enjoy it as a hobby. There are many flying schools and aeronautics faculties in our country, either recreational or amateur flying activities take place frequently and everyone can enjoy this passion in a different way. My advice to the readers is that they should try to participate in these types of events to the maximum level, often read and follow such publications and encourage their children in this area which has a bright future as well. Nowadays, aviation is a compulsory transportation method instead of a luxury mode of transportation, unmanned air vehicles are now inevitable devices in many areas and airports have become life centers instead of merely landing/take off runways, so we should be reading more about aviation and allocate more time to it in our lives. Each of our young citizens should consider themselves as a young wing within the framework of Atatürk's famous saying, "the Future is in the Skies" and they should actively participate in all types of activities concerning aviation. Hereby, I would like to remind our readers to attend the Teknofest 2019 events blending technology and aviation that will be conducted at the Istanbul Atatürk Airport on September 17-22, 2019 🇹🇷

GÖKBEY

Multirole Utility Helicopter



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Welcoming Global Visitors via Istanbul Airport

World Class Setting New Standards of Excellence

Istanbul Airport will be a record breaking and trend setting airport as it soars to become the most critical global aviation hub. In an exclusive Aviation Turkey Magazine interview, Mr. H. Kadri Samsunlu / IGA Airport Chairman of the Executive Board & CEO Istanbul Airport discusses how the airport is a spot-on project, benefiting not only Turkey's economy but also global aviation as a whole, enabling airlines to fly to more destinations worldwide.

Upon completion of all phases, Istanbul Airport will be able to serve 200 million passengers annually. Currently, the airport hosts a yearly capacity of 90 million passengers. The new airport will be one of the greatest 'hubs' serving 300 destinations, 250 of them international.

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✈️ Aviation Turkey: Dear Mr. Samsunlu, the opening ceremony of the Istanbul Airport took place on October 29, 2018. As of October 31, 2018, the Airport launched its services with the first flight between Istanbul – Ankara. This massive airport spans an

area over 76.5 million square meters has provided employment opportunities to 16 thousand people upon its launch. Could you please share a bit with us about IGA's future outlook?

H. Kadri Samsunlu: As you also mentioned, following

a construction period that lasted 42 months , which could be regarded as a new record, Istanbul Airport occupies covers and area over 76.5 million square meters and was inaugurated on the 95th anniversary of our Republic on October 29, 2018 at a ceremony under the

auspices of our President Recep Tayyip Erdoğan. The first flight departed from Istanbul to Ankara on October 31, 2018.

Istanbul Airport will contribute significantly to the Turkish economy in many respects. Developing the construction sector



from the construction period towards the transition to the operation period, Istanbul Airport will contribute considerably to the economy and employment with the launch of the operation period. We inaugurated the first phase of our Airport in 2018, and

our Airport will offer employment opportunities to 100 thousand people and provide a source of income to 1.5 million people indirectly. According to the "Istanbul Airport Economic Impact Analysis" report prepared by the independent think tanks and consultancy

organizations, Istanbul Economy and Economy and Foreign Policy Research Center (EDAM) in 2016, the number of people either directly or indirectly employed by the Airport will reach 225 thousand people in 2025. When the direct, indirect, triggering and accelerating economic

impact of the Istanbul Airport are combined under the Global Growth Scenario (Optimistic Scenario), it is projected that the impact of the activities connected with the Istanbul Airport will increase to 4.89% of the GDP in 2025.





We have a young and dynamic team with 5,580 people are currently employed within IGA. When we factor in all the brands, institutions and enterprises providing services, that figure exceeds tens of thousands within the Airport.

By employing the young talent that may be leading the global aviation industry at the world's greatest airport, we aim to invest in their individual development while training the professionals of the aviation sector of the future. We have already launched our internship and training programs to this end. In 2018, 79 students completed their internships in various departments and at the end of the internship 18 of these students seized employment opportunities within our different departments, and we aim

to accomplish services that will contribute to our goal of “operational excellence” with them.

We were awarded the “Best of Employment” award in 2018 and it was then, in a sense, an indicator of the importance we attach to the effective management of human resources and a demonstration of our accomplishments in this direction and this award made us proud. Currently we are currently very pleased with the creation of employment, added value to the economy and the investments that are being made in the younger generation.

✈️ Aviation Turkey: Istanbul Airport is located at the heart of global trade and aviation traffic, and it is geographically positioned at the intersection of Asia,

Europe, Africa and Middle East. You aim to become one of the greatest global hubs. Could you please share the air transportation figures executed so far since April 6, 2019, the date when the Airport was fully launched after the great move? Did the figures achieved start to fulfil your expectations? What is your road map regarding the number of passengers forecasted for the year 2023?

H. Kadri Samsunlu: Turkey's targets set forth for the year 2023 stand out as a reflection of a wide vision from the onset. As of the announcement of these goals, and as a result of all the steps taken under the leadership of our President, Recep Tayyip Erdoğan, the Turkish economy is developing rapidly, giving

confidence to foreign investors, extending and enriching its economic access from Latin America to Southeast Asia and Africa.

In order to support the export target of US\$ 500 billion, Istanbul Airport will be the world's new hub of aviation in passenger and cargo transportation with the added value it will create with a massive capacity and main terminal size of 1.4 million square meters. In light of all these developments and with the help of its ever-strengthening national economy, Turkey will easily reach its targets identified for the year 2023.

We aim to provide services to about 100 airlines within 5 years. In the duration of a day, the number of landing and takeoffs will reach 3,500 in the airport that will feature an aircraft capacity of 347 narrow – bodied aircraft and 266 wide – bodied aircraft when all phases have been completed. Since day one, with the first flight, which was conducted at 14:00 p.m. and including the transition operation to full capacity on April 6, 2019, over 8 million passengers flew through the Istanbul Airport by the end of May. I rely on the fact that these figures will increase further in the years ahead and we will achieve our target number of 90 million passengers, in a short period of time.

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AUTHORIZATIONS

Turkish DGCA Approved;

- *Air Taxi Operator*
- *SHY-145 Maintenance Organization for Sikorsky S76 Series Helicopters*
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- *Continuing Airworthiness Management Organization*

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Third Country Operators (TCO) approval by EASA.

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✈️ Aviation Turkey: With the opening of Istanbul Airport, international airline companies launched new lines and a total of 63 airline companies are now conducting flights to Istanbul Airport. What will be the number of airlines flying to Istanbul when all phases are completed and all runways are operational at Istanbul Airport?

H. Kadri Samsunlu: Our goal was already determined as we launched the Istanbul Airport project and we are working with all our strength in order to achieve this target. Istanbul Airport is the greatest proof of Turkey's achievements in aviation. In terms of travel experiences, I have no doubt that we will soon be among the league of elite and few airports in

terms of service volume by exceeding our current service capacity.

Presently, 2 runways and their alternates are in service at Istanbul Airport. Next year, we will be gearing up by opening the third runway. These developments indicate that Istanbul Airport will be Turkey's door opening to the world...

We are collaborating with a very experienced team at Istanbul Airport and continuously evaluating our calculations. Our target is to exceed 100 million passengers at Istanbul Airport in 2023. Hopefully, we will achieve our target and enter the 100 m passengers per annum club. There are two airports in the world now that can reach the number of 100 million



passengers on a yearly basis, the Atlanta and Beijing Airports. When all the phases are completed, Istanbul Airport will be able to serve 200 million passengers annually. Currently, the airport hosts a yearly capacity of 90 million passengers. The new airport will be one of the greatest 'hubs' with over 300 destinations, 250 of them international.



All international airline companies have launched services at Istanbul airport. 3 of these companies launched their initial operations in 2019 at Istanbul Airport. These airline companies are raising their travel service frequency every day, such as Ethiopian Airlines, Nouvelair and Indigo. In April, two new carriers launched their services at our airport as well. Moreover, Air Albania and Sichuan Airlines conducted their first flights at Istanbul Airport. Last year, 300-400 thousand Chinese tourists visited Turkey, there is a huge demand and we certainly have the infrastructure to fulfil such a demand. Istanbul Airport is a necessary and spot-on project and one of the indicators of this is the fact that airline companies that were not capable of opening slots are now able to fly to new destinations via our airport.

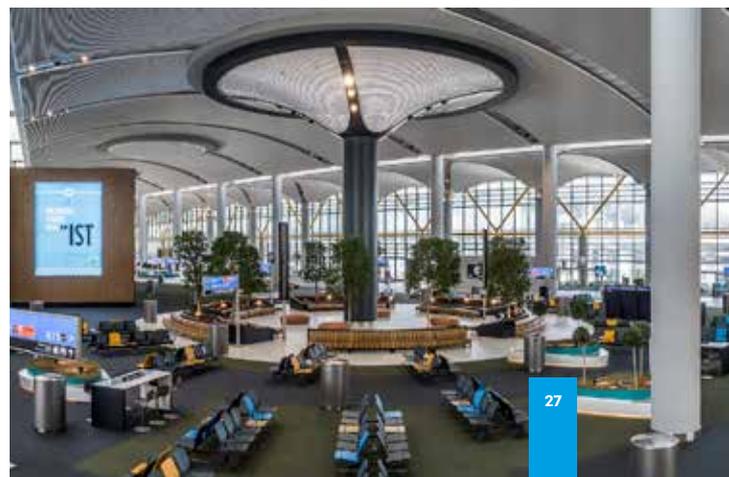
✈️ Aviation Turkey: IGA has realized remarkable implementation activities at Istanbul Airport, such as

those related to air transportation security, ground support services, the environment and IT functions. Could you please inform us on these innovative industrial implementations and the particular areas of application? Additionally, please share your expectations regarding new implementations to be launched in the future?

H. Kadri Samsunlu: Istanbul Airport is one of the greatest infrastructure projects launched by Turkey during the recent period. When we examine all stages of this project, from the brainstorming stage to architecture, from the construction to the operational stage, we can witness the innovation

and groundbreaking R&D achievements and the importance attached to these activities.

Since the beginning of the project IGA has been saying that Istanbul Airport will be a leading airport by becoming distinct at the point of travel experience. In addition to a classical understanding of operations, we will be serving with an operational and service approach that places priority on the travel experience. You can consider Istanbul Airport as an area where you can socialize 7/24 instead of merely a flight connection point within the days of your flights. Placing a spotlight on the overall travel experience at Istanbul Airport will



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be the fundamental difference that sets us apart from other airports. Vital elements such as technological features will stand out and I would like to highlight a few examples in this respect.

Tunnels were built in order to prevent apron traffic at Istanbul Airport. All ground services are executed via these tunnels instead of conducting transportation of technical vehicles at the apron. Additionally, in order to effectively meet the challenge of tracking an area of 76.5 million square meters, we implemented a system that gathers images captured via large cameras positioned at certain critical areas and

built a virtual control tower operation inside a 300 square meter room. We are integrating the virtual control tower to the airport operation center. As the first such implementation in our country, this is quite critical.

Containing a rich collection of brands in the duty-free area, different from many shopping venues or airports, Istanbul Airport will offer an uninterrupted and excellent travel experience to passengers on 7/24 basis. With its distinct shopping and food & beverage options and activity areas, Istanbul Airport features the characteristics of being an interactive living space



where passengers can arrive at least for a few hours prior to their flight and have fun with their families.

The airport is highly developed in terms of technology and we

designed it to offer our passengers the highest level of comfort, raising the bar in their overall customer travel experience. Istanbul Airport is being equipped with a smart system, beacon, wireless internet, radio and new generation





GSM infrastructure and LTE, sensor and speaking 'objects' for the convenience of the passengers. For instance, through the Istanbul Airport application, the transportation process from home to the airport

can be easily optimized. We suggest that all our passengers download this application, which is based on data from the traffic in the cities which they will visit and they are able to plan all their experiences from the time they leave

home until boarding of the plane, promoting effective time management and peace of mind for travelers.

The utilization of robots, artificial intelligence, face recognition or machines capable of processing, with other personal data, is available at the check-in or baggage claim points at Istanbul Airport as well. We are conducting efforts to enable robots and automated systems to welcome and facilitate the experience of our passengers. After a short while, robots will be welcoming our passengers.

 **Aviation Turkey: Upon the IATA approval given to the Fuel Supply Systems, IGA became**

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the airport featuring the world's greatest storage and hydrant systems. What are your assessments on this capability in terms of aviation safety, environmental impacts and operational facilities?

H. Kadri Samsunlu: Istanbul Airport is one of the few airports that has a tank space with a storage capacity of 300 thousand cubic meters, nearly a 105 km long pipeline, 512 aircraft supply points, 73 aircraft refueling vehicles and a seaport capable of conducting the refueling of two vessels with the capacity of 125,000 DWT and 50,000 DWT



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simultaneously. We are quite comfortable in an operational sense with the help of this system which is also approved by the IATA.

We continue to make our mark with our worldwide 'firsts' and 'mosts' at the Istanbul Airport. Additionally, one of these achievements has been made with our capacity in terms of fuel supply. Filters and equipment located in the standard aircraft refueling vehicles protect the aircraft from water, particles and excessive pressure, while the refueling vehicles at Istanbul Airport are capable of continuously controlling the water, particles and the pressure in addition to the execution of infiltration and pressure regulation. While maintaining environmental protection, we provide more qualified services to airline companies in operational terms. Such a system is advanced in terms of technology as well. We can automatically stop the fuel supply if there is a problem during infiltration. Due to the aforementioned systems, which are not utilized by even the most developed airports in the world, we provide the safest and most qualified method of fuel supply to the airlines at our airport.

✈️ Aviation Turkey: We know that Istanbul Airport attaches great importance to art. Many works of art transformed from waste are being displayed at the international lines as part of the exhibition of 'Waste to Art' and the revenues collected from these pieces were donated to charity organizations. Will your contribution to such social projects continue?

H. Kadri Samsunlu: One of the most critical and distinctive features of Istanbul Airport is art... We value art greatly and will continue to do so. In addition to the Waste to Art Project... We realized a total of 144 events in cooperation with the Ministry of Culture and Tourism since the opening of the Istanbul Airport which we regard as Turkey's doors opening to the world. From this perspective, we, as Istanbul Airport, continue to launch our artistic projects within an Istanbul oriented perspective.

Within the scope of these events, we hosted 80 different artists active in 6 different branches of art. We realized many artistic events such as Miniature Craft, Art of Paper Marbling, Calligraphy, Tile Art, Turkish Music and Classical Music at various points of our

terminal. Currently, the Ara Güler Exhibition, Triumphal Statute Exhibition, Göbeklitepe Exhibition, Waste to Art Exhibition and Turkish Contemporary Art Exhibition that has been recently launched by the Turkish Airlines, are ongoing at Istanbul Airport.

As Istanbul Airport, we value art greatly as we believe that in our times, in addition to financial assets, the factors distinguishing institutions, in other words making them valuable is social sensitivity. And we are quite pleased with the support we provide in this sense specifically at Istanbul Airport.

Also, as a result of the Romanian Presidency of the Council of the European Union and the Europe Day, we hosted the exhibition of "Turkey from the perspective of European Union diplomats" which was composed of photographs taken in Turkey, with the participation of 18 ambassadors and diplomats from the European Union. This exhibition will be held at the airport until June 30th.

✈️ Aviation Turkey: You launched the 'IGA PASS' program to enable passengers to have comfortable and quality

time at the airport prior to their flight, raising the bar of passenger experience to a higher level. Could you please inform us about the scope of this program?

H. Kadri Samsunlu: One of the most critical issues is the exclusive passenger program. At this point, we announced our new brand IGA PASS and services as IGA. While we were preparing full capacity operations, IGA also launched a new membership program to offer our passengers a privileged, comfortable and joyful travel experience. We refer to the exclusive passenger program as the IGA PASS and it is composed of three different services. As part of the membership program, Lounge, Buggy (Mini golf vehicle), Fast-Track, Priority Check-in, Parking, Valet and In-City Transfer services are provided. IGA Lounge is one of the most crucial service privileges of the IGA PASS program aiming to offer maximum comfort level and quality, contrary to the classical understanding of airport services. With this service, the IGA Lounge offers 24-hour services in a spacious 4,420 square meter area with a seating capacity of 584 people, an upscale atmosphere for passengers awaiting their flights at the airport.

Within the scope of this new membership program, extensive services were also taken into consideration





for families with children. Children are able to play and watch cartoons while their parents are waiting in the Lounge. Parents will be able to monitor their children in the play-room via monitors in the Food and Beverage area. All details such as a children's bathroom, a baby care unit and nursing room were taken into consideration at the IGA Lounge and the comfort of families with children were not missed. Furthermore, passengers will be able to preorder products that they wish to purchase via screens the IGA Lounge without the need to enter Duty Free shops as the products from the nearest Duty Free shop are displayed on the screen.

Containing details such as a billiard room, a game area and a cafe as well as showers, the IGA Lounge draws attention with its unique and extraordinary features. This area with televisions, special television chairs and private cinemas that will especially be a top choice of young passengers. Travelers will quickly get away from stressful worries and fatigue at Istanbul Airport and with welcomed details such as the dining hall, open buffet, relaxation area, billiards and game consoles, all details are designed to create a sense of holiday and comfort even when passengers are waiting at the airport.

✈️ Aviation Turkey: Despite the innovative implementations that you've mentioned, certain issues regarding operations at Istanbul Airport have also come up on the agenda. For instance, the number of active runways is currently two, and as it is mentioned, the aircraft taxi duration is quite lengthy as both of these runways were built on the west side of the terminal. Also, the third runway will be launched in a short period of time. Will the taxing duration decrease after the third runway is launched? Could you please share your comments on the latest status?

H. Kadri Samsunlu: We designed an airport that considers the comfort of passengers in every aspect and we have four active landing and take-

off runways. Currently we are building our third runway and it will be completed within the first half of next year. Moreover, presently the taxi process varies from 9 to 15 minutes both in domestic and international flights. It is now below the taxi durations experienced in the first weeks. This duration will decrease significantly with the launch of the third runway.

When all of these operational and traveler experience fine points are taken into consideration, Istanbul Airport is well on its way to becoming a record breaking and trend setting airport as it soars to become the most critical global aviation hub. We really believe in this and work adamantly toward this end 🌐



Global Aviation's Trendsetter Turkish Airlines

Reflections on Rapid Rise and Outstanding Future Outlook

In our exclusive interview Mr. Bilal Ekşi, CEO of Turkish Airlines shares insight into the rapid rise of the Turkish aviation industry. Istanbul has now become one of the greatest logistics and passenger transfer hubs of the world. The city connects three continents,

has hosted numerous civilizations throughout history, and is a natural hub. The company is launching new international flight lines from Ankara and Antalya, continuing to raise the bar as they develop commercial, touristic and economic relations.





✈️ Aviation Turkey: First of all, according to the experiences of a person who has served Turkish Airlines for many years, what would you like to say about your company's transformation into a global player from a regional airline company?

Bilal Ekşi: In the beginning of the 2000s, a decision had to be made on the future of Turkish Airlines: Should Turkish Airlines continue to function as a regional airline, or should it be transformed into a global player by using the advantage of Istanbul as a natural hub? Connecting three continents, Istanbul hosted numerous civilizations throughout history, it is a natural hub and it is our home. This transformation started in 2003. Without doubt, the

vision of our President, "Airways will be the nation's way" has been an incomparable motivation for the growth of Turkish Airlines as well. The policies and strategic targets put forth as part of this vision paved the way for the two-digit growth figures of Turkish Airlines. These achievements enabled the transformation of our brand into the most recognized brand abroad. With its performance over the last 16 years, Turkish Airlines holds the title of the airline executing flights to the highest number of countries in the world with 124 countries.

Aviation Turkey: You achieved your targets and ended 2018 with a remarkable rate of return. How do you evaluate 2018 in terms of targets and actual figures?

Bilal Ekşi: In 2018 we reached a number of passengers beyond the figures we budgeted. As a matter of fact, as we already projected this achievement, we notified the Public Disclosure Platform that we updated our targets and raised the bar. We hosted a total of 75.2 million passengers, and this figure is almost equal to our country's population. As Turkish Airlines, we declared a real operating profit of nearly US\$ 1.2 billion in 2018. We obtained great achievements in terms of passengers and our cargo income. We reached this success through effective budgetary discipline, the investments we made in the lines with high profitability, rational fleet management and our understanding that values every single dime. All our colleagues have a share in this success. I would like to thank them all once more.

✈️ Aviation Turkey: What are your targets identified for 2019 in terms of turnover, number of passengers and profitability?

Bilal Ekşi: We aim to serve 33 million passengers with domestic lines and 47 million passengers with international lines in 2019. While reaching this target, we anticipate an occupancy rate of 81-82%. Our scheduled future bookings indicate that we will have another successful and profitable year. We will be elevating the customer experience to the top level especially with the new flight lines we will be launching at the Istanbul Airport. We aim to break a new record of carrying 145 million tons of cargo with our new facilities and the new capabilities that we will gain. We are rising rapidly. Istanbul has now become

one of the greatest logistics and passenger transfer hubs in the world.

✈️ Aviation Turkey: Turkish Airlines flies to 309 destinations in 124 countries across the world and maintains its championship in the world. What will the new flight lines be this year? How will Turkish Airlines's competitiveness progress in the global market with these new flight lines?

Bilal Ekşi: Before launching new operations to any destination, we conduct significant feasibility studies. The network contribution of the potential flight line, its conformity with the flow of our timetable, its profitability and commercial potential are taken into consideration during the decision-making process. Istanbul's characteristic as a natural hub allows us to make efficient operations with the single - aisle aircraft to which we refer as narrow - bodied aircraft. Such that, we have access to 38 countries within a distance of 3 hours, 55 countries within a 5-hour distance and to a total of 1.5 billion people. Hardly any airline company has this advantage and we make all of our rivals feel this advantage within global competition. With our wide - bodied, in other words twin - aisle aircraft, we execute profitable operations with high occupancy rates for rather longer distances. As

I mentioned before, all our flight lines feed the network and directly affect the profitability of our company and they are selected carefully. Within 2019, so far, we launched the Uşak, Siirt, Çanakkale and Zonguldak flight lines in the country. Regarding the international lines, the Sharjah (UAE), Marrakech (Morocco) and Strasbourg (France) flight lines we launched will be followed by Luxor (Egypt), Bali (Indonesia), Rovaniemi (Finland) and Mexico City (Mexico) flight lines.

✈️ Aviation Turkey: What are your plans for increasing the number of flights in 2019? Within this context, for which flight lines will there be a frequency increase?

Bilal Ekşi: We make use of all the opportunities that may be profitable for our company and will extend our sphere of influence by increasing our passenger revenues in terms of network, proactively. We intend to form a second frequency wave in the Asia - Far East region in particular with providing the solution of the slot problems at Istanbul Airport. For instance, the frequency increase in Tokyo - Japan, the relaunch of the Osaka flight line or the frequency increases we announce at the Hanoi flight line in Vietnam are all the indicators. The new generation wide - bodied aircraft to be included in our fleet will enable us to reach our targets more

rapidly. Again, by launching new international flight lines from our capital city Ankara and our tourism city Antalya, we will be maintaining our support in terms of developing our commercial, touristic and economic relations.

✈️ Aviation Turkey: What is the current status of the Turkish Airlines fleet? It was announced that new generation aircraft will be included in the fleet in 2019. Could you please inform us on these aircraft that are to be included, such as the Boeing 787 Dreamliner and Airbus A350? How will the inclusion of new generation wide - bodied aircraft to the fleet contribute to Turkish Airlines' growth strategy and competitiveness?

Bilal Ekşi: We run Europe's youngest fleet with the lowest average age. Surely, this results in an advantage in fuel costs and there are also the technological features directly affecting the passenger's satisfaction. Presently, there are 336 passenger and cargo aircraft in our fleet. Our fleet will soon include the new generation Boeing 787 Dreamliner series aircraft in 2019. The A350 series aircraft will be included in our fleet in the beginning of 2020.

I would also like to point out that, as I mentioned previously, on account of the slot advantages offered by the Istanbul Airport, we will

be able to place a second wave frequency particularly in Asia and the Far East. This timetable frequency will be possible with the inclusion of such aircraft in our fleet. These aircraft that will both maintain considerable fuel savings in long distance flights and assist us in increasing the passenger satisfaction will significantly increase our network power as well. I can say that we will be continuing to extend our fleet with aircraft that fulfil our needs. In order to compete with rival airline companies under better conditions, it is of vital essence.

✈️ Aviation Turkey: Istanbul Airport is positioned as a global hub in the global market. How is Turkish Airlines' approach to this new airport? What are its targets?

Bilal Ekşi: We completed all our processes from our first flight at our new home until the "Great Migration". We are improving all areas where we are in contact with our customers. We have high hopes about the Istanbul Airport which is a Statute of Victory and at the same time quite happy about it. The size of our passenger waiting rooms, the number of our check - in counters, and the capacity of our cargo facilities is almost twice as big as that of Atatürk Airport. We will be improving day by day in order to better accommodate our guests.

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✈️ Aviation Turkey: We know that as Turkish Airlines you attach importance to pilot training. What are your activities and programs regarding pilot training and how many new pilots do you plan to employ in 2019?

Bilal Ekşi: We will continue to employ licensed pilots in required types in line with the needs of our growing fleet. When we take the rapid growth graphic of the Turkish Civil Aviation into consideration, we believe that our need for pilots will continuously increase as well. Within this context, we have been training our own pilots for a while at the Turkish Flight Academy. An annual average of 200 pilots graduate from this academy and they sign 10 year-long contracts to fly with our company. As you know, all the projections made signal a significant requirement that will arise for pilots within the next 15-20 years. We are preparing ourselves in the best way we can towards these scenarios.

✈️ Aviation Turkey: How do you assess Turkish Airlines' position in the global market?

Bilal Ekşi: Within the scope of the brand perception research made by the Nielsen Research Company, as a response to the question "Would you tell the names of 5 airlines you know?" asked at the

airports and passenger contact points, Turkish Airlines became the 2nd most known brand in the world. Actually, this is the result of the leading brand communication strategy we executed and our powerful flight network. We will further strengthen our brand perception in a global sense and continue to be one of the best airline companies in terms of both safety and passenger satisfaction. We are now amongst the most critical players of global civil aviation; moreover, we are amongst the rule makers. We aim towards greater achievements and we proceed with firm steps.

✈️ Aviation Turkey: Turkey's first "Aviation Psychologies Research Institute" was established under the cooperation of Turkish Airlines and Istanbul University. Could you please inform us on the activities executed in this area?

Bilal Ekşi: Aviation is a culture in developed countries. In fact, many stakeholders have an impact on shaping of this culture. Education and utilization of existing resources has a critical role in the formation of this culture. DLR - an assessment system we imported during the employment process of pilots, is now being conducted through the esteemed scientists of our country. Through this

study, which is amongst our indigenization attempts, we allow the academicians of our country to work on aviation psychology while we transfer the remaining foreign currency to various areas of investment. We are well aware of the fact that unless we support the activities conducted in aviation as Turkish Airlines, we will not be able to contribute to the development of this sector in our country. Merely increasing the number of passengers will not be enough for this.

✈️ Aviation Turkey: Turkish Airlines is amongst the critical partners of Star Alliance. Do you plan to extend the scope of the cooperation with the Star Alliance in line with your targets and growth strategies in the upcoming period?

Bilal Ekşi: As Turkish Airlines, we are amongst the most crucial members of the alliance. Our network, our service quality exceeding the expectations and standards of the alliance making us a critical stakeholder. We are happy to be a member of the Star Alliance and the Star Alliance is happy to have us. We display our win - win principle also within this alliance. By signing mutual codeshare agreements with the members of the alliance, we increase our

opportunity areas. We continuously work on creating new working areas in terms of trade that would satisfy both our company and the alliance.

✈️ Aviation Turkey: Havelsan will be manufacturing a Full Flight Simulator having an international D level certification for the Boeing 737NG type aircraft of Turkish Airlines. Could you inform us on the activities regarding this? What is your approach on an indigenous aviation industry and what are your comments on this issue?

Bilal Ekşi: Havelsan fully supported us in launching the capability of military simulators in civilian life. As you know, Turkey became the 4th country in the world to manufacture its own simulator as a result of this project. This has been a model study in respect to the development of Turkish Civil Aviation as well. We are using the simulators manufactured by Havelsan. As Turkish Airlines, we will continue to support all types of indigenous and national initiatives.

✈️ Aviation Turkey: Finally, is there any message that you would like to convey to our readers?

Bilal Ekşi: Turkey will grow; Turkish Airlines will be flying high 🇹🇷



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TURKISH DEFENCE & AEROSPACE INDUSTRY



By 2025, Large Portion of
European MRO Activity Will
Move to Low Cost Destinations

How Can **Turkey** Win This Opportunity?



Amartya De



Philipp J. Reuter

An exclusive Aviation
Turkey report from
Amartya De Associate
Director, Aviation Practice,
Frost & Sullivan and
Philipp J. Reuter, Head of
Mediterranean Region,
DBD A&D Europe



Strategic position of Turkey

Located strategically at the convergence of three major continents Europe, Asia and Africa – Turkey is in an apt position both geographically and economically to take advantage of the growing aviation sector in the region, developing the country in to a regional MRO hub. Turkey

has been a hot topic of discussion for aviation investors with the opening of the world's largest airport in Istanbul expected to have a handling capacity of 90 Mn passengers initially. As of Dec 2018, all Turkish airports hosted nearly 210 Mn passengers serving 5 percent of passengers travelling through various airports on both domestic and international flights. With greater connectivity, at Turkish airports, opens

a large market for line maintenance serving international airlines as well as presenting an option of a regional heavy maintenance hub, as many global cities are within a five-hour flight radius that can be flown by both narrow body and wide body aircraft. The continuing growth of low-cost airline operations in Europe, Middle East and North Africa provides a lucrative market for burgeoning MRO market.

European MRO dynamics

European MRO expenses are expected to move beyond those of North America by 2025. By end of 2018, European MRO demand was estimated to be close to \$US 22.7 billion which is expected to increase by a further \$US 5.3 billion and reach the \$US 28.0 billion mark by 2025 growing at a CAGR of 3.05%. The total MRO market demand of Western Europe is estimated to grow



at 3% annually and add a further \$US 4.7 billion to its current demand of \$US 18.5 billion by 2025. Eastern Europe, though continuing to suffer from economic sanctions placed on Russia, the MRO market demand is forecasted to increase 2% annually. UK, Germany, Turkey and France continue to be the four major markets with higher MRO spending in Western Europe whereas in Eastern Europe, the prominent markets include Hungary, Poland and Kazakhstan. Noticeably Russia accounts for more than 50% of the Eastern European MRO expenses while Western Europe's MRO market is

more fragmented with UK, Germany, Turkey and France together accounting for 40% of the spending in 2018. Locally, the total MRO spending of Turkey stands at \$US 1.88 billion in 2018 that is expected to grow at a CAGR of 5.21% and reach an estimated value of \$US 2.68 billion by 2025.

MRO Migration from West to East

Over the past few years, airlines have outsourced maintenance activities to Asia and other regions to achieve cost savings due to comparative lower wages and lower infrastructural or operational costs of repair

facilities. Both Eastern and Western European regions have felt the wage pressures, as the labor rates are on the verge of further increase. While Eastern European MRO labor rates hover around \$US 50 per hour that is closer to North America's average rate of \$US 55 per hour while the Western Europe billing rate is \$US 70 per hour, one of the highest MRO labor rates in the world.

While outsourcing MRO work to Asia and other regions has been a major trend, it could slow down in the near future with the introduction of composite aircraft which are expected to reduce regular, labor

intensive maintenance work. As a result, European carriers such as Air France KLM, Lufthansa and Virgin Atlantic which have outsourced heavy maintenance for long haul aircraft to MRO providers in the past, may soon see low-man hour rates being less relevant in overall economics of heavy checks. Heavy checks are expected to be more spaced out and composite repair works would require more specialized services in addition to man-hours only. In addition, rising fuel costs have led to higher ferry costs thus reducing the potential labor savings. Thus, considering above



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factors such as higher ferry costs, rising wages emerging economies of Asia and reduction in man-hour dependency for heavy maintenance work will lead to substantial drop in migration work from Europe to elsewhere.

Western European MROs will continue to invest into Asian markets, since simply outsourcing of tasks did not benefit many large airline customers unless their MRO subsidiaries were able to leverage cost benefits of both labor and infrastructure in Asia with added new customers. Now with growing number of Asian customers, these global MRO centers are able to stay closer to their Asian customers and reap the benefits of a high growth market.

Low cost labor rates in Turkey

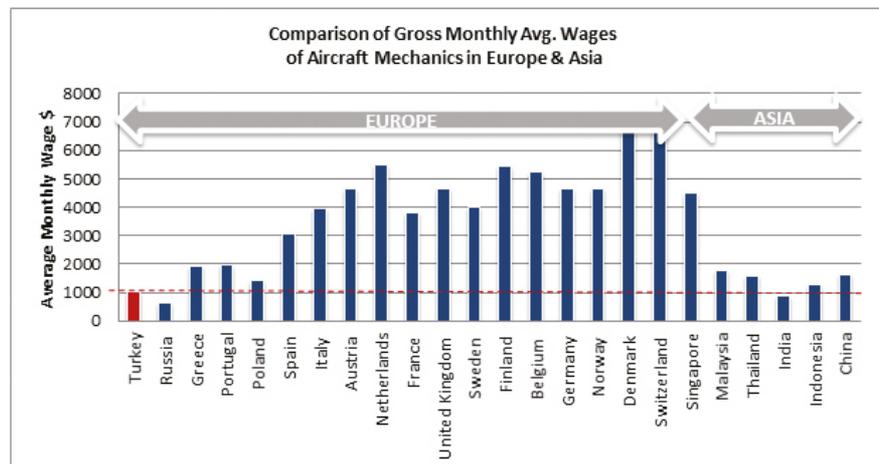
The most significant MRO challenge is the tight labor market, evidenced by the shortage of skilled aircraft engineers, particularly in northern Europe. In addition to close proximity to major cities, Turkey extensively benefits from its labor rates, lowest compared to major countries in Europe

while closely competing with those of the ASIA's major MRO destinations such as China, Singapore, Malaysia and Thailand.

As per our analysis, the gross average monthly wages in Turkey accounts for \$US 1046 which is 4 to 5 times inexpensive compared to the UK, Germany and France, the major aviation hubs in

Europe. Not only Turkey beats Western Europe prices but is also rated better when compared with the average monthly salaries of aircraft technicians working in ASIAN countries such as Singapore, Thailand, Malaysia and China.

MRO demand and existing capabilities in Turkey





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The growing MRO demand has resulted in a surge of MRO activities in the country, with new MRO centers being established in Istanbul. Turkish HABOM, based in Istanbul at Sabiha Gökçen Airport, is a large MRO facility consisting of THY Technic joint ventures for wide and narrow body aircraft repair and maintenance activities. The facility at Sabiha Gökçen also has an engine repair shop and various other MRO facilities of varying size and scale.

Turkish MRO companies like Turkish Technic, MyTechnic, Pegasus Technic and others are also competing to increase their share of the MRO market and expand their customer portfolios. According to aviation industry experts, 12% of the airline industry

costs pertain to aircraft maintenance, which provides significant opportunities to MRO companies in Turkey.

Besides the industry initiatives, the government has also prioritized the aviation sector and brought some incentives to make it more attractive for both customers and airlines. Low-cost airlines have become more popular, regulations pertaining to fares have been revised, and discounts in airport service, landing and passenger fees, and tax reductions for ticket fares and jet fuel have been implemented. In addition the Turkish government has privatized Turkish Airlines, signed bilateral service agreements with likes of EASA, increased the active role of the

Civil Aviation Authority in the international arena and started constructing new airports with the opening of New Istanbul Airport being the most significant and largest in the World. The recent developments are in line with Turkey's Vision for 2023 to construct new airports with 400 million passenger capacity, and build at least two major aviation maintenance and training centers.

Turkey is emerging as an aerospace hub for markets in Europe, Middle East and Africa with the increase in number of domestic and international flights which lead to a surge in passenger and cargo traffic. It is forecasted that by 2025, MRO spending of Turkey will reach \$US 2.68 billion from current spending of \$US 1.88 billion in 2018. Turkey's MRO demand is

growing at a rate of 5.21% which is much higher than the growth of entire Europe's MRO spending put together at 3.05% year on year till 2025. Turkey's local MRO market demand by 2025 is estimated to be close to 10% of Europe's entire demand for MRO services that puts Turkey in an advantageous position with a large local addressable market.

The MRO forecast major aircraft families for the period 2018 – 25 clearly highlights that the MRO demand in Europe will be driven by A320 and B737 in narrow body category whereas A330 and B777 in wide body category. Besides these, A350, A380 and B787 are expected to exhibit high grow rates of 40%, 14% and 40% respectively during the period 2018-25.



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In line with Turkey's MRO demand resulting from narrow body aircraft, the major MRO suppliers like Turkish Technic which has been a preferred MRO service provider for Airbus models has developed capabilities focusing primarily for narrow body aircraft models such as A320 family, A330 and B737 along with few old generation wide-body aircraft models such as A330 and A340. In addition to the existing MRO facilities, Turkey aims to further strengthen its capabilities in MRO with development of new facilities. As Istanbul's

new airport has been fully operational, major airlines including Turkish Airlines have already shifted their base to the new airport. With these changes in place, the older Atatürk International Airport could be used for aviation maintenance activities and positioned as a major MRO and training hub.

Vision for Turkey - capture 5% MRO demand of Europe by 2025

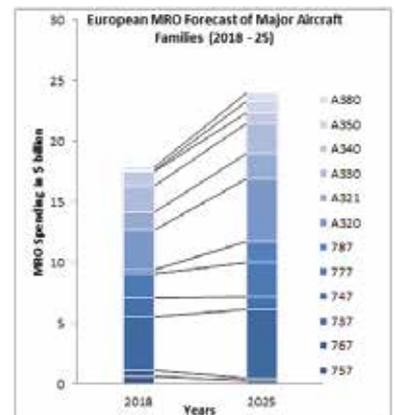
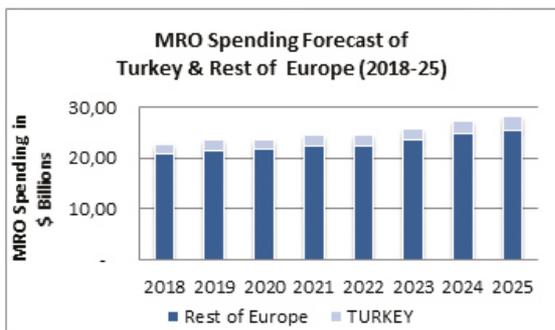
By 2025, Europe is estimated to generate a total demand of \$US 28.0 billion resulting from

various MRO services such as airframe, engine, component, modifications and line maintenance activities. Turkey can take advantage of the growing European MRO demand through its existing MRO capabilities mainly in narrow body category and engine segments and position itself as a major MRO service provider in the category.

Owing to Turkey's excellent geographic position and competitive labor rates supported by government's initiatives and vision towards being established as one of the major aviation and maintenance hub, setting a vision to capture 5% of the total European MRO demand amounting to \$US 1.4 billion is a challenging yet attainable goal. This would be composed

mainly of airframe heavy maintenance and engine services, supported by component repair shops of major aircraft components such as APU, landing gear, wheels and brakes etc. and may come largely from Western Europe MRO outsourcing activities.

Turkey being a suitable transit point for the global passenger also has the potential to be the MRO transit hub for the aircraft in future 🇹🇷



wishes



Temel Kotil
CEO & President of Turkish Aerospace

"I wish success to Aviation Turkey, the new magazine in the field of civil aviation. We will be able to follow the important news regarding our

civil aviation sector through this publication. I wish a successful publishing life to this magazine from where I will follow the

developments, problems, solutions and most importantly the qualified news related to national and international civil aviation."

Latif Aral Aliş
Chairman of the Board of Directors Defense and Aerospace Industry Exporters' Association



"I wish success to Aviation Turkey Magazine, which started its publication life with the strength and experience of Defence Turkey Magazine that allows us to share the significant developments in the

defence and aviation industry at both the national and international level, and that the sector has the opportunity to express itself with all its components. We will have the chance to share the export

achievements of Turkish companies especially in the civil aviation sector with sector professionals and the public in a more comprehensive manner through Aviation Turkey Magazine."

Mehmet T. Nane
Pegasus Airlines General Manager



"The press has an important role in the development of the Turkish civil aviation sector and to promote it efficiently to the world as much as to the civil aviation authorities and companies operating in the

aviation sector. In this context, I sincerely believe that this magazine, which was formed with the aim of becoming a communication platform that provides bilateral information flow between the

global and Turkish aviation sector, will be an important source for the civil aviation sector. I wish Aviation Turkey Magazine success in its publishing life."

Ahmet Hamdi Atalay
General Manager & CEO
Havelsan



"I would like to congratulate Aviation Turkey Magazine, which will start its publication life in the civil aviation field adding new breath

and enthusiasm. Aviation Turkey Magazine is the sister publication of Defence Turkey Magazine that has been publishing important

developments of our defense industry since 2005. I wish Aviation Turkey and all their employees many successful issues of the new magazine."

Can Şaşmaz
General Manager MNG Jet Havacılık A.Ş.



"I wish success to Aviation Turkey, the new magazine in the field of civil aviation. We will be able to follow the important news regarding our civil aviation sector through this publication. I wish a successful publishing life to

this magazine from where I will follow the developm "I would like to congratulate you for this new magazine that you have introduced to our aviation community. To be successful you have all the features you need as a team. We are all

aware that you can create a great product and we will be your full supporter on this path. Good luck on your new journey." ents, problems, solutions and most importantly the qualified news related to national and international civil aviation."

The Most Violent Turbulence in Boeing's History: 737 MAX!



by Muhammed Yilmaz

The aircraft, during its short life span of just 3-years, managed to break sales records and success charts; it also experienced two fatal accidents, banned flights, dozens of contradictions, hundreds of question marks, negligence claims, and much more. Now, Boeing faces the toughest days in its history. Here's a recap of the infamous 737 MAX jets - past, present, and future!



Equipped with new systems and powered by more efficient engines, the 737 MAX family is the fourth generation of the Boeing 737 series. When the MAX-8, the first member of the 737 MAX family, took to the skies for the first time on January 29, 2016, no one knew how the beginning of this story would unfold.

Entering service with the Malindo Air fleet for the first time on May 22, 2017,

MAX family airplanes became the fastest-selling aircraft model in Boeing history, accumulating over 5,000 orders in a short time. However, in the continuation of the story, these statements of success and pride were replaced by tragic, painful, and dubious ones. Entering the market like a perfect storm, it looks like MAX aircraft will be at the top of the list of the most controversial aircraft models in aviation history!

Problems started with the design

Wanting to reduce the production costs and to not fall behind its European rival Airbus A320 in the single-aisle aircraft market, Boeing faced some problems in the design process of the 737 MAX aircraft. Providing 14% better fuel burn, the new generation CFM International LEAP-1B engines developed for the new aircraft were larger than the engines used on previous models. Therefore, Boeing raised the landing gears and placed the engines higher and further forward from the aircraft's fuselage. However, these actions changed the airplane's center of gravity and affected its flight performance especially

during the climb, increasing the aircraft's angle-of-attack (AOA) all too often.

Regarding this hazardous situation, a system called MCAS (Maneuver Characteristics Augmentation System) was installed to the aircraft for the first time in Boeing history, to prevent the aircraft from entering an abnormal state called stall wherein the angle-of-attack increases beyond a certain point such that the lift begins to decrease. Thanks to this new system, when the nose of the aircraft was pitched upwards due to the increased angle-of-attack during the climb, the airplane could automatically adjust the trim, pushing its nose down. However, it was clear that something was not going right...



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Back to back 737 MAX crashes

Then the demoralizing incidents began to come one after another. On October 29, 2018, Lion Air's 737 MAX-8 crashed 11 minutes after its take-off in Jakarta, and on March 11, 2019, Ethiopian Airlines 737 MAX-8 crashed 6 minutes after its departure from Addis Ababa. The Ethiopian Airlines airplane involved in the accident rolled out of the factory

four months in advance of the incident and flew about 1,200 hours operationally, while the Lion Air aircraft rolled out of the factory 11 months prior and had flown merely 800 hours up to the accident.

Having two fatal accidents that caused 346 deaths within a short span of five months was enough to link these crashes with each other and raise questions about the safety of the newest aircraft model

built by the oldest and perhaps the strongest aircraft manufacturer. Both accidents were very similar to each other, and all the evidence pointed to the MCAS system. Something went unquestionably wrong with Boeing's newest and best-selling commercial aircraft model.

According to preliminary reports on the accidents, pilots were struggling to maintain control of the

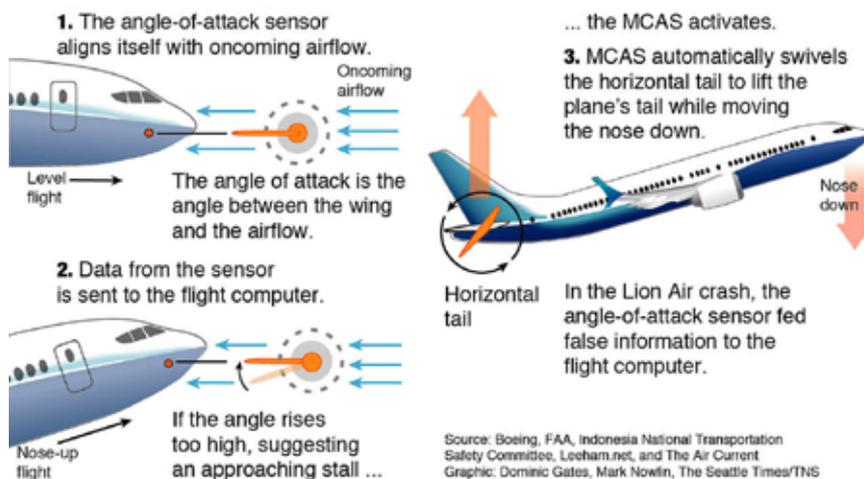
aircraft following the failures of the airspeed indicator and some other equipment during the take-off. It is believed that, because of the faulty readings from the angle-of-attack sensors, the MCAS system abruptly commanded the aircraft into a steep dive, and the pilots could not recover the aircraft from the persistence of nosediving.

Global Grounding of 737 MAX!

Following the second accident, the decision of the Civil Aviation Administration of China (CAAC) to ground all MAX airplanes was rapidly implemented by other countries. The Civil Aviation Authority of many countries banned MAX aircraft from their airspaces, as well as compelled MAX operator



How the Maneuvering Characteristics Augmentation System works on the 737 MAX



airlines to withdraw the airplanes from their fleets. Within about four days, the entire global fleet of 371 737 MAX jets were temporarily grounded until the manufacturer could prove the reliability of this aircraft. Boeing stock fell nearly 20% and the company experienced the most severe turbulence of its 102-year long history!

Pilots are concerned!

After the two deadly crashes, the pilots who flew Boeing aircraft also appeared to have serious problems and concerns about the aircraft. The database of the Aviation Safety Reporting System (ASRS), which was established by NASA to allow pilots to anonymously record the incidents they experienced, holds numerous aircraft-related

problems reported by pilots from all over the world. When the reports are analyzed, it is clearly seen that the pilots were not entirely adapted with the aircraft, and they had some confusion about controlling the aircraft.

The audio recording of American Airlines pilots confronting Boeing experts about the MCAS system during a meeting after the Lion Air accident also received extensive media coverage. At the meeting, pilots blamed the MCAS system and claimed that the faulty system was the cause of the accident, however, Boeing Vice President Mike Sinnott stated that the investigation had not been completed yet and said "The crash investigation is still ongoing. No one has concluded that the MCAS system led to the accident."

Was Boeing aware of the problems?

A statement by Boeing in this May revealed a timeline indicating that they were aware of a problem with the aircraft long before the Lion Air accident, but that they did not take any action on the case.

Analysts criticized Boeing's unique software design as it was based on readings from only one angle-of-attack sensor on any given flight, leaving the aircraft

vulnerable to a single point of failure in case of data inconsistency. It also claimed that Boeing did not test how the MCAS system would react if one of the angle-of-attack sensors failed.

In 2017, within several months after beginning 737 MAX deliveries, engineers at Boeing identified that the 737 MAX display system software did not correctly meet the AOA Disagree alert requirements. However, instead of fixing the problem immediately,





Boeing decided to leave it to the next planned system software update.

Approximately a week after the Lion Air accident on October 29, Boeing added a line in the FAA's Airworthiness Directive (AD), stating that the AOA Disagree alert feature is only available if the angle-of-attack indicator option is installed. It is not entirely clear whether Boeing had warned the airlines that purchased the 737 MAX jets about this issue. Many pilots alleged that the operations manual is notoriously insufficient, and they had not received any information during the training process on how to switch off the MCAS system.

All charges against Boeing also target the US Federal Aviation Agency FAA. There are allegations that the FAA overlooked the incident and did not request the

necessary safety measures for the MCAS system from Boeing.

Boeing stated that, when the MAX airplanes return to service, all the aircraft will have an activated and operable AOA Disagree alert and an optional angle-of-attack indicator. All customers with previously delivered aircraft will have the ability to activate the AOA Disagree alert. Unfortunately, aviation regulations continue to be written in blood.

MCAS software updated

Although Boeing primarily focused on the deficiency of pilot training regarding the accidents, the grounding of the aircraft and other developments led the company to accept the possibility that both accidents had occurred due to a common reason. After the investigation,

Boeing CEO Muilenburg apologized for the lives lost, acknowledging that the MCAS system, which pushed the aircraft's nose towards the ground, played a key role in both accidents.

Boeing decided to release a software update for the MCAS system consisting of flight control regulations, panel indicators, operations manual and training of the cockpit crew. With the update, Boeing aims to prevent the system from activating and reacting to the wrong angle-of-attack data provided by only one sensor as in the case of previous accidents and plans to introduce a new set of cockpit warnings to alert the pilots against potentially dangerous situations.

The flight control system will now automatically crosscheck the data from both of the airplane's angle-of-attack sensors.

The MCAS system will not be activated if there is a discrepancy of 5.5 degrees or more when the aircraft flaps are closed. Also, the system will inform the pilots about the situation via an indicator in the cockpit, allowing the crew to counteract the system in the case of an emergency.

The MCAS system will no longer overrule the pilots' commands or apply so much input to the stabilizers that the crew cannot counteract it. This will enable the pilots to deactivate MCAS at any time and to manually control the aircraft. Boeing will also provide a training program to help pilots better understand the MCAS system. No extra simulator training will be required for the pilots apart from the half-hour long PC-based online training.

Unlike its biggest competitor, Airbus, Boeing has so far considered the



© Boeing

pilots as the sole authority in flight. MCAS software was developed as the only exception to this traditional approach. However, it didn't take too long to realize what a fatal mistake this was.

When will the Aircraft Take-off Again?

Although Boeing previously announced that the update would be completed in 1-2 weeks and delivered to airlines and authorities, the company was able to complete the update in about 2 months. However, the aircraft are still in parking position in various regions of the world, for almost three months!

Boeing's test pilots have flown with the updated software for more than 360 hours on 207 test flights and carried out concurrent simulator testing. The finalized reports were submitted to the FAA and

aviation authorities of 8 countries by the company.

Boeing pilots completed the test flights with the new MCAS software. However, during the flight certification tests, the aircraft will be flown accompanied by FAA pilots to independently verify whether the software update complies with all safety regulations.

Boeing announced that the software could be delivered to all operators within a day following the approval of the update by the FAA and other aviation authorities, and it would take only an hour to install the update on the aircraft. Boeing also plans to organize a series of customer conferences across the globe before the 737 MAX jets start commercial flights again.

Not Suitable for Hot and High Airports?

Geographically high-altitude airports require longer runways and higher take-off speeds. Because the air is thinner at higher altitudes, the aircraft must accelerate faster to

generate the required lift on the wings. The same condition also applies to airports located in hot regions, as the hot weather has similar air densities with higher altitudes.

The Addis Ababa Airport, where the Ethiopian Airlines accident took place, is in the high airport category with an altitude of 7,657 feet, while the Jakarta Airport where the Lion Air crash occurred is in the hot region airports category.

The official documents submitted to the International Trade Commission by Boeing during a lawsuit between Boeing and Bombardier in 2017, claims that 737 MAX jets are not suitable for operations at high altitude and hot airports. According to these claims, only the 737 MAX-7 can serve in such airports due to its size while the MAX-8, 9 and 10 models are not considered suitable.

Official documents submitted to the Commission indicates that at least 16 undisclosed airports in the United States are in the "the high and hot" category and not suitable

for the operation of MAX-8, 9 and 10 aircraft.

All the controversy about 737 MAX accidents revolving around the MCAS software around the world, pushed aside the claims that the aircraft cannot operate at high and hot airports. No one knows if it has anything to do with the accidents, but it's a little confusing that Boeing doesn't make any statement on this topic and continues discussions regarding the MCAS system.

Who will compensate the airlines?

Compensating the airline companies for their financial losses due to the worldwide grounding of 737 MAX jets is another case. Insurance companies and Boeing must pay the tangible damages to the airlines.

What is certain besides the 346 people who lost their lives and the negative effects of the resulting panic, is that the operators of the aircraft are not satisfied with the current situation. Most airlines have



publicly announced that they will seek compensation for their financial losses.

Southwest, Air Canada, American Airlines, China Southern, Norwegian, Air China, TUI Group, United Airlines, flydubai, SpiceJet and WestJet are still the largest operators of the aircraft. American Airlines operates a fleet of approximately 1,000 aircraft comprised of 24 737 MAX aircraft. The company used 737 MAX aircraft in 85 of its 6,700 daily flights. United Airlines, another US-based company, has fourteen 737 MAX-9 jets. The largest operator of 737 MAX aircraft with 34 jets in its fleet is Southwest and their operations with MAX airplanes correspond to 4% of their daily flights.

All the operators of the 737 MAX have taken various actions to minimize the tangible damage caused by temporary grounding. Some airlines changed their flight schedules and canceled some of their flights while others signed short-term

aircraft leasing agreements.

A study by the independent aviation consulting firm IBA (International Bureau of Aviation) shows that the direct cost of 737 MAX aircraft grounding is around US\$150,000 per day. For Boeing, this amounts to a US\$55.6 million loss in a single day.

The calculation by the IBA is based on the airlines' leasing or financing costs, personnel costs, parking fees, compensation payments arising from flight program changes and cancellations, rebooking passengers on other airlines and additional costs, regardless of whether the aircraft is flying or not. In addition, grounded aircraft still require maintenance and repair. Therefore, even after Boeing fixes the problems with the aircraft, the airlines will face some extra maintenance costs before the jets begin to fly.

As the occupancy rates and hence the cash income of the airlines in the Northern Hemisphere are expected

to increase before the upcoming spring and summer season, every operation that the airlines could not complete in this period due to the grounding of their aircraft equates to a red alert for their revenues. This situation will cause Boeing to pay a tremendous amount of compensation!

The fact that many airlines are considering canceling their previous orders can significantly increase the loss that Boeing will suffer from.

737 MAX summaries of Turkish airline companies

Corendon Airlines became the first airline to add 737 MAX aircraft to its fleet in Turkey. Turkish Airlines has a total of 75 Boeing 737 MAX jets on order consisting of 65 MAX-8 and 10 MAX-9 models with a longer fuselage. So far, THY has received a total of 12 aircraft including 11 MAX-8 and one MAX-9. Turkish Airlines has grounded all its Boeing 737

MAX models until further notice from civil regulation authorities, and the jets are currently parked at Istanbul Airport. SunExpress was also preparing to receive its first MAX 8 aircraft in April.

MAX continues to be produced!

Boeing currently focuses on finding solutions that will allow the MAX planes to return to the skies and fly safely. Although the MAX airplanes have been grounded for nearly three months, Boeing continues to manufacture jets at its production center in Seattle without any breaks. Rolling out MAX jets from its final-assembly line at the remarkable rate of 52 aircraft per month before the incidents, Boeing temporarily throttled back the production rate to 42 aircraft per month. The rolled-out jets quietly wait for their deliveries.

The current workload of the US-based OEMs is quite hard. Boeing needs to compensate the airlines for their financial losses, convince them not to cancel their orders, win back the trust of both passengers and airlines regarding the safety of the aircraft, and solve the problems of the MAX jets as soon as possible. If Boeing doesn't use its energy wisely and efficiently, the company will likely face quite a bit of trouble in the upcoming days. We will see what happens 🌐

wishes



Bilal Ekşi
Turkish Airlines CEO

"Our civil aviation has been improving with each passing day. As Turkish Airlines, we combine our technological infrastructure, fleets and service quality with the access advantage of Istanbul, and we soar

demonstrating excellence and proudly representing our country. As we ascend, we know that our sector should grow together with all of its stakeholders. Academic studies, publications and research

are our future. Entering our sector with its experienced staff, I believe that Aviation Turkey Magazine will assume a critical role in this field and I wish success in its publication life."

Kadri Samsunlu
IGA Airport Chairman of the Executive Board and CEO



"I would like to thank you for featuring the Istanbul Airport in your first issue. In Turkey's aviation history, our airport has its name written in letters of gold. We thank you for sharing the

excitement we feel for the greatest project in history of the Republic.

I look forward to sharing new and exciting news about our airport with

you. I wish Aviation Turkey Magazine a long and successful publication life which I wholeheartedly believe will bring new breath into the aviation sector."



Murat Soylu
Esenboğa Local Authority
Ankara Deputy Governor

"I would like to congratulate those who have contributed to the

preparation of the magazine which will contribute to the promotion of

our country."

İlhami Sezer
Sezer Aviation



"We congratulate Aviation Turkey Magazine for the contributions it

will make to the Turkish aviation industry and wish success in its

publication life."



Gudrun Telöken
independent consultant,
formerly General Manager of Antalya Airport

"Finally, there is a magazine in English, to cover the Turkish aviation market on an international scale! Turkey has seen an unparalleled development of its aviation sector over the last two decades. The strong profile of Turkish Airlines, a strong airport concession regime and a robust domestic and international traffic trend have

catapulted Turkey's aviation sector on the global aviation map. But that went unnoticed due to a lack of visibility in the international media landscape. To be at par with its international peer markets in the top league -not only in terms of traffic numbers, but also by participating and contributing to international best

practice- a publication in English is indispensable. AVIATION TURKEY is the first magazine to attempt this.

Can Erel and his team combine in-depth knowledge of both Turkish aviation and international sector expertise, and I am keen to follow their magazine!"

Worldwide Opportunity Exceptional Competitive Power

Conducting business worldwide, TAV is ready to meet the needs of increases in global population, urbanization, globalization and growth of newly developed middle classes as they will be the driving force of air traffic growth throughout the next 20 years especially in the main geographies where TAV is active. In this exclusive interview, President & CEO of TAV Airports Mr. Sani Şener discusses TAV Airports continued growth plans for Eastern Europe, Baltic Countries, Middle East and African Regions. Through collaboration with Aeroport de Paris (ADP) Group in 2012, the world's greatest airport operation platform was created, composed of 24 airports and a yearly number of 281 million passengers





✈️ Aviation Turkey: Could you please inform us on the evolution, the present structure reached, sectoral access and operational as well as financial status of TAV Airports Holding (TAV HH) known with its application of the model of Build - Operate - Transfer for Airports and Terminals that contributed to the global recognition of Turkish aviation with its successful implementations from the start?

Sani Şener: With a unique business model from the beginning, TAV is a company that was established by assuming the construction and operation of the Atatürk Airport in 2000. In that period, Turkey launched the policies of liberalization in aviation and privatization in airport operation.

During the last 19 years, on account of this vision, two global brands emerged: THY in aviation and TAV in airports and the number of passengers exceeded 200 million in Turkey. After getting involved in this business in 2000, we projected the growth of the sector and regarded it as a critical worldwide opportunity. With the know-how we accumulated, we aimed for international growth and identified a target of becoming an operationally regional company and a global one in terms of finance.

The year 2012 was a critical milestone for TAV. In that year, 12 airports existed within our portfolio and we became a global company serving yearly 72 million passengers. We went through a public offering, we settled our institutional

processes, and we became a preferred brand in this area focusing on airport building and operations. For the next step, we went through a search for an industrial partner and through our cooperation with Aeroport de Paris (ADP) Group in 2012, we created the world's greatest airport operation platform.

In the last seven years, we have also maintained our development with the contribution of such cooperation activities. Together, we conduct business in third countries such as Croatia and Cuba. Currently, we operate 14 airports in seven countries. Additionally, our service companies perform activities in 21 countries at 62 airports where TAV does not exist. We are at the top of the global list of airport construction in the last

three years. We have over 55 thousand employees together with our construction company. We have become a company preferred worldwide with our know-how.

✈️ Aviation Turkey: Today, with ADP partnership TAV HH is one of the 5 greatest airport operators in Europe. What are your comments on TAV HH's global position? What would you like to say about TAV HH's ADP shares and assessments for the future?

Sani Şener: Currently, TAV is a company that collaborates with the world's leading airport operators, it is a brand preferred by the whole world and it exists at the same platform with Europe's top five airport operators. We are partners with Fraport in Antalya. ADP is our



Antalya Airport

partner, and Vinci is ADP's partner. ADP is also the partner of Schiphol. We created the world's greatest airport operating platform composed of 24 airports and a yearly number of 281 million passengers with ADP. The distinctive experiences and know-how we gained here provide an exceptional competitive power to TAV all over the world.

✈️ Aviation Turkey: It was announced that TAV HH served 29 million passengers in the first quarter of 2019 and that it achieved a net profit of EUR 24 million out of a total turnover of EUR 270 million. What is Turkey's share in this financial statement? How has 2018 been for Turkey and what are your comments on the 2019 first quarter figures?



Medinah Airport

In Turkey, we are executing the operation of the Antalya, Izmir Adnan Menderes, Ankara Esenboğa, Milas-Bodrum and Gazipaşa-Alanya airports. As a result of the devaluation suffered by the Turkish Lira that started in the second half of 2018, the regression in the internal demand affected Turkey's domestic lines traffic negatively. Due to both volatility and 2018 being a high base year, we observe the continuation of this regression in the first months of 2019 as well. On the other hand, the increase in the international lines traffic at our four airports that serve touristic destinations continue. Especially in Antalya which is Turkey's second greatest airport in terms of international lines, we witness a successful graphic on account of the promotion and marketing activities we conducted in order to extend the touristic season to 12 months. Antalya Airport's international lines traffic increased by 45 percent in the first four months of the year compared with the previous year and reached 2.8 million passengers.

✈️ Aviation Turkey: Zagreb and Skopje Airports operated by TAV HH were selected as the "Best Airports" of Europe in their categories. In addition to Zagreb and Skopje, the Muscat International Airport at Oman was selected as the "Airport improving its service quality the most" in the Middle East. The affiliates of TAV HH - BTA and TAV Operating Services assumed all the food - beverage operations, lounge, car park and CIP services. Finally, the Riga Primeclass Lounge operated by TAV Operating Services was selected as "Passenger Lounge of the Year" in Europe. What are your comments on

the activities of your companies that appear on the agenda with their achievements in such countries?

Sani Şener: Passenger satisfaction lies in the center of all our operations. Aviation is a strictly regulated strategic sector feeding various other sectors with high factors. Security based regulations have been increasing across the entire world in the recent period. Within such a framework, our endeavor is to offer a rapid and comfortable travel experience to our passengers. We are creating innovative solutions by tracking changing passenger requirements



© TAV



Ankara Esenboğa Airport

© TAV

and expectations. At the same time, we increase efficiency by implementing the technological developments to company processes. Contrary to the past, recently developed information technologies allow us to have a detailed view of passenger behavior and to create instant solutions. We foresee a process where passengers will be able to plan all moments of their travels and where the airports will be transformed into social life areas. We own financial and operational competencies rendering us capable of conducting making business across the world.

✈️ Aviation Turkey: You announced that your service companies, which are your third

area of growth, formed a 37 percent combined turnover, and that the TAV Operating Services Company accessed Spanish airports by acquiring the majority of the shares of Spain based company GIS and that you accelerated growth strategies in South America and Europe. What is the status of your global activities with your service companies ATÜ, Havaş, BTA and TAV Technology? Are you setting sights on new markets and areas within this new period?

Sani Şener: The growth strategy of TAV Airports is a very clear strategy based on three fundamental pillars. First of all, through investment strategies with attractive return profiles,

we are always searching for smart inorganic growth, “smart growth” opportunities. Secondly, we wish to serve to more passengers at our airports that we maximize and operate by supporting the organic growth of our existing portfolio and operations with all types of new technologies and increasing efficiency. Within the scope of the third pillar of our growth strategy, we aim for our service companies to extend out of TAV as well, by using business opportunities at the new airports besides just the TAV Airports ecosystem. As TAV Airports, we completed a successful year in terms of all three areas that are fundamental to our growth strategy. In line with our

strategy of focusing on profitable inorganic growth opportunities, we acquired 50% of the shares of the company running Antalya Airport in 2018 in return for EUR 360 million. In this way, we added the 14th airport to our portfolio. Our service companies, which are our third area of growth, now form 37% of our combined turnover. With ATÜ, Havaş, BTA, Operating Services and TAC Technology, TAV’s footprints have reached from the USA to Denmark and to Indonesia, spanning 76 airports in 21 countries.

✈️ Aviation Turkey: TAV was examined as a “Case Study” at Harvard Business School. How did that happen, how did it develop and what is the current situation? Could you inform us about this development?

Sani Şener: Harvard Business School (HBS) is amongst the world’s leading schools in the area of business management sciences. HBS performed a case study on TAV which started in Istanbul and how it became a global brand. The case study, written by an academician at the HBS Prof. Juan Alcacer and the HBS Istanbul



Enfidha-Hammanet International Airport

© TAV

Research Center Director Esel Çekin, is based on a Turkish company starting from scratch and rising to become one of the greatest airport operating platforms by adopting the build- operate- transfer model in its journey fueled with a great vision. On the course of this study, 12 academicians from HBS visited Istanbul, I made a presentation to them and they decided to make a case study of TAV immediately after the presentation. Prof. Alcacer and Çekin examined our company for two months and made one-on-one interviews with our executives. Upon the publication of the study, I was invited to Boston and we explained TAV to the MBA students at a course with our CFO Burcu Geriş and Deputy CEO Serkan Kaptan. Previously you asked me about my career, well one of the milestones shaping my career was being able to represent our country by talking about our company directly to the world's most distinguished students at Harvard University. I was very proud that a Turkish company was selected as a model.

✈️ Aviation Turkey: Now let's talk about the issues many are wondering about... You ended your activities at the Atatürk Airport with an emotional farewell with all your employees. What type



of global and national business strategies do you have for the future now that TAV HH's greatest initiative - the most crucial airport introducing the implementation of the "Airport and Terminal 'Build - Operate - Transfer' Model" to the world with its achievements has been closed?

Sani Şener: We are involved with many projects across the world. We are not able to announce all these projects due to their confidentiality and as they have not yet reached a certain level of maturity. Most recently we participated in the tender launched for the Sofia Airport in Bulgaria and placed the best offer with our partner ADP. We expect the results to be announced in the days to come.

In the medium term, Airbus and Boeing expect the worldwide airline traffic to

grow by an average of 4.5 - 5% every year within the next 20 years. According to the projections of the IATA, the total number of airline passengers in the world will double within the next 20 years. Eurocontrol's expectation regarding the total amount of Turkish airline passengers is 7% yearly growth until 2020. A more rapid increase in air traffic is expected in developing countries as their middle class expands. Increases in population, urbanization, globalization and growth of newly developed middle classes will be the driving force of air traffic growth throughout the next 20 years especially in the main geographies where TAV is active. TAV Airports will continue to perform activities in Eastern Europe, Baltic Countries, Middle East and African Regions that constitute the geographies of TAV's main activities.

✈️ Aviation Turkey: What is the latest status of the compensation process you have been executing with the State Airports Administration (DHMI)? What will be TAV HH's activities in the future of this airport which will be conducting its activities as a general aviation and terminal operator? What will TAV HH's role be in this process?

Sani Şener: We made great progress in the negotiations we have been conducting since 2018. We made many efficient face-to-face meetings with the independent audit companies that both deliver consultancy services to us and DHMI as well as with the executives of DHMI. We expect the negotiations to be finalized within a short time upon the full capacity launch of the new airport and the closing of Atatürk Airport. After that time, we will share all detailed information with the public 🗣️

The Future of Aviation

What Awaits us?

by Muhammed Yilmaz

Our next aircraft will be; easy to manufacture, sustainable, more automated, more connected and most importantly it will be extremely safe!

Organized by the European aircraft manufacturer Airbus, the Innovation Days event, which allows us to glimpse into the future of aviation, was held at the company's center in Toulouse on May 21-22, 2019. I personally followed the event which was held for the first time at the Airbus Leadership University Campus together with 135 press members from 42 different countries.

The impact of the recent changes at the top levels of

management at Airbus was certainly evident with the selection of speakers and subjects at the event. The format of this year's event was slightly different from the previous ones. During the event, special panels and conferences were held to discuss the future of aviation with presentations of experts, while the participants were given the opportunity to experience new generation technologies with various mock-ups set up in an area called the Market Place.



Demand for 37,000 Aircraft in 20 Years

According to the official figures announced by Airbus, global aircraft demand is expected to be more than 37,000 in the next 20 years. The total list price of these aircraft is expected to be around US\$4.6 Trillion. As air travel continues to grow, regulations become stricter, and as airlines become more competitive the need for a unique aircraft from all sides becomes apparent.

Performance of the A220 to be improved

The first major announcement at the Innovation Days event was about the planned actions to improve the performance of the A220 airplanes. Airbus signed one of the best deals in the history of commercial aviation by acquiring the majority shares in the production program of Bombardier C Series last year, and launching the aircraft under the name

of A220, and just how lucrative this deal was will be more apparent over time.

In the 100-150 seat capacity regional jet market, Airbus has achieved impressive success with the competitive and efficient A220 aircraft. Airbus is planning to make the A220, which has performed very well so far, more attractive for airlines to use on more routes by increasing the range and maximum take-off weight.

Therefore, Airbus decided to increase the maximum take-off weight of A220 aircraft by approximately 2.3 tons. The planes with the new maximum take-off weight (MTOW) will be launched from the second half of 2020 onwards. In addition to the aircraft's maximum take-off weight, their range will also be increased. Thus, the maximum range of the A220-100 will be 3400 nm, and the maximum range of the A220-300 will be 3350 nm.





Is the Boeing NMA's Rival A321XLR?

Throughout the event, the most popular question thrown at Airbus from the guests was "will there be

an A321XLR to compete with the Boeing NMA? Interesting answer one that should hopefully be clear soon. The fact that A321LR is the longest-range single-aisle airliner currently, has been

repeatedly emphasized.

The fact that the A220, A321neo/LR, and A330 are the best complementary solutions for airlines, puts Airbus's product strategy in a different position from

that of Boeing. Believing that the NMA model will be an inefficient project, Airbus officials are closely following Boeing's steps.

Achieving fuel savings of around 15-20% with its A320neo family aircraft, Airbus aims to increase the efficiency of the aircraft by reducing the friction and noise levels even more with the new nacelle project they have jointly developed with Pratt and Whitney.

Pleased with the performance of the already in use A330-900neo, Airbus plans to



New cabin concepts

© Airbus



TAP Air Portugal A321LR

© Airbus

complete the certification process for the younger brother A330-800neo by the end of the year.

Airbus officials state that their star A350 will provide great advantages to airline companies in the future with its advanced cockpit, cabin and maintenance systems, in addition to its great success in terms of digitization and connectivity.

With the completion of the A380 production in 2021, the answer to the question if Airbus will

produce a larger version of the A350 to compete with the Boeing 777-9 or 777-10 is very clear: There will be no major change for the A350 until the next engine renewal!



Good news for Australians from Airbus!

Within the scope of the Sunrise project, Australia's flagship Qantas Airways aims to reach destinations such as Paris, Cape Town, New York, and Rio de Janeiro with the non-stop flights from Sydney and Melbourne on the east coast of the continent.

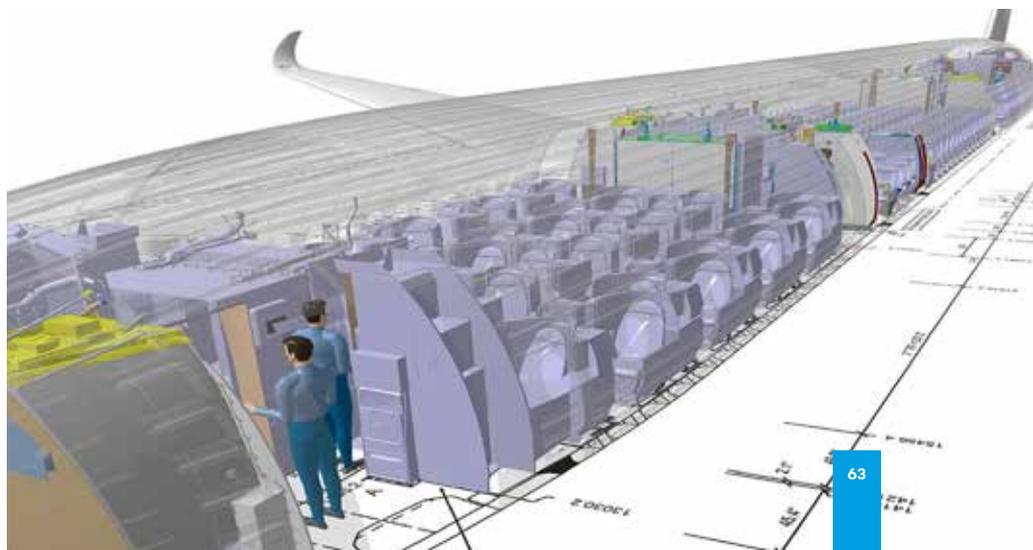
The CEO of the company, Alan Joyce, has long been calling on Airbus and Boeing to develop an airplane that can cover ultra-long distances and fly non-stop between any two points of the world.

During Innovation Days, I also learned from one of Airbus's top names that a new product was developed to meet the needs of Qantas. The future looks bright for Australians with this exciting news!

Manufacturing processes of planes are digitalizing

Among the products that we personally experienced at the Market Place during the event were efficient, safe and reliable technological equipment developed for the employees working in the manufacturing process of aircraft were quite remarkable.

Smart glasses with virtual reality (VR) and augmented reality (AR) technology simulate the results of all actions taken by technicians on the aircraft. It is easier and more reliable than ever before for a technician to install meters of cables on the plane or to work on avionics systems using these technological glasses. Airbus also uploaded the company's





training documents to the system and integrated its internal training processes with VR technology. Every time the employees put on the glasses, they find themselves in a classroom and can see all the course notes. According to the studies, the addition of visuals to the education process besides reading and listening makes a significant contribution to the 'deep learning' technique. It increases the efficiency of training and saves on time.

The target of wearable technology applications in aviation was set for employees who constantly work in the same position in the manufacturing process. The spring-loaded mechanical skeleton-like structure called exoskeleton is designed to eliminate the muscular and joint problems of the workers and provide them with better and more efficient working conditions.

Airplane parts to be produced from Algae

The most crucial factor for a technological breakthrough in the aviation industry is a revolutionizing difference in material quality. The introduction of carbon fiber-based composite materials into aerospace technology, and especially the high utilization rates on the Boeing 787 and Airbus A350 models, has started a new era for the aviation industry.

Airbus is now planning to use seaweed (algae) for the manufacturing of structural components in aircraft. The company will use the fibers extracted from seaweed, that can reduce the carbon dioxide concentration in the atmosphere in a sustainable manner, to produce light and strong material for the manufacturing process of aircraft parts.

The same goal also applies to artificial spider silk. If large volumes of spider silk can be produced in a sustainable way, Airbus plans take advantage of this thin, ultra-light material with outstanding durability to produce aircraft parts.

Flexible wing tips

Airbus presented a projection of the future aircraft wings with a flexible-tip technology demonstrator called Albatross One. The wing tips of the design flex down

during the flight to reduce the effects of turbulence and stress on the structure and wings of the aircraft.

Unlike Boeing's latest airplane model 777X, the Albatross One has downward folding wings. As the air flows over the wings when the aircraft accelerates, the downward curved parts at the tips of the wings bend upwards due to the increased lift and take the shape of the winglets on the existing airplanes with the same





effects. They also help with the gust alleviation.

Although the system is not perfect yet in terms of safety and functionality, Airbus believes the future of wing design, which means increased comfort for passengers and fuel savings for airlines, is very bright. Recent tests with the scale model show promising results regarding the possibility to find aerodynamically optimal wing positions during the flight.



Connected cabins

Airbus is ambitious to implement the idea of a connected cabin. The Skywise platform aims to optimize all the movement inside the aircraft and meet the needs of the passengers in a shorter time through the data collected from the volumetric sensors placed in every corner of the aircraft, especially the seats, overhead bins, galley, and toilet. Scheduled to be integrated into a real airplane in 2021, the integrated cabin system provides the cabin crew with necessary information such as whether you are wearing a seat belt or not. The system also shows the overhead bin density to crew members through their multi-functional screens. Moreover, the system lets you check the status and location of your food and drinks in seconds. For those

concerned about privacy, Airbus clearly states that passenger information will not be stored or used on this system.

Another highlight of the Innovation Days was the lower deck module, which was also awarded in the Cabin Concept Category at the Crystal Cabin Awards this year. The modular design, which can turn the cargo compartment of the wide-body aircraft such as the A330 and A350 into a resting area for the passengers with an additional ventilation support unit, attracted a great deal of attention at the fair. Accessible through the stairs, the passengers are expected to rest in this windowless section during long journeys.

The award-winning cabin concept is believed to be influenced Qantas' choice for the Sunrise project between the Airbus A350 and Boeing 777X in favor of the A350.

ARTICLE

Electric Planes Are Coming!

Aircraft are roughly 80% more fuel efficient per passenger kilometer than they were 50 years ago. However, with air traffic growth estimated to more than double over the next 20 years, reducing aviation's impact on the environment remains the aim of the industry.

To overcome this challenge, Airbus has signed a Memorandum of Understanding (MoU) with SAS Scandinavian Airlines for hybrid and electric aircraft eco-system and infrastructure requirements research. Collaboration will start in June 2019 and will continue until the end of 2020. Airbus and SAS Scandinavian Airlines have committed to achieving carbon-neutral growth for the aviation industry as a whole from 2020 onwards, cutting aviation net emissions by 50% by 2050 (compared to 2005).



ARTICLE

The collaboration also includes a plan to involve a renewable energy supplier to ensure genuine zero CO₂ emissions operations are assessed. This multidisciplinary approach—from energy to infrastructure—aims to address the entire aircraft operations ecosystem in order to better support the aviation industry's transition to sustainable energy.

This agreement further strengthens Airbus' position in a field where it is already investing in and focusing its research efforts on developing hybrid-electric and electric propulsion technologies that promise significant environmental benefits. Airbus has already started to build a portfolio of technology demonstrators and is currently testing innovative hybrid propulsion systems, subsystems and components in order to address long-term efficiency goals for building and operating electric aircraft.

Airbus, Rolls-Royce, and Siemens also work together in another project called the E-Fan X, which is expected to contribute significantly in transitioning to electric aircraft. In the project, one of the turbofan engines on the BAe 146 regional airplane was replaced with a 2 MW electric



Muhammed Yilmaz - Editor of Aviation Turkey Magazine

motor to develop a hybrid passenger aircraft. Within the scope of the project, the aircraft is expected to make its first flight in 2020, and all the engines of the aircraft are planned to be replaced with electric motors in the long run.

AirRace E, the world's first electric airplane race to be held for the first time in 2020 with the support of Airbus and Formula Air Race Association, is believed to be an important step in raising

awareness about electric airplanes.

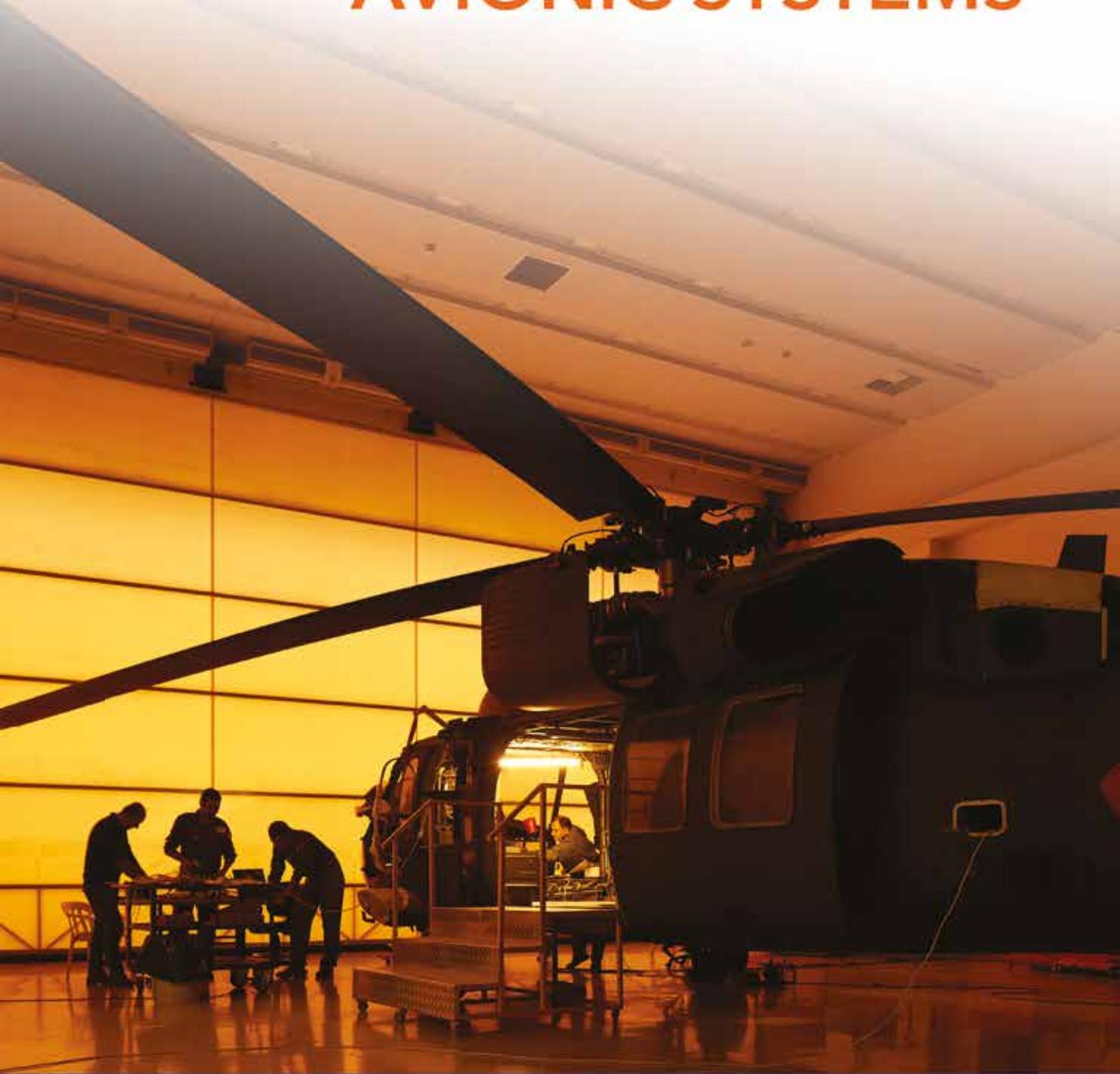
Flying Taxis are Inevitable!

During the event, Airbus also presented its solutions for urban environments, and the company gave wide coverage to its projects that aim to find solutions to congested traffic in growing and crowded cities. In the panels, Airbus officials stated that the flying taxis would

become an indispensable part of our lives in 2030 and provided information on the current status of the City Airbus VTOL (Vertical Take-off and Landing) aircraft project. The ongoing studies on the autonomous aircraft Valhalla was also shared with the participants. We are moving towards an era where the Jetsons will become a reality, and Airbus seems to be one of the pioneers of this journey 🚀



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Perfectly Poised TSI, Becoming a Major International Aviation Seating Vendor

Annual revenues are projected to hit \$50 million in 2019 and the firm has a goal of seeing this number double by 2023. With headquarters & a production facility in Sabiha Gökçen International Airport – Istanbul, Turkey and a production facility in Utah, in the USA, TSI plans to expand and develop into one of the world's leading seat manufacturers

Turkey's first and only manufacturer of aircraft seats, upon its foundation TSI Aviation Seats set its target to be ranked among the top 5 leading aircraft seating manufacturers in the world. TSI has 2 production facilities, one in Istanbul Sabiha Gökçen Airport in Turkey and the other in Salt Lake, Utah in the USA. The strong companies in their partnership structure are indications of the reality of this goal.

TSI Aviation Seats was established in 2012 by Turkish Airlines, Turkish Technic and Assan Hanil (a joint-venture between Turkish industrial conglomerate, Kibar Holding, and Hanil Seoyon E-Hwa, a South Korean global auto parts supplier) in order to design,

manufacture, modify and merchandise aircraft seats and their subsequent spare parts.

Annual revenues are projected to hit \$50 million in 2019 and the firm has a goal of seeing this number double by 2023. The employee count across its two locations stands at 120.

TSI has a close relationship with Turkish Airlines with orders for seats on almost 400 aircraft. The company had agreements with Freebird Airlines, Azerbaijan Airlines, Nordavia Airlines and Nordwind Airlines, and also struck deals with other leading Airlines. As such, it is perfectly poised to become a major seating vendor. Indeed, TSI has ambitions to rank among the world's top-five aircraft



seat manufacturers by 2023. Accordingly, production capacity will ramp up rapidly to 100,000 Pax per annum over the next few years.

TSI promises customized solutions in a timely manner. Pre-certified seats can be delivered in less than three months, while the company has recently completed projects that started at the design stage with Airbus and Boeing in less than 16 months – much lower than the industry average. With a cluster of car-makers and parts suppliers, the Turkish automotive sector – in which TSI's ownership Assan Hanil is heavily involved – exports billions

of dollars in motor vehicles and components each year. 80% of TSI's suppliers are local and proximity to this supply chain, most of which is situated within two hours of its Istanbul headquarters, is fundamental to the firm's ability to deliver seats on-time or even ahead of schedule.

Manufacturing aircraft seats with the authorization of the Federal Aviation Administration (FAA) and European Aviation Safety Agency (EASA), TSI is the aircraft seat supplier of Boeing and Airbus aircraft.

TSI attaches great importance to R&D studies, focuses on the



development of high value-added products and technologies, and increases quality and reliability by using digital technology at every stage.

Up until today, TSI has obtained various patents regarding aircraft seat design with its superior engineering experience, and has received a US trademark registration as of March 2018.

2018 was a very successful and enthusiastic year for TSI Aviation Seats as there were many significant steps forward.

In May 2018, the first deliveries of TSI's new economy class seat Epianka were completed with an overachievement for the A321neo ACF and B737MAX. The A321neo ACF is the first 'Cabin Flex' series aircraft, by applying modifications to the fuselage, it enables flexible cabin configurations for up to 240 passengers.

TSI's new economy class seat; Epianka expands the creativity and competitiveness of economy seating and makes it one of the best solutions for the leading airlines. The seat also changes the meaning of comfort and practicality and offers wide and slim 12" monitors for in-flight entertainment system. Epianka's functional lower literature pocket with multiple pockets

are very useful. Thus, the passengers will be able to keep their wallet near them, mobile phone close at hand, etc.

Epianka will also be delivered to wide-body linefit projects; the A350 and B787 in 2019. The seats will have 13.3" monitors for the in-flight entertainment system. These 13.3" monitors will be certified by TSI Aviation Seats for the first time for Turkish Airlines' new A350 and B787. This is a remarkable development not only for TSI but also for the aviation industry. Epianka will be certified for A320, A350, B737, B787 and B777, thus, using the same seat platform for different types of aircraft will provide advantages to airlines for maintenance and operation in terms of parts commonality.

TSI has made its first step into narrow body business class seating with the launch of Royalux in 2018. The seat will be offered in 3 different concepts with



the option of electrical or mechanical controls. The project will be completed by the end of 2019.

In the last quarter of 2018, TSI increased its production area by 325% with a significant investment. As a result of intensive work; their production facility in Sabiha Gökçen International Airport moved to the new area of 3400 m2. In the new facility, with 2 production lines their capacity has increased from 10,000 pax to 25,000 pax per year with one shift. In the 3rd quarter of 2019, a new production line for business class seats will be established.

In 2018, the number of TSI employees expanded by 30%. Manpower will continue to rise significantly in 2019 in both locations, at the headquarters & production facility in Sabiha Gökçen International Airport – Istanbul, Turkey and the production facility in Utah, in the USA, to expand and develop TSI into one of the world's leading seat manufacturers.

With the 22 shipsets delivered in 2019, the total number of delivered shipsets reached 115 so far. This number will reach over 1000 through 2023 with the orders taken from world's leading airlines.





Turkey's Digital Airline Pegasus

Pegasus Airlines CEO
Mr. Mehmet T. Nane shares a closer view of Pegasus
Airlines 2018 performance and predictions of 2019 with
Aviation Turkey Magazine

The Turkish civil aviation sector developed quite rapidly after 2003. In 2003, it only made up 0.54% of the Turkish economy but as new players entered the sector, the sectoral growth rate of 5% soared to a record growth rate of 53%. By the end of 2006, Turkey had reached the total traffic volume increase that international organizations had forecasted for the end of 2015. Moreover, change and improvement in the sector steadily continue. With the recent important

developments in our sector, such as the closure of the Atatürk Airport and the opening of the Istanbul Airport, growth will continue, and we will get closer to achieving our true potential. Opportunity abounds with the Istanbul Airport's anticipated passenger capacity of 90 million and the fact that Istanbul will become a major air transportation city, the largest air transfer hub in Europe. With these important developments in our sector, it is only

a matter of time until Turkish civil aviation rises a shining star to be seen by the world, and along with this momentum, Pegasus Airlines continues with full force and capability, working with all of our power and pride to continue to exceed expectations.

2018 was an extremely positive year for us. Guest numbers increased by 8% to 30 million guests. Our occupancy rate grew by 1% to 85%. Side income per guest increased

by 18% to €11.9. We increased our revenue to 8.3 million TL with a 55% increase compared to the previous year. We also managed to maintain our profitability at last year's level despite the increase in oil prices. In short, our operational and financial indicators improved. Given our CASK (Cost per Available Seat Kilometres), 2018 was better than our CASK target, excluding fuel. We increased our daily use of flights. With our new A320neo aircraft added



to our fleet, we began optimizing our fleet. We launched Ankara-Baku, Gaziantep-Erbil, Trabzon-Amman and also flights to from Sabiha Gökçen to Basra, Venice, Riyadh, Manchester, Eindhoven and Casablanca. Currently, we fly to 110 destinations in 42 countries with 35 domestic and 75 international flights. We continue to grow with the addition of new routes to serve our guests, and we

will grow even more with the exciting new developments in the sector. The unique location of Istanbul will play a significant role in supporting growth and facilitating these developments.

Sustainable growth is a delicate subject against a backdrop of planning. At Pegasus Airlines we identified key business pillars of sustainable

growth and the reasons behind them. We have the 3rd lowest CASK in Europe, excluding fuel. We are transforming our fleet step by step with the addition of our Airbus aircraft. Istanbul Sabiha Gökçen Airport's new position as the closest airport to the city of Istanbul, following the closure of Istanbul Atatürk Airport and with the second runway which is expected to be in service by 2020,

will support our growth targets. We will continue to increase our side income with our new additional products and services. We will continue to be 'Turkey's Digital Airline' with the digital transformation that we initiated in 2018 and to improve profitability via our digital solutions. All of these are the main factors that will enable us to continue toward our sustainable growth targets. Our goal



is to create a difference in guest experience while improving our operational profitability and efficiency by benefiting from technology...

Digital transformation

Technology and digitalization are two concepts that we began to hear a lot about and became actively involved in. As with every other sector in the world, these two concepts have

significant influence and impact on the aviation sector. Recently, technological areas such as biometrics - facial recognition applications, blockchain and translation software are among the key talking points in the global aviation sector and inherently many innovative applications in these areas are being adapted to the sector as well.

Pegasus Airlines keeps a close eye on which technologies are being

used in the international aviation sector. Using the leading European low-cost airlines as our benchmark, our teams examine digital developments and new applications around the globe. It is clear to us that the Turkish aviation sector places great importance on this issue. We evaluate all of the technologies that we monitor with regard to their ability to improve the travel experience of our guests from beginning to end

and to simplify their lives. In addition, by employing robotic technology in our infrastructure to establish self-managed systems, we can lower our costs and increase the productivity of our operations. For this reason, technology and digitalization have been among our key areas of focus over the past few years.

Within the framework of the digital transformation that we started in 2018, we not only renewed our website and mobile applications but also began to introduce many innovations to the airport and in-flight travel experience. As 'Turkey's Digital Airline', we integrated various technological innovations into our systems in order to improve the travel experience of our guests.

By employing robotic technology in our infrastructure, we established self-managed systems. We convert data





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into value in different lines of business and we know our customers well and we create a positive difference in their experiences with our solutions. Our main areas of focus are digitalization and our guests. We offer our guests brand new digital technologies and unparalleled innovations that will facilitate and expedite their travel experiences from A to Z. We would like to mention a few:

It is very important for us to inform and guide our guests throughout their journey. That was the aim when we developed our Travel Assistant Program, converting our mobile app into a travel assistant. Within the scope of the first phase of the program, we began notifying guests at Sabiha Gökçen International Airport of their gate number and the carousel number where they can reclaim their baggage. In addition, we inform guests' relatives that the plane has landed at its

destination and provide useful information to guests with infants, those with connecting flights and who have checked in online.

Another successful application that we instigated in the second half of 2018 is "Express Baggage." This option aims to enable our guests to experience a fast, practical and digital journey all the way from ticket purchase through to baggage reclaim. We are the first airline to offer this service at Sabiha Gökçen Airport and the first airline to offer it on domestic Turkish routes. Accordingly, we offer guests who have completed online check-in the option of a self-service bag-drop so they can avoid waiting in line. This service has been in high demand since we began to offer it. Currently, about 16-17% of our online check-in counter transactions are being realized through the self-service Express Baggage facility.

As of February, we have begun to test Travel Technology using the New chip ID card on Turkish routes at gate 208B, in a joint operation with Istanbul Sabiha Gökçen International Airport terminal management. This joint project aims to allow guests, who have completed their online check-in for domestic routes, to proceed directly to their flights using the new chip ID card, without having to obtain boarding cards, thereby eliminating the need to queue up and offering fast and easy flight access. This project is a global first, and we plan to implement it on all domestic flights departing from Sabiha Gökçen Airport by the end of 2019. Thanks to this project we will allow our guests to fly "paperless", using only their own ID cards or passports,

which is a revolutionary transformation. In fact, in the more distant future, biometric information (fingerprints, facial recognition etc.) might be sufficient for flying. New developments are happening worldwide in this area.

We utilize digital transformation in many areas of our operations. In 2016, we eliminated the use of paper in the cockpit and transferred over to electronic flight maps with our Electronic Flight Bag project. In 2018, with Blockchain infrastructure, we ensured the instantaneous transfer of operational information on flights generated by Sabiha Gökçen Airport systems to Pegasus systems. With our Digital Apron project, we began monitoring all of our apron vehicles and planes at Sabiha



Pegasus Airlines CEO Mehmet T. Nane



Gökçen Airport with IoT technology and achieved a reduction in fuel and maintenance costs by maximizing utilization of our personnel and vehicles through automatic task assignments using artificial intelligence. These cost reductions allow us to continue to offer our guests flight tickets at extremely reasonable prices, too.

In order to digitalize the entire travel experience of our guests, we

introduced a brand-new in-flight digitalization project. We have successfully completed the installation of an in-flight entertainment system (IFE-Inflight Entertainment), and very soon our guests will be able to access content such as films, games and music on our IFE system on all flights. They will be able to watch these broadcasts by connecting their personal iPad, smartphone or computer screen.

These are just a few of the projects that we have instigated within the framework of our technology and digitalization investments. During 2019 we will continue to introduce innovations that simplify our guests' travel experiences within the scope of the complete digital transformation of all our processes, from A to Z.

We are hopeful for 2019

Tourism made a great contribution to Turkey in 2018. We forecast that tourist interest in Turkey will continue in 2019 and we are making our plans accordingly. In line with the manufacturing planning of Airbus, we will add 11 new planes to our fleet at the end of this year. In August, we will receive our first A321neo aircraft. With our A321neo aircraft, we will lower our CASK even further. We plan to use a significant part of our capacity on international

routes in order to meet the increasing tourism demand.

As a low-cost airline company, our top focus in 2019 will be to control our costs. Besides that, continuing our digitalization investments and optimizing customer experience are among our priority targets. We will continue to be one of the greatest supporters of growth in Turkish tourism and continue our growth in international routes.

With over 5,500 colleagues currently, we work diligently and proudly for our country, sector and company with all our power. But our job is not just to think about today, but also to plan for tomorrow. Thus, we began to offer young people the chance to achieve their dreams of becoming pilots with our "Pegasus Pilot Training Program" that was initiated at the start of this year. This is both a solution-oriented approach to increasing sector need and an important step for Pegasus in helping young people achieve their dreams...

Finally, as we always say, 'we didn't initiate aviation in Turkey, but we changed it'. We continue to always do better for our country, our sector and our guests, to tirelessly work every day to change aviation together... 🌍



wishes



Ahmet Bertan Nogaylaroğlu
President, Turkish Aeronautical Association

"The first civil aviation activities in our country have officially gained momentum with our institution, formerly named the Turkish Airplane Association, founded only 16 months after the proclamation of the Republic. The Turkish Aeronautical Association has guided the institutional foundations of Turkish civil aviation in our country in line with the words of Atatürk, "The Future is in the Skies" written in gold letters in the history of

aviation and which serves as a guiding light illuminating hope for the future of our country.

Civil aviation in Turkey is forging ahead in order to progress with the momentum of this dynamic era. We strive to improve the vision of our country and our institution in terms of new technologies. We must be tenacious and work skillfully day and night in order to become a country which produces, designs and exports technology.

Especially over the last 20 years, civil aviation has been growing steadily in our country and in the world. One of the most important factors of this progress is undoubtedly the support of publications in the aviation field.

I would like to extend my wishes to Aviation Turkey Magazine for a long-running publication life and plentiful readers and I hope it brings a new voice and breath to civil aviation life."

S. Nurzat Erkal
TGS General Manager



"Our country has become a major player in the global aviation arena with its vast investments in the aviation sector. In order to improve our current position for the better and further,

announcing and promoting these developments are as important as increasing investments. With this understanding, I wish Aviation Turkey Magazine, which we believe will provide great services to the

Turkish aviation sector, great success in its publication life and hope that the magazine will be beneficial to the whole sector, especially in the field of civil aviation."

Haluk Görgün
Aselsan Chairman & CEO



"Aselsan, Turkey's leading defense company, has been successfully performing its activities over 40 years developing and producing some of the most critical avionics systems used in helicopters, fixed wing aircraft and unmanned aerial vehicles, as well as the integration of such systems to air platforms for both national and international customers. Beginning its activities in the area of avionics with the production of navigation systems for F-16 fighter aircraft in 1988, Aselsan

is now among the well-known avionics equipment manufacturers in the world with 1200 experienced personnel in the field of aviation.

In the civil aviation market, passenger and cargo transportation is projected to increase by 4% each year for the next 20 years. This growth rate brings an increase in the number of existing aircraft as well as important potential sales in civil avionics. As of today, the HÜRKUŞ Next Generation Basic Trainer Aircraft and the GÖKBAY Multirole

Helicopter have been equipped with Aselsan's indigenously developed civil avionics. Our aim is to use the knowledge and experience gained in the avionics field, for the domestic and international civil aviation market to increase our market share.

Aselsan would like to present sincere wishes of success to Aviation Turkey Magazine and thanks in advance for your valuable contributions to our sector."

Alişan Soylu
General Manager of Soylu Aviation



"For many years, Defence Turkey magazine has become the voice of the sector to national and international platforms that have added value to the Defense and

Aviation sector with its principled and respected publishing approach. I believe that your new initiative, Aviation Turkey, will be an important source of information in the civil

aviation sector with the same understanding and I wish you success."



Expanding Market for Havaş

Turkey's World Class
Ground Handling Services
Experts

With steady growth in current operations in Turkey, Latvia and Saudi Arabia, Havaş sets sights on markets abroad, including the Middle East, Africa and Eastern Europe



Havaş General Manager, Mr. Kürşat Koçak discusses the company's secure, high quality and innovative service concept in this exclusive interview with Aviation Turkey magazine.

Aviation Turkey: Dear Mr. Kürşad Koçak, you have successfully completed a very important operation in the process of the big transfer from Atatürk Airport to Istanbul Airport. Activities at Istanbul Airport have started with doubled station capacity and

temporary storage unit buildings, office spaces, equipment maintenance workshop and parking areas. Could you inform us briefly about the details of the big and successful move as well as your capacity, investments and operations at Istanbul Airport?

Havaş has always been ambitious in ground handling services and is committed to maintaining its presence in the sector as a world class ground handling service provider with its service quality, equipment and technological infrastructure.

Kürşad Koçak: With the opening of Istanbul Airport, we moved our facilities at the Atatürk Airport to our new station within a successful operation of 30 hours. We used 186 trucking rigs to transport around 600 ground handling services equipment in total to

our new facility; these included the large volume vehicles such as passenger buses and passenger stairs. We have doubled the capacity of our new facilities at Istanbul Airport compared to Atatürk Airport. Our new facilities cover approximately an area of 40,000 square

as Riga Airport in Latvia and Medinah Airport in Saudi Arabia. Can you inform us about your services at the Riga and Medinah airports?

Kürşad Koçak: We carried our 86 years of experience and knowledge that we have acquired in ground handling services in Turkey to Riga first and then to Medina with the goal to become a global brand. We have been operating at Riga Airport in Latvia, one of the important countries in the Northern Europe in terms of aviation potential, through our affiliates since 2010 and at Medinah Airport, one of the prominent airports in terms of pilgrimage tourism, in Saudi Arabia since 2014. In Riga, we provide services for AirBaltic along with other airline companies such as Turkish Airlines, SAS, Ukraine Airlines, Air Europa, UTair, Aegean Airlines, Onurair, Freebird, Corendon, LOT, Norwegian, and Getjet. In Medina, we manage ground handling operations of several airline companies such as Royal Jordanian, Air Arabia, Tunis Air, Pegasus, Sun Express, Gulf Air, Jazeera Airways, Atlasglobal, Tailwind, and Badr. Our activities involve extensive passenger and operation services including passenger and luggage services, ramp, load check and communication, de-icing, cargo, flight operations, transportation, aircraft cleaning, representation

and supervision. We handle over 1.5 million pieces of baggage per year and host nearly 28,000 flights and over 4 million passengers at the Riga and Medinah Airports.

✈️ Aviation Turkey: Havaş is the first Turkish company with ground handling services license in Saudi Arabia. Havaş Riga Station (RIX) has been certified with ISAGO certification. How would you evaluate your international achievements and certification processes?

Kürşad Koçak: Our sector is one of the most challenging sectors in the world with a 7/24 work system along with the requirements to conduct operations in a fast way without compromising security, taking into account variable conditions and geographical differences in the job field. We may say that the sustainability of this dynamic structure is in direct proportion with

the fulfillment of global standards. In this sense, we consider the certificates given by internationally accredited organizations for the standards we fulfill under the titles related to our management systems such as categories of occupational health and safety, service quality, business continuity, and ensuring environmental impacts and operational security in a sustainable way as the guarantee of our corporate sustainability as well.

Our ability to conduct our operations in all the fields we operate in both domestic and international markets by establishing interconnected systems that are adapted for differing conditions lays the ground for our international achievements in parallel with our goal to become a global brand. In addition to ISAGO certificates received by our Riga and Medina stations, we are also members of Airport Service



© Havaş

meters, including an indoor area of 20,000 square meters. Our temporary storage unit building at Istanbul Airport has been constructed to be twice as large as our storage units at Atatürk Airport. Our station building, equipment maintenance workshop and parking areas have also been designed to have higher capacities than the ones at Atatürk Airport. We take on the task of ground handling services for 45 airlines in Istanbul with our 1,200 employees.

✈️ Aviation Turkey: With Havaş, you provide services for more than 200 airlines in 28 airports in Turkey as well



© Sinan Niyazi Kutsal

Ayşe Evers and Kürşat Koçak

INTERVIEW



Association (ASA) and IATA Ground Handling Council (IGHC). We provide services to approx. 465 thousand flights per year together with our affiliates and we also provide services to over 130 million passengers per year by carrying 860,000 tons of cargo and over 100 million of luggage.

✈️ Aviation Turkey: What are the responsibilities of Havaş in terms of cargo services?

Kürşad Koçak: In addition to our new 14,000 square meter temporary storage unit building at the Istanbul Airport, we currently also have warehouses at Atatürk Airport, Ankara Esenboğa Airport and Izmir Adnan Menderes Airport. We take on the task of the administration of import and export cargos by storing general cargos, valuable cargos, chilled cargo, cargos with hazardous substances

and radioactive materials at our facilities. As per the national and international regulations, we continue our investments in our facilities to include the latest technology and equipment in our operations and to increase our service diversity. We increased our capacity at our warehouse at Izmir Adnan Menderes Airport and our cold storage

depot at Ankara Esenboğa Airport in the last 2 years. In addition, we added two reefer trucks to the fleet of our warehouse in Istanbul last year which were particularly developed by our party as a first in the air cargo sector. With these vehicles, we transport cargo with requirements to be kept constantly cold, to the aircraft by protecting them

from external conditions or carry the incoming cargo to our cold storage depots at our facilities under the same conditions. In addition, we also provide scheduled bonded carrier services between Istanbul – Ankara and Istanbul – Izmir. Through our transportation service, we carry cargo sent from various cities to the most appropriate airlines. We plan to include refrigerated vehicles in our fleet working in these lines soon.

✈️ Aviation Turkey: What kind of growth do you predict in domestic and international fields in the next five years?

Kürşad Koçak: In addition to the growth in our current operations in Turkey, Latvia and Saudi Arabia, we have the goal to enter into the markets abroad, including the Middle East, Africa and Eastern Europe 🌐



wishes



Sani Şener
TAV President

"Thanks to its development over the last 20 years, the civil aviation sector has become one of Turkey's most important success stories across the world. Annual passenger traffic has increased from 30 million to 200 million. New airlines have launched their activities. We have created

two global brands such as THY and TAV. An industry has emerged that generates employment for hundreds of thousands of people, feeds different sectors with a high multiplier effect and creates significant added value. As TAV Airports and TAV Construction, we only focus on the airport business

and continue to grow in this area. The media assumes a critical responsibility for recording, sharing and the transfer of know-how accumulated in this sector to future generations. I wish success to Aviation Turkey Magazine that has started its journey with this mission."

Bilgihan Yılmaz

Fraport TAV Antalya Airport General Manager

"We, as Fraport TAV Antalya Airport, would like to express our appreciation for the formation of your new magazine which will elevate Turkish Civil Aviation to where it belongs in terms of global vision and which will be our voice, and also I would like to point out that we are excitedly awaiting the first issue of "Aviation Turkey

Magazine" that you are preparing with your experienced staff in the aviation sector.

As Plato says, experience is the best cornerstone for everything. Therefore, we would like to congratulate the publication life of "Aviation Turkey Magazine", which has started its

Deniz Varol

Fraport TAV Antalya Airport General Manager

journey with the aim of establishing a communication platform to provide bilateral information flow between the global aviation industry and the Turkish aviation sector and that it will break new ground in Turkey with their years of experience. We are pleased to provide our support to your magazine."



İ. Sami Özdemir
GE Aviation Regional General Manager

"I would like to congratulate Defence Turkey Magazine, through which we have been following the developments in the field of defence industry for many years, particularly for introducing a new magazine to the aviation industry. Being one of

the leading industries of our country, the aviation sector continues to develop and grow and this brings along many developments that we should follow every day. I believe that Aviation Turkey Magazine will be a notable and effective communication

channel for the sector in which we can closely follow developments in the field of civil aviation. I congratulate those who have contributed to this magazine, and I wish success in its publication life."

Mireille Goyer
Founder & President Institute for Women Of Aviation Worldwide (iWOAW) /
Institut des Femmes de l'air du Monde

"The Institute for Women Of Aviation Worldwide (iWOAW) is looking forward to reading Turkey's newest aviation magazine for years

to come. We trust that its founders will ensure that the people and the products who have brought and continue to bring Turkish aviation

and space industries on the world stage are highlighted in a fair and balanced way."



Krislen Keri
Executive Director of the Albanian Civil Aviation
Authority

"It is with great pleasure that I have the opportunity to write a few thoughts on aviation, on the first Aviation related magazine in English in Turkey. Whereas Aviation is of great importance to people connectivity and economic development, for us professionals of the field it is of outmost importance for technical details to be made public and published, for people to know the extend of efforts put into guaranteeing

the safe and further development of aviation.

Aviation is a dream come true and it should be marketed as such, this is where Aviation Turkey magazine will become an important player in the Turkish, regional and I hope global marketplace. Having personally had the honor of getting to know some distinguished members of the Turkish

civil aviation sector, I am confident that this project will be successful into fueling the need for information of the aviation specialists and enthusiasts readers, where the pool of experts that Turkey has available and the scale of the Turkish aviation sector will never cease to leave this new magazine unfulfilled."



by Attorney Nazmi Cumik

Lags / Delays in International Air Carriage and Liabilities of Carriers

Member of the Aviation and Space Law Commission at the Bar of Istanbul

An increasingly globalized world coupled with significant changes in technology have stimulated the development of civil aviation. Aviation Law must reach the same momentum and become globalized in parallel in terms of achieving a well-functioning system. In fact, aviation law is recognized as an international law in many cases due to the nature of travelling

by air. Pointedly, the membership of countries in international conventions that establish international aviation rules are the most critical factor. In order to maintain the secure and compatible development of international civil aviation in this area, there are conventions and organizations such as the International Civil Aviation Organization (ICAO) and the International Air

Transport Association (IATA). Besides, aviation law features the characteristics of a branch of law that involves the rules of both public law and private law. The Convention on International Civil Aviation fairly forms the public law aspect of these rules, while the Warsaw Convention of 1929 and the complementary protocols of the Hague and Montreal form the portion which is

concerned with private law. We hereby examine the carriers' liabilities on freight and the concept of delay on the basis of international criteria due to the aforementioned reasons.

Within the scope of aviation law, "delay" is the amount of time (reasonable) more than the duration identified by the contract (air



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consignment note - air receipt) or announced on the time tables due to any reason and the failure to deliver the load/cargo in a timely manner should be regarded as a delay. On the other hand, a delay should be examined with reference to the entire transportation process. This point, in addition to the importance of the parties' pre-contractual liabilities, the arrangement of the "air consignment note" or "air receipt" in line with the requirements and demands of the parties is of vital essence. Such that, Article 4/1 of the

Montreal Convention of 1999 stipulates the compulsory issuance of the air consignment note (three copies).

The carrier's execution of its liability is mandatory in the event of a performance delay; however such performance must be considered actual delayed performance. According to the Warsaw - Hague System and the Montreal Convention of 1999, the delay or cancellation of a flight is not regarded as a delay. Therefore, from this perspective, a delay is defined as the delivery of the load to the addressee later than the time identified in the terms of the contract¹.

Damages incurred due to delays are defined as the damages, except for the loss of the load

or damages to the load itself. The Warsaw - Hague System and the Montreal Convention of 1999 regulate the carriers' liabilities on the loss or damage of the load and their liabilities regarding the delay separately. Regarding the load carriage executed within the borders of the country, the provisions of the Turkish Civil Aviation Law shall primarily apply². Liability arises from either a contract or the law. It is not possible to alter the limitations of the liabilities stipulated by the Warsaw - Hague Agreements and the Montreal Agreement for the benefit of the carrier prior to the emergence of the damage with a contract between the parties³. To be more precise, conditions that have the quality to remove the carriers' liabilities are invalid.

The carrier is liable for the damages occurred due to delays as long as the damages are caused by the delay. The liability of the carrier starts as he accepts the load as designated by the contract which is the transfer of the possession that is the complementarity component of the carriage contract. In this case, the carrier's first primary obligation is to receive / accept the load. Delivery of the load to the carrier is the presumption of the existence of the carrier contract. Then again, the liabilities of the carrier regarding the attention and supervision of the load starts with the acceptance of the load and lasts until the moment of delivery of the load to the addressee. It is regarded that the process of the load's carriage by air lasts until it is transferred

¹Diederiks & Verchoor, IHPH Introduction to Air Law, pg. 300, Kluwer Law and Taxation Publishers, 8th Rev. Ed. Deventer 2006

²Dr. Jur. Bülent Sözer, Contracts on Carriage by Air at Turkish Law and International Law, 2 Edition, pg. 107, Vedat Kitapçılık, İstanbul-2009

³Gökhan Turhan, Carriers Liabilities regarding the Load in International Air Carriage, pg. 145, Onikilevha Yay. A.Ş. İstanbul-2016

ARTICLE

to the possession of the addressee and therefore it is under the responsibility of the carrier until then⁴. (The issue of whether or not the carrier is released from his liabilities in case the load is delivered to the customs authorities).

Another primary obligation of the carrier is the timely performance of the carriage. In addition to the Warsaw - Hague System, Turkish Civil Aviation Law established norms and created obligations with substantive provisions⁵. A delay may occur due to many different reasons. For instance, the carrier's failure of the loading process at the identified place or time within the scope of the contract conditions or as the case may be constitutes a contradiction to the execution of the obligation and causes a default of the debtor.

The carriage contract can be qualified as a contract of work that undertakes the execution of the carriage in accordance with the



contract stipulations or briefly a contract committing a conclusion⁶. The carrier shall never be relieved from his liabilities by proving that there are no faults on his side in the occurrence of the damage. To be relieved from his liabilities, the carrier is liable to prove that in order to prevent any damages either he or his employees have already adopted all necessary measures or that the adoption of such measures were

not possible⁷. The carrier absolutely has to prove that he has actually and truthfully taken all essential precautions and that the prevention of the occurrence of the damage could not be managed despite these. By considering even exceptional circumstances, both the Warsaw - Hague text and the Turkish Civil Aviation Law enjoin the carrier to adopt all the measures in required scope and quality⁸.

To identify the damages due to delay, we need to start with a definition (the damages other than the loss of the load and/or damages over the load)⁹. The liabilities arising from the delay contain the loss of profit suffered by the addressee due to the delay, addressee's losses arising from the non - performance of his commitments, the additional charges made for a substitute good that became compulsory instead of the expected



⁴Diederiks & Verchoor, I.H.Ph. Introduction to Air Law, pg. 135, Kluwer Law and Taxation Publishers, 8th Rev. Ed. Deventer 2006
⁵Dr. Jur. Bülent Sözer, Contracts on Carriage by Air at Turkish Law and International Law, 2. Edition, pg. 203, Vedat Kitapçılık, İstanbul-2009

⁶İnci Kaner, Air Law (The Special Law Section), p. 54, Filiz Kitapevi, İstanbul-2004

⁷Dr. Jur. Bülent Sözer, Contracts on Carriage by Air at Turkish Law and International Law, 2. Edition, pg. 203, Vedat Kitapçılık, İstanbul-2009

⁸Dr. Jur. Bülent Sözer, Contracts on Carriage by Air at Turkish Law and International Law, 2. Edition, pg. 203, Vedat Kitapçılık, İstanbul-2009

⁹Hüseyin Ülgen, Air Carriage Contract, pg. 185, The Research Institute for Banking and Trade, Ankara-1987



© Turkish Cargo

good, the additional onuses in case of increases in the customs charges and duties, if the offloading process is to be executed by the addressee, additional expenses and payments made due to the delay, i.e. the overpaid warehouse and/or stevedoring expenses¹⁰.

Regardless of the type of the grounds for action for damages, whether it arose from a contract or a wrongful act or any other causes, the claim for damage could only be based on the conditions and quantitative restrictions identified by the convention. Even though the carrier's liabilities are restricted within the context of quantitative restrictions, in case of culpable negligence, wrongful intention and similar situations and the legal invalidities regarding the air receipt, this limited liability shall not apply.

The application of the quantity and limited liability principle is not available except for in the cases of limitations identified by the Warsaw - Hague System and the Montreal Convention of 1999.

In case the damage is caused by the malicious acts or culpable negligence of the carrier or his employees, the carrier or his employees shall not be able to benefit from the provisions of the convention that removes or limits the quantity of their liabilities.

If the carrier accepts a load that is not regulated within the air receipt or in case of the absence of the essential components stipulated by the legislation at the air receipt, the carrier shall not be able to benefit from the provisions of the convention that removes or limits the quantity of his liabilities.

If there are no statements in the air receipt regarding the carrier's liabilities, then the carrier shall not be able to benefit from the provisions of the convention that removes or limits the quantity of his liabilities.

Both the Warsaw - Hague System and the Montreal Convention of 1999 stipulate that lawsuits regarding the liabilities of

the carrier should be filed within two years from the air vehicle's arrival to the identified destination or from the date the air vehicle should have arrived there or from the suspension of the transport, and that there shall be a loss of claim if the aforementioned duration is exceeded¹¹. Within the scope of the Warsaw/Hague Agreement and Montreal Agreement, in certain cases, the lex fori (the execution area of the court) shall apply¹². For example, in the settlement of conflicts of the procedural law, lex fori is referred to during the identification of the court expenses or other costs of proceedings.

In terms of the implementation, in accordance with the philosophical and doctrinal approaches, during the establishment of the contract, it is essential that the parties to the

air carriage declare their requirements and demands within the pre-contractual liabilities (Culpa in Contrahendo) and shape their air consignment note - air receipt to that end. Pursuant to the principle of honesty, the execution of the concept of the liberty of contract on one hand shall take the shipper's rights into consideration while on the other shall enable paying regard to the carrier's rights in terms of carriage safety.

The presentation titled "Lags/Delays in International Air Carriage and Liabilities of Carriers" was made by Attorney Nazmi CUMİK, at the meeting on "Air Carriage" held as a single session on May 28, 2019 at the Conference Hall of the Bar of Istanbul by the Aviation and Space Law Commission at the Bar of Istanbul. ➔

¹⁰Özlem Karaman Coşgun, Liabilities of the Carrier Arising from Delays in Cargo Carriage on Land and Sea, pg: 499-521, In Memory of Prof. Fahiman Tekil, Prepared by: Y. Akın, M. & O. Caner, İstanbul-2003

¹¹Assoc.Prof. Jur. Tunçay Gökşal & Ahmet Tuncay Donuk, Limitation on the Legal Liabilities of the Air Transporter in International Civil Aviation Law, pg: 841, Adalet Yay. Evi, Ankara-2019

¹²Gökhan Turhan, Carriers Liabilities regarding the Load in International Air Transport, pg: 68, Onikilevha Yay. A.Ş. İstanbul-2016



Partnership with Collins Aerospace for Exceptional Future Products in Turkish Aviation

An Exclusive Interview with Mr. Colin R. Mahoney

Collins Aerospace VP of Business Development for Interiors

✈️ Aviation Turkey: First of all, thank you very much for your time. Collins Aerospace is one of the leading companies in aviation and high-integrity solutions for commercial customers around the world. What kind of services do you provide for your customers?

Colin R. Mahoney: As you are very aware UTC Aerospace Systems merged with Rockwell Collins and Collins Aerospace is now a 23 billion-dollar company. The

commercial aerospace segment provides a vast array of capabilities for all aircraft types, whether they are helicopters or fixed wing. We created the company in 5 businesses. They are: Mission Systems which is where our government and defense work falls under; Mechanical Systems, which includes systems such as landing gear; our actuation falls under call Power and Controls; Aerostructures which develop our cells that go around engines and there is Avionics

which does flight decks for fixed and rotary wing platforms. The fifth strategic business unit is Interiors, which is what we all represent, and interiors obviously it's an exciting world as we do things like seats, pilot seats, flight attendant seats, super-first class seats, business class, premium economy, economy, so all kinds of seats you can think of we do - we also do everything else that impacts the passenger experience such as aircraft galleys and galley inserts - things like ovens, beverage

makers and refrigeration. We do oxygen systems weather that's portable or in the infrastructure of the aircraft. We do lighting, all kinds of lighting inside the airplane and outside the airplane. We do water systems, waste-water systems lavatories, etc. we do all of that, we do portable water systems - faucets and drinking water on the airplane, and then we have the evacuation slides. We do all of the evacuation slides and rafts on most of the airplanes in the commercial market. So, a

very broad list of things we can bring to airlines and we can bring OEMs and we do that from the very beginning of inventions. We collaborate with our customers to invent things that their customers are asking for right through to service and support and models and operation to keep those products in the air for many years.

The other thing you want to think about with Collins Aerospace and what we bring to our customers, with all of that capability, with a couple often talked about themes in aerospace these days, we are able to bring these capabilities together in a unique way. So you hear the industry talk about the connected aircraft, so given everything we have on the airplane, we have on the ground for data systems and the connection between airplanes and the ground we can add a very big role in the connected aircraft future and we can also have a big role in the all-electric aircraft future and more broadly, propulsion. When you think about all electric airplanes in the future, we're going to have a big role in that as well. Collins aerospace has a lot to bring the industry and certainly a lot to bring Turkish aviation.

✈️ Aviation Turkey: In 2018, Turkish Airlines chose the Collins Aerospace

MiQ seating platform for their new Airbus A321neo aircraft. Can you please inform us about the technical specifications and the delivery schedule of the platforms?

Colin R. Mahoney: We've been doing business with Turkish Airlines for many years as you know. The MiQ is the most prevalent business class seat for single aisle airplanes so A321 is a very important platform for that product.

The secret of the MiQ product line, as you know you fly on plenty of airplanes, is living space, and the way the passenger feels while sitting in that living space vs sitting on it. It's got width and the actuation is very specialized and we talk a lot about kinematics. Kinematics is the science of moving a mass through the air – so we have a special designed actuation to position the human body in a very perfect way, so that's what you experience when sitting in an MiQ seat.

Ergonomics is very important, so a 4-position head rest, the leg rest architecture of the seats, the simplicity of access and egress, getting in and out of the seat. And then you need the privacy approach. Business Class passengers tend to want some privacy, so we have some special design in that seat to enhance the



© Collins Aerospace

A320 MiQ Business Class

privacy of the passenger. Passengers are already those seats as the first airplanes went into service in July of last year, so we have about 9-10 months under our belt and about 15 or so airplanes in service, obviously the 737 MAX situation has delayed deliveries, but so far so good.

✈️ Aviation Turkey: Aside from Turkish Airlines, are you negotiating your product usage with other Turkish operators?

Colin R. Mahoney: Anytime an operator around the world is buying new airplanes – Collins Aerospace is a very normal phone call to make because we provide, as I described earlier, we provide so many things to the airplane. We have equipment on all airlines in Turkey, Pegasus, SunExpress, etc. these are all customers of ours and

as they decide to increase their fleet we are very normally in negotiations with those airlines for our products. The inserts business specifically, for example with Turkish Aerospace or Turkish Industry with the galleys on the 737 and the A320 but we do the inserts that go in those galleys, so we are always in negotiations with all the operators in Turkey.

✈️ Aviation Turkey: Turkish Aviation Suppliers have gained great experience in terms of successful cooperation with major international manufacturers over the years. Could you please enlighten us about your collaboration with the Turkish Aviation Industry?

Colin R. Mahoney: As a company our philosophy is to partner with indigenous aviation capability, we do that around the world.



Turkey obviously has big aspirations and big desires in aerospace which is great news for a company like us. So, we have found ways to partner with Turkish Industry as a company, and we've done it with avionics over many years, so Aselsan and Turkish Aerospace they are companies that we've either provided units to, to integrate into a system or in fact modules or cards that are inside a Turkish Industry product. We know how to do that, we've done that. Really the basics of that is adding value to both companies and then those partnerships work very well. As you know, Turkish Airlines and Turkish Technic formed a company TSI to create their own seats, and in so doing they didn't need any of the aerospace capabilities and the same can be said for TCI which do the galleys. Galleys

are a pretty high-end integration job, but the components within them are more straight forward. So, in those two examples, while we explored it, we couldn't find that secret formula of value-add but we are always interested in and always exploring how do we partner with, in this case, Turkish Industry, like we have with the other examples we gave.

✈️ Aviation Turkey: Collins Aerospace has won two awards across two categories at the 13th Annual Crystal Cabin Awards. The M-Flex™ Duet was the winner in the Cabin System category and the μ LED Reading Light won the Material & Components award. Could you inform us about these two technologies?

Colin R. Mahoney: Absolutely it's a proud moment for Collins

Aerospace interiors – we participate in this forum every year and we are usually fortunate to get an award or two. So, this year the M-Flex Duet, which is a door to door monument, so when you see monuments in airplanes they are like wardrobes or storage areas and we've created a very unique monument that stows while in flight. Our monument when in flight will open up to form a social area. If you've been on an airplane that has got a walk-up bar where you can go and help yourself to drinks or snacks usually that's in the center of the airplane, and if it is in the center of the airplane it takes away precious seat space. So, what we've done with M-Flex Duet is that we've designed a unique monument that fits in the door space. So when the airplane is at altitude, the crews open it to form that

social area, that bar, that serving area and we have extensive interest in that since Hamburg, and we are working through what the launch customers will look like etc., and the certification path of the two OEMs. So, we are really excited about that, as are the customers.

The μ LED reading light, it's very timely as we're all into LED lights in our cars and homes now. It is a μ LED, a very small powerful programmable light that allows us to do so much more than just light up a reading space. So, today you have a light, you adjust it and you read by it, but now you can do all those lights in one package, and software controls it to light up 3-4 seats. You only need one light to do the job of 4-3 and obviously that's very powerful from a cost integration standpoint, and you can do unique things with it. You can display images with that light now, so you can display a seat number on the base of a seat, and we've also taken that technology and put it into our C-cap lighting panels which allows an airline to create custom images on otherwise boring and plane walls of an airplane – and the way we are going to use that in the future is unlimited, the ideas that you could come up with in terms of what you can use a flexible display for, from branding

to revenue generation, there's so many things you can do with that. μ LED is at the heart of that technology as well, and I think life will change significantly as a result of this and the industry will recognize us as a leader of providing future state-of-the-art lighting.

✈️ Aviation Turkey: These days airlines provide more comfort to their passengers using cabin entertainment systems, Wi-Fi connections and USB power systems. The USB Passenger Power System is one of the cabin interior systems of Collins Aerospace, could you tell us about your USB Passenger Power Systems?

Colin R. Mahoney: We do provide the industry USB in-seat power capability. We have a couple of ways of doing it, two different technical approaches. The USB power technology itself is not rocket science, but the key is the way to integrate it into the airplane. We have a significant integration capability based in Seattle, where we are able to design and certify our own solutions and we do that all around the world, and so what that does for Collins Aerospace Interiors is it allows us to incorporate USB as one of many capabilities for a cabin line fit. Right now, we are doing a lot of retrofits with USB power,



but as a seat provider it makes a lot of sense for us to be an integrator of seats and USB power together. So, I think that's how we will be able to be a leader in the market for USB in-seat power.

✈️ Aviation Turkey: Would you like to add anything in the way of a message to our readers?

Colin R. Mahoney: Turkey is an important geographic location for the industry. Your flag carrying airline Turkish Airlines and its strategy is very important to us. We understand clearly what the airline is trying to accomplish in terms of its positioning on the top 10 airlines in the world. We see things like flying chefs in the airplanes to increase the passenger experience around the dining experience which is very interesting to us with our galley capability.

Our Essence range of inserts, which is our latest and greatest, has been designed with chefs from catering companies from airlines to be the most effective way to provide food to passengers. So, what Turkish Airlines is doing is fully in line with what we are doing, so collaborating there is fantastic. But I think the most important thing that we can bring to help Turkish Airlines move up with our first and business class capabilities. You've seen products like the Q-Suite in Qatar. Obviously, there's good relations between Turkey and Qatar and there's a lot of traffic between the two, and the people of Turkey have seen the Q-Suite which is a business class capability in the Qatar fleet, and that is the sort of thing we can bring to Turkish Airlines. That is a one of a kind, as many first and business class

solutions are, market leading capability that we collaborate and design together with the airline.

So as we think about the future, particularly wide body airplanes in Turkey, our desire and we work hard with products like our Elements business class solution that we showed at Hamburg for the first time, what we can do in a bespoke first class environments, and bring in that along with our lighting capabilities to Turkish Airlines so that we can strategically partner to help the airline realize their in-house goals. In a nutshell we are very focused on Turkey as a country because of its geographical importance and its reach to every corner of the world and also the fact that the airline is very strategically thinking about its future and therefore we believe we can play a bigger part in that future ➡

T625 GÖKBEY - Up-and-Coming 6 Ton Class Multi-Role Helicopter Captures the Spotlight!



by Cem Akalin





Steadfast Ambition built upon the strength of an accomplished and dedicated industry. The T625 GÖKBAY design benefits from extensive use of composites, advanced airframe aerodynamics, next-generation widescreen digital glass cockpit design and state-of-the-art avionics for maximum situational awareness; the new generation smart cockpit of the T625 GÖKBAY and all its avionics systems were developed by Aselsan.



...On September 6th of 2018 at the facilities of Turkish Aerospace Industries, the dawn of a new day was welcomed with exquisite golden rays of sun that spread silently and quickly across the hills as daylight effortlessly illuminated the runway like a spotlight for a very special event. Indeed, it was a very special occasion for Turkey and the Turkish aviation industry. Distinguished guests and official delegations breathlessly witnessed a moment in history for the Turkish Helicopter industry. At exactly 06:00am, the

T625 Multi-Role Helicopter's engines revved up and lifted off the runway in the crisp morning air precisely as planned. The stability and maneuvering of the helicopter were carefully followed by the transfixed gaze of the audience. Throughout the 20-minute duration, the helicopter demonstrated its impressive stability in a shorter time span than was expected. But behind this story and the glory of this wonderful morning, there is deep meaning as this much anticipated achievement is almost inexpressible for one industry...

A brief background leading up to the introduction of the much awaited T625 GÖKBEY Helicopter

The Turkish Helicopter Industry has already proven itself with the military T129 ATAK Helicopter program that has been developed

and manufactured under the license of the AgustaWestland A-129 Mangusta platform as of 2009. Turkey successfully teamed up with the Italian company Leonardo in consequence of a decade-long rocky road regarding this project. According to a recent statement of Turkish Aerospace CEO & President Temel Kotil during the IDEF'19 press meeting, 'Turkish



Cem Akalın - T129 ATAK Assembly Line

© Turkish Aerospace



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Aerospace delivered the 45th T129 ATAK helicopter to the end-users as of May 1st, 2019 and each month almost two helicopters have been leaving the final assembly line'. The fuselage of the Leonardo - AW139 Helicopter is also being manufactured for Leonardo at Turkish Aerospace facilities. The first fuselage manufactured at Turkish Aerospace facilities was delivered in December 2006. Within the framework of the contract with Leonardo, a total of 322 fuselages in various configurations were delivered by the end of 2017. Within new agreement with Leonardo, in total, 80 AW 139 fuselages will be delivered to Leonardo by the end of the year 2021.

The T625 GÖKBAY unarguably reflects the heritage of the T129 ATAK program as well as the AW 139 program with the dedicated contributions of the robust local aerospace industry.

The T625 Multi-Role Helicopter Program was initiated to cater to the light-weight class helicopter requirements both for military and private users worldwide. It was launched upon the decision of the Defense Industry Executive Committee dated on June 15th, 2010. The Turkish Light Class Utility Helicopter (TLUH) Program was signed between the SSB and Turkish Aerospace which was awarded the amount of US\$687.3 million in a contract dated June 26th, 2013. On September 6th the contract became effective and the kick-off meeting was held on October 11th, 2013.

In conjunction with the contract effective date, the System Requirements on September 15th, 2015, Preliminary design on October 20th, 2016 and



the Dynamic Systems Critical Design on December 28th, 2016 were completed according to the program schedule. The numerical name of T625 was designated to the platform that is comprised of the helicopter's six-ton gross weight, '2' indicating the two engines and '5' the number of main rotor blades and in 2017, the first mock-up of the T625 Multi-Role Helicopter was debuted at IDEF' 17 held in May 2017. The first international demonstration was actualized at the Paris Air Show in June of 2017.

Within the scope of the project, the Critical Design Phase was completed on September 29, 2017. As of October 2017, the first prototype design was finalized, and the

manufacturing process was initiated by Turkish Aerospace. The Rotor System Test Preparation Review, as well as the first bladed engine run-up tests of the T625 Multi-role Helicopter prototype, was successfully been completed between August 17th and 31st, 2018. The first hover flight of the T625 Multi-Role Helicopter for the testing rotor system, engine, flight control system and transmission were accomplished with the P0 prototype on September 6th, 2018 with the participation of an official delegation. On December 12th, 2018, Turkish President Recep Tayyip Erdoğan announced the name of the T625 Helicopter to the public during the Turkish Defense Industry Summit, dubbed as GÖKBAY.



© Turkish Aerospace



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Qualification and Certification to be completed along with 3 test prototypes

Within the scheduled program, in total 3 prototypes will be manufactured for the test campaign (flight and ground test), system verification and optimization. To qualify for a particular type of certification, the helicopter should be in compliance with the 1956 safety requirements and successfully perform over a hundred helicopter and system level tests.

The comprehensive test campaign has been initiated by Turkish Aerospace following successful hover flight as of September 6th, 2018. The ground test activities and systems verification test forged ahead during

this time period. According to Turkish Aerospace, it was carried within 50 hours of system verification tests over the P0 prototype. Concurrently, the production of the P1 prototype was also completed during this period. As a result of these activities, the required structural retrofitting was reflected in the platform by the design team.

On May 2st, 2019, Turkish Aerospace President & CEO Temel Kotil said that “The production of the second prototype (P1) was completed more recently. We are aiming for it to make its maiden flight in the near future during the press meeting of IDEF’19”. Within the enlightening statement, the first bladed engine run-up of the second prototype (P1) that was fed with GPU (Ground Power Units) was successfully accomplished on May 20th, 2019, following that, the P1 Prototype is

expected to make its debut flight in advance of the summer season. The flight envelope’s maximum speed, altitude and load factors will be expanded gradually with the P1 Prototype.

The P1 prototype to be utilized in the flight and ground tests will incorporate the necessary system and structural retrofitting according to the verification tests over the P0 prototype. While in the test campaign, more than 500 sensors mounted on the fuselage, wings, main rotor mast, tail rotor, landing gears and different parts of the platform will relay critical information to the program system room, and all exceeded limits will be monitored in real-

time and analyzed by the design team. The payload in particular and analytical data analysis to be collected during the ground and flight tests will be utilized for the optimization of the weight or the structural retrofit over the P3 prototype. Furthermore, the P2 prototype, which will support the P1 prototype during the tests, is still being manufactured at the facilities. According to Turkish Aerospace executives, the system integration of the P2 prototype is expected to be completed in August 2019 and is scheduled to enter into the test campaign in September 2019. Within the scope of the program, over 1500 hours of flight and ground tests are



expected to be conducted with the prototypes. While the testing processes and the Technical Data Package are intended to be finalized in 2020, the type CS-29 certification and EASA certification processes are aimed to be completed in the next phase of the program. Within the statement by Ismail Demir, the President of Defense Industries, during the Turkish Defense Industry Summit on December 13th ,2018, the T625 GÖKBEY is expected to be in service in 2021.

The aircraft incorporates several new technology features to provide the highest levels of safety and operational advantages. Within the scope of the program, critical systems such as transmission, rotor, and landing gears as well as aerostructures and avionics systems are designed from scratch at Turkish Aerospace facilities in Ankara, Turkey.

A new generation, advanced aerodynamic indigenous rotor design will provide excellent performance in the most demanding operating environments. The T625 GÖKBEY design also benefits from extensive use

of composites, advanced airframe aerodynamics, next-generation widescreen digital glass cockpit design and state-of-the-art avionics for maximum situational awareness.

Under the Turkish Light-Weight Utility Helicopter (TLUH) Program, Turkish Aerospace has completed design, development and manufacture of an indigenous twin-engine 5-ton class light utility helicopter with a takeoff weight of 6 tons and powered by two CTS800-4AT turboshaft engines, 1373shp each, enabling the aircraft to perform in hot & high environments and perform safely in a one engine loss condition for Category-A certification. The unique TS1400 Turboshaft engine, which is going to replace the CTS800-4AT in the serial production period, currently has been in development by TEI since 2017. The preliminary prototype of the turbojet core to be utilized on the TS1400 engine was successfully tested for the first time on a test bench on June 11, 2018. The SSB announced this success via its official twitter account; "Under our Turboshaft

Engine Development Project, production of the preliminary prototype of the core motor which constitutes the main core of the TS1400 engine was completed and the first ignition test was successfully performed." The TS 1400 Turboshaft Engine development project consists of five stages which are as follows; the development of the core engine, prototype engine stage, mature engine stage, certificated engine stage and integrated engine stage. Under the eight-year schedule TEI is to design, develop, produce and certify two 1400shp turboshaft engine (TS1400,ITAR-free) prototypes.

The T625 GÖKBEY is designed for IFR and VFR single-pilot operations, night operations and flight in known icing conditions. The geometry of the helicopter is optimized for maximum aerodynamic performance with retractable landing gears hence providing efficient fuel consumption leading to better range and endurance. Thanks to the auxiliary fuel tank, the range of the helicopter surpasses the 950km range accompanied by five-hour endurance.

The T625 GÖKBEY has a five-blade main rotor and a four-blade tail rotor to minimize vibration and noise. Both the main and tail rotor hubs are fully articulated with elastomeric bearings. Both rotor systems are driven by a transmission system, which consists of the three-stage main gearbox, having the capability of operation for 30 minutes in the event of loss of lubrication.

It also incorporates a state-of-the-art, four-axis, dual redundant automatic flight control system to improve helicopter stability, handling and reduce the pilot workload in-flight.

Aselsan's Modular Avionic Touch-Screen Environment (MATE) debuts on GÖKBEY

The new generation smart cockpit of the T625 GÖKBEY and all its avionics systems were developed by Aselsan, demonstrating competitive



MATE (Modular Avionics Touchscreen Environment)

and innovative solutions in the global aviation market with this new generation smart cockpit.

The new generation smart cockpit MATE (Modular Avionics Touchscreen Environment) consists of two wide touchscreen (8x20 inches) Integrated Mission Displays and two touch screen (8x10 inches) data entry Touch Command Control Units. MATE was developed to be compatible with the civil aviation standards of the European Aviation Safety Agency (EASA) and the General Directorate of Civil Aviation (SHGM) enabling pilots to control all avionics systems on the helicopter via the touchscreen cockpit displays. The navigation, communication, identification for friend or foe (military configuration), electronic warfare (military configuration) and EO/IR systems of the helicopter

were designed by Aselsan as well.

The T625 GÖKB EY Utility Helicopter's flight and mission management software was also developed by Aselsan. This software enables the helicopter to navigate Performance Based Navigation up to the level of RNP 0.3 (Required Navigation Performance 0.3) in all civil airspaces all over the world. The unique digital map and Helicopter Terrain Awareness and Warning System (HTWAS) software enables pilots to perform safe flights in extreme conditions.

The T625 GÖKB EY Helicopter is designed to offer a superior payload and diversified configurations to end-users. The T625 GÖKB EY can accommodate a maximum of two crew, namely a pilot and co-pilot, and up to 12

passengers. The extensive cabin space can also be customized according to the requirements of the end-user such as Search and Rescue, Passenger & Cargo Transportation, V.I.P., Firefighting, Air Ambulance, and Off-shore operations.

Turkish Aerospace aspires to be one of the greatest OEMs within the next 5 years

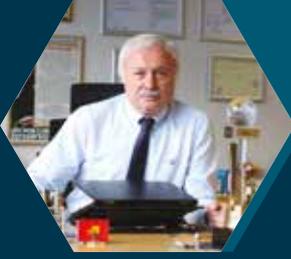
Turkish Aerospace already employs about 400 engineers for the various programs in the Helicopter Department. The acquired knowledge and know-how from the AW 139 program, the T129 program as well as T-70i General Utility Helicopter program (under the license of S-70i Black Hawk) have strengthened the company to advance to the next stage. In addition,

the unique and national 10-Ton Class ATAK-2 program and the 10-Ton Class Utility Helicopter program, which recently was initiated in the charge of Turkish Aerospace by the decision of procurement authorities. According to the President & CEO of Turkish Aerospace, Temel Kotil's statement during IDEF'19, the company intends to ramp-up their annual helicopter production capacity, up to 120 units in next five years. Turkish Aerospace's aspiration is to penetrate the international market with a diverse range of helicopter platforms and to become one of the greatest OEMs such as Boeing, Airbus, Leonardo, Sikorsky, etc. world-wide in the mid and long-term.

If we consider the Heavy-Weight ATAK-2, the T-70i General Utility Helicopter Program, the 10 Ton Class Utility Helicopter program as well as the T625 GÖKB EY program, all of these helicopters will enter into serial production within the upcoming period and this assertive goal is not unattainable. Undeniably, Turkey is striding forward with the momentum of visible progress towards its ambitious vision, with resolute and steadfast ambition built upon the strength of an accomplished and dedicated industry.

Stay tuned for more developments on the Turkish Helicopter Programs! ➡

WISDOMS



Hüseyin Oflaz
Mytechnic General Manager

"It is very gratifying to hear that Aviation Turkey Magazine will be launching soon. As Turkey is strengthening its presence in all

branches of aviation, it is also very exciting to hear that the Turkish presence in the aviation press world will be strengthened as well.

Wishing the magazine, a long and fruitful publishing life in line with their goals."

Mehmet Sait Yılmaz
SKYJET Aviation Chairman of the Board



"The civil aviation, defense and aerospace industries in our country have shown remarkable growth in parallel with the national and international developments in recent years. With the special emphasis given to aviation, Turkey has the world's rapidly growing dynamics and successfully continues to

grow. During rapid growth, it is very important to transfer know-how and experiences in order to ensure the sustainability of development, and to create a system of information sharing. Aviation magazines, news portals, aviation clusters and organizations bear serious responsibilities for such transfer

and sharing, and they create positive awareness due to the popularity of the aviation sector. On behalf of all active stakeholders of aviation, I would like to thank the Aviation Turkey team for the different voice and harmony that they will create, an important factor which I hope to hear from a magazine."



Güneş Nomaler
ACT Airlines General Manager

"One of the most valuable things for aviation enthusiasts nowadays is the timely and correct flow of information. We as ACT Airlines,

have full confidence that Aviation Turkey Magazine will add that value for the aviation industry. Sharing all the excitement you have, we wish

you a joyful, productive and long-lasting life."

Aslıhan Bulut Aydemir
General Manager of Aviation Parts and Services Ltd



"Considering Turkey's aviation history, we see that we've had a great history that honors us. I am very proud to witness the formation of this platform, which will inspire us by blending the results of this glorious

history and its contributions to the future and create an intellectual aviation culture that will complement all the branches of the sector. I have no doubt that this initiative will inspire not only us, but also future

generations. I would like to sincerely congratulate such esteemed thinkers who have initiated this Cultural Partnership with Turkish Aviation and wish them much success."



Ali Sedat Özkazanç
MNG Airlines General Manager

"I hope that 'Aviation Turkey' magazine will succeed in creating a platform to discuss ideas in order

to strengthen Turkey's aviation environment and notoriety all over the World. I wish to see success in

this way."



by İbrahim Sünnetçi

TS1400 Turboshaft Engine for the T625 Helicopter

As a close follower of developments and innovations in the field of aviation engines TUSAS Engine Industries Inc. (TEI) has accomplished important milestones in the initiatives taken to develop the indigenous and national TS1400 Turboshaft Engine under the Turboshaft Engine Development Project since the first ignition of Core Engine in June 2018. The TS1400 will power up the T625

GÖKBEY Turkish Light Utility Helicopter (TLUH) but it can also be integrated into T129 Mk-I ATAK Helicopter with some adaptations. Being carried out by TEI's Seasoned Team of Expert Engineers the TS1400 Turboshaft Engine Development Project is considered as a giant step to achieve company's vision of "To be Globally Competitive, Original Power Systems OEM."

Under the TLUH Program TUSAS has completed design, development and the manufacture of an indigenous twin-engine, 5-ton class medium category (4 to 6 tons), utility helicopter with a maximum take-off weight (MTOW) of 6,050 tons and powered by a pair of 1,400 shp class turboshaft engines. Powered by a pair of LHTEC CTS800-4AT turboshaft engines, each generating 1,373 shp during take-off, the T625 TLUH first prototype (dubbed PO) performed its first flight, which lasted 20 minutes, on 6 September 2018 at 6:00am at TUSAS facilities in Ankara. According to Honeywell the CTS800-4AT has almost 95% commonality with CTS800-4A engine, which is being used on T129 Mk-I ATAK helicopters and the 5% difference stems from necessary modifications on the engine and FADEC system (Full Authority Digital Engine Control) System to meet the T625 specific requirements.

Under the Prototype Phase Turkish Aerospace will manufacture three

prototypes for flight and ground tests, and to power these helicopters 10 CTS800-4AT turboshaft engines have been ordered from Light Helicopter Turbine Engine Company (LHTEC, a 50-50 partnership between Honeywell and Rolls-Royce) under a contract signed on 10 December 2015 between TUSAS and LHTEC. According to Honeywell as of May 2019 six of these 10 CTS800-4AT engines have already been delivered and the remaining four engines (expected to be used as spares and for ground testing purpose) are scheduled to be delivered during 2019.

The production of T625 GÖKBEY helicopters are initially expected to be powered by a pair of LHTEC CTS800-4AT turboshaft engines, but once all tests are complete and the required certification is obtained, the serially produced T625 GÖKBEY helicopters will start flying with indigenous TS1400 engines (in 2024-2025 timeframe), which are being developed domestically by



TUSAS Engine Industries Inc. (TEI) under the Turboshaft Engine Development Project (TEDP). The TS1400 Turboshaft Engine can also be integrated into the T129 Mk-I ATAK Helicopter with some adaptations.

On February 7, 2017, TEI was awarded a contract by the SSB under the Turboshaft Engine Development Project to develop Turkey's first indigenous turboshaft

engine to power the T625 GÖKBEY TLUH. Under the eight-year (2 years for the development of the turbojet core + 4.5-years for the prototype manufacture + 1.5 years for certification) schedule TEI is to design, develop, produce and certify two 1,400 shp turboshaft engines (TS1400, ITAR-free) prototypes with a team of 250 engineers. The preliminary prototype of the



TS 1400 Turboshaft Engine

turbojet core to be used on the TS1400 engine which was successfully tested for the first time on a test bench on 11 June 2018. The test cell, where the TS1400 Core Engine Tests are being conducted, was designed, manufactured and made ready for use with fully domestic achievement in cooperation with the 1st Air Maintenance Factory Directorate and TEI.

According to the information we have obtained, 12 to 14 TS1400 prototypes will be produced by TEI under the 8-year Turboshift Engine Development Project including the core engine prototypes.

During the Concept Development Phase of the TEI TS1400 Engine, 10 different engine models were examined and the centrifugal (radial) flow compressor design, which is more suitable for the turbocharger, was adopted. Axial compressors, on the other hand, are generally preferred for turbojet engine designs. For example, the Kale ArGe Company product KTJ-3200 Engine, and the French Safran Power Units' (former Microturbo) TR-40 Turbojet Engine features four-stage axial compressors. With the centrifugal design, higher mass flow rates can be obtained in narrower spaces (shorter engine length), however, the centrifugal compressor design requires larger engine diameter than

the axial compressor design. The axial flow compressor engines are smaller in diameter, but they are notably longer. Centrifugal compressor engines are considered more robust and stable, while engines with axial compressors are more fuel-efficient than the centrifugal compressor engines. Since the aim of the TS1400 design is to develop a turboshaft engine rather than a turbojet engine, a centrifugal flow compressor design was chosen because the shaft power is more important than the propulsive power (thrust).

The TS1400 Engine consists of a two-stage Centrifugal/Radial Compressor, a Reverse-Flow Combustion Chamber (Combustor), a two-stage High-Pressure Turbine (HPT) and a two-stage Power Turbine (PT). The 2nd core engine prototype in turbojet configuration, which was previously exhibited at IDEF 2019 as well as at the Istanbul Air Show (AIREX) and at the 4th High-Tech Port by MUSIAD in 2018, has an exhaust vent at the rear section instead of a Power Turbine. Power Turbines are required for the transition of the core engine in turbojet configuration to both turboshaft and turboprop configuration.

The turboprop version of the TS1400 Turboshift Engine is planned to power TUSAS HURKUS-B/C aircraft. In the turbojet configuration

of the TS1400, the core engine can also be converted to turbofan configuration by adding a fan and additional shafts and bearings to the front side and a power turbine to the rear side. Turbofan engines have 30% to 40% lower fuel consumption rates compared to the turbojet engines; however, their production is more difficult, and their unit costs are more expensive than turbojet engines. For example, the unit price of an F107-WR-402 turbofan engine is US\$190,000, while the unit price of a turbojet engine in similar class/thrust rates is around US\$100,000.

Among the main purposes of the Turboshift Engine Development Project (TEDP) is the establishment of a gas turbine engine design and the development of infrastructure and the knowledge to facilitate such a development process. Thus, the core technology

of the TS1400 Engine shall also form the basis for the indigenous turbofan engine (in 8,500lbf to 9,500lbf thrust class) needed for the HURJET New Generation Advanced Jet Trainer (AJT) & the Light Attack Aircraft Development Project, and it will be possible to develop the national aircraft engine when needed, upon any necessary technological additions to the capabilities gained under the TEDP.

However, the TS1400 engine, which prefers a two-stage centrifugal compressor like the LHTEC CTS800-4AT engine with a high-level weight and volume optimization, requires axial (front) air intake assembly changes that are necessary for a turbofan engine design. Although extremely suitable for turboprop (TP) or turboshaft (TS) engines, the two-stage centrifugal compressor architecture has some disadvantages in terms of the cross-



sectional area due to both the bypass ratio (the ratio of the air that goes through the core, i.e. the capacity) as well as the placement of the radial air assembly and the combustion chamber. The TS1400 is anticipated to be developed further with a multi-stage axial flow compressor and then a single-stage centrifugal compressor assembly to be able to evolve into a high-performance, low-thrust turbofan (TF) engine. Announced by TUSAS General Manager Dr. Temel KOTİL during the IDEF '19 Fair for the first time, the indigenous 2,500-3,000 shp turboshaft engine, which will power the T129 Mk-II (ATAK-II) Heavy Attack Helicopters, can be expected in a similar configuration.

According to TEI, the TS1400 Engine has a more robust design thanks to the centrifugal compressor assembly. It allows the air to flow through the core from front to top, not from front to back, creating more efficient negative and positive pressures. Under the TEDP, TEI has been able to effectively produce TS1400 core engine prototypes within two years following the contract and plans to perform the first

flight test on the T625 GÖKBAY helicopter in 2021.

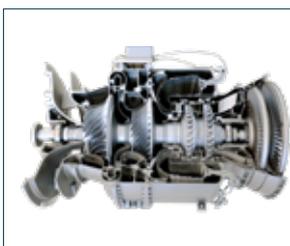
Although the contract was signed in February 2017, the history of TEI's knowledge and infrastructure accumulation for the TS1400 engine goes back to the Core Engine Technology Development Project that was launched in July 2012 with a 3-year schedule. The aim of the project was to develop core engine technology, which would form the basis for a 1,000 hp class turboshaft engine. Under the project, conceptual design software & methodologies for the indigenous compressor, combustion chamber, and turbine were developed by studying different engine architectural concepts. The detailed design studies on the TS1400 started in 2016. The oil lubricated TS1400 engine also features an indigenous FADEC System. The two TS1400 engines on the T625 GÖKBAY will be able to communicate with each other via FADEC. For example, if an engine experiences power loss during the flight, the other engine will be able to increase its power to compensate the lost power of the other engine. The standard engine power of the TS1400 will be 1,400

shp (shaft horsepower) but it will also have the capacity to produce 1,660 shp for a period of 30 seconds in an emergency, such as in the case of the loss of another engine.

The TEI TS1400 engine is expected to have similar dimensions and weight with the LHTEC CTS800-4A/4AT Turboshaft Engines, which have a reputation for compactness, light weight, reliability, power and durability. In open sources, the dry weight of the LHTEC CTS800-4A Engine (with a length of 86,4 cm and height of 72,9 cm) is stated to be 360 lbs. (163 kg). According to the EASA Type Certification Data Sheet the CTS800-4N version, featuring a reduction gearbox compared to the CTS800-4A/AT versions, with an overall length of 122,2 cm overall width of 60 cm and overall height of 72,9 cm has a dry weight of 408 lbs (185,1 kg). The TS1400 Engine will ensure the shaft output speed conditions of 23,000 rpm and have a service ceiling of 20,000 ft. The process which starts from the engine right through to shutting it off again is known as a cycle, and over the engine's

lifetime there are only a finite number of cycles before something cracks or breaks. The conventional methodology for measuring this lifespan and one that's used by many engine manufacturers is known as the TAC (Total Accumulated Cycles) Life. One TAC is the equivalent of one cycle of an engine (exactly: one excursion from engine start, passing intermediate power rating and back to engine stop). The average lifespan of the TS1400 is expected to be at least 2,500 cycles, while the target for the service life is 5,000 cycles (TAC). After 2,500 or 5,000 cycles the TS1400 will require a general overhaul.

A team of approximately 250 engineers, all of whom are TEI employees from TEI's Eskişehir, Ankara and Istanbul Engineering Offices, are involved in the project. The TS1400 turboshaft engine design team includes engineers from the fields of Aerothermal Engineering, Structural Engineering, Product Engineering, Prototype Testing, Electrical/Electronic & Control Engineering, and Embedded Systems Engineering



TS1400 Turboshaft Engine Specifications	
Sea Level Standard Air Max. Take-off Power	1,400 shp
Sea Level Standard Air Max. Single Engine (30 sec) Power	1,660 shp
Max. Power-to-Weight Ratio	8,54 shp/kg
Service Ceiling	20,000 ft
Output Shaft Speed	23,000 rpm (28,000 rpm reached during the test at a test cell)

wishes



Osman Yılmaz
Çelebi General Manager

"I think Aviation Turkey Magazine will close a gap in the Turkish civil aviation sector because I believe, that when taken into consideration, internet media and social media cover almost all communication means and many important issues

are skipped over as time flies, and the problem of not paying necessary attention to such issues by both the sector and players are bypassed. The projects and future plans as well as many "best practices" will now have the opportunity to be

more carefully considered and some discussions that need to be focused on by the sector will arise, with more details and contemplation. I hope this initiative will be successful and will make the expected contribution to the sector."

Ferda Yıldız
Başarı Holding and Kaan Air Chairman



"As in every sector in the globalizing world, rapid and new developments are also being experienced in the aviation sector. Following these developments closely and rendering their sustainability in the market

are of great importance to us as sector representatives. In this context, I believe that Aviation Turkey Magazine, which started its publishing life in order to provide a flow of sectoral information in the

global and national market, will provide significant benefits to the aviation sector and I wish success in its publishing life."

Kürşad KOÇAK
Havaş General Manager



"I am pleased with the addition of Aviation Turkey magazine to our industry as an affiliate publication of Defence Turkey which has an important role of globally announcing projects and developments related to the Turkish

defence industry and presenting the latest international trends to the sector's professionals. I believe Aviation Turkey would be an important source for the industry in all categories related to the world's civil aviation policies

and aviation and will succeed in establishing a lasting presence in the representation of our country. I congratulate the team of Aviation Turkey magazine and wish them success in publishing."

Ahmet Karaman
Turkish Technic CEO



"The volume of the Turkish aviation sector, its momentum of growth and importance in the global aviation market has increased significantly since the end of the 90s. The opening of Istanbul Airport with its first two phases is the beginning of a new and

very different era for Turkish Aviation. Within this context, the existence of a publication embracing all the stakeholders of the aviation sector, providing a flow of information between the parties, and making the Turkish aviation known in the world

is undoubtedly an essential need for the sector.

I wish success to Aviation Turkey Magazine, which becomes aware of this necessity and assumes the task of announcing our voice to the world."

Volkan Mutlu Coşkun
Turkish State Meteorological Service General Manager



"An English language magazine specializing in civil Aviation will provide vital contributions to the sector. I hope Aviation Turkey can serve all stakeholders and decision makers with necessary technical information. Moreover, it will be a platform, which ensures to advertise the important projects

and programs of the Turkish Aviation Sector to the International community.

Aviation meteorology is possibly the most important data stream for air traffic management (ATM) services given its impact on both safety and efficiency.

As a Director General of Turkish State Meteorological Service, a key element of Air Traffic Management, I expect special emphasis from Aviation Turkey on aviation meteorology. Turkish State Meteorological Service is ready to provide relevant content."



The ICAO and the international Community

Consider Turkey's Civil Aviation Sector to be one of Fastest Growing Civil Aviation Sectors in the World

The ICAO continuously sets standards and rules for all aspects of civil aviation and ensures their successful implementation on a global scale. Turkey's flag carrier airline THY is considered to be a model for the international aviation community. In this exclusive interview Mr. Çağatay Erciyes,

✈️ Aviation Turkey: Can you tell us about the Aviation Department of the Ministry of Foreign Affairs? Do you recruit pilots? What does your department do there?

Çağatay Erciyes: I do not think we can afford to hire them. Joking aside, unlike other Foreign Ministries, we have a dedicated department established in the late 1970's following the occurrence of the

aviation related crisis in the Aegean Sea. We have career diplomats serving there. The department functions within the Deputy Directorate General for Maritime-Aviation-Border Affairs.

The main responsibilities of the department are to ensure inter-agency coordination, the issuance of diplomatic flight clearances for the aircraft to be operated within

Ambassador, Director General for Bilateral Political & Maritime-Aviation-Border Affairs discusses growth in air transport and the developments in the aviation industry over the past decade and how Turkey proudly has succeeded in developing a competitive and modern aviation sector

the Turkish airspace, the conduct of aviation relations with the other states and international organizations operating in the field of civil aviation, principally the International Civil Aviation Organization (ICAO) and the European Organization for the Safety of Air Navigation (EUROCONTROL). The Department is also responsible for the long-standing Aegean disputes related to airspace issues

between Turkey and Greece, which, in essence, fall under three main categories involving the breadth of national airspace, the Flight Information Region (FIR) and related problems, and the other unilateral and arbitrary actions of Greece in the international airspace of the Aegean. Briefly, the Aviation Department is responsible for maintaining Turkey's sovereign rights in the airspace.

I have spent most of my professional career working in different capacities at the Directorate General for Bilateral Political and Maritime-Aviation-Border Affairs. I have been serving as the Acting Director General since December 2018. I had also been Ambassador to the International Civil Aviation Organization (ICAO) between 2012 and 2015. The Ministry led me to pursue a specialist career path rather than a generalist one.

✈️ Aviation Turkey: What is the position of Turkish civil aviation in the world?

Çağatay Erciyes: Having made great strides in the civil aviation sector in recent years, Turkey serves as an important example of how civil aviation should be turned into a strategic tool on a world scale. Let me share with you some figures as the numbers speak for themselves. According to the latest key aviation data revealed by the ICAO, Turkey ranks 12th worldwide by Revenue Passenger-Kilometers and 11th by Revenue Ton-Kilometers on scheduled services.

According to the Airports Council International (ACI) 2018 Report, in terms of hub connectivity, Atatürk Airport, having increased its hub connectivity by +4.8% over the preceding year, ranked 7th worldwide.

The newly opened Istanbul Airport is expected to serve

90 million passengers a year in the first stage. This number can be increased up to 200 million passengers a year in the coming period.

Among the airports, accommodating more than 25 million passengers a year, Sabiha Gökçen and Antalya Airports, ranking 1st and 2nd respectively, became top performers in direct connectivity considering the last ten years from 2008 to 2018.

In 2018, the airports in Turkey hosted around 210 million passengers in total as the number of domestic passengers increased by 3% and the number of international passengers increased by 16% compared to the previous year.

Besides, according to EUROCONTROL 2018 data, excluding the overflights, the three countries that contributed most to the growth in network traffic in Europe are Germany, Spain, and Turkey, respectively.

Turkish civil aviation is embodied in Turkish Airlines' (THY) achievements, which is no doubt the most valuable Turkish brand. THY, the locomotive of Turkish civil aviation, has maintained its growth momentum for decades.

Turkey's national flag carrier THY has built one of the largest air transport networks for both passenger and cargo flights. Having served approximately 75 million passengers in 2018, THY currently flies to 258

cities in 124 countries, and 49 cities in Turkey.

Additionally, THY, flying to far-flung corners of the world, bridges developing countries with the developed world and contributes to extending Turkey's footprint in these regions. THY, executing flights to 56 cities in 37 countries on the African continent, also ranks 1st in terms of the connectivity provided from Africa, Far East and the Middle East to the world.

✈️ Aviation Turkey: To what extent did Turkey's advantageous geographical position favor the development of civil aviation?

Çağatay Erciyes: It could not be denied that Turkey enjoys geographical advantages in terms of transport in a broad sense. However, these are the well-structured policies that have been followed since 2003, as well as the rational mobilization of investments, which led to success in the field of civil aviation. Especially over the past decade, Turkey succeeded in developing a competitive and modern aviation sector, supported by highly competent technical institutions.

Another point of pivotal importance is that Turkish civil aviation, by improving its competitiveness, has become one of the leading actors in a relatively short period in a sector where major and established players are involved.

In economic terms, the most painful aspect of the modern economy is to settle in a developed market. Turkish civil aviation has smoothly exceeded this threshold.

✈️ Aviation Turkey: Istanbul Airport recently became operational. Do you think this colossal structure will be able to meet expectations?

Çağatay Erciyes: Istanbul Airport, as one of the largest airports in the world, will consolidate Turkey's role as an air transport hub just as Turkey's geography has served through centuries as a bridge between continents. According to the April 2019 data, 58 airline companies from 38 nations carried out 3,261 departures from Istanbul Airport and these figures keep improving day by day. As soon as the current transition period is left behind, we will witness this high potential gradually materializing.

✈️ Aviation Turkey: How do the hot conflicts surrounding Turkey affect civil aviation?

Çağatay Erciyes: Considering the current situation in the surrounding regions, Turkey can be compared to an oasis for the safety of civil aviation.

Because of the turmoil extending from Ukraine in the north, Syria and Iraq in the southeast, the majority of the traffic from Europe towards Middle East and Asia and vice versa is

INTERVIEW

conducted through Turkish airspace, which in return creates a substantial increase in air traffic flow.

Turkey is committed to the principle that the safety of civil aviation comes first and continues to act responsibly.

✈️ Aviation Turkey: You also worked at the ICAO, could you talk about the structure and activities of the Organization?

Çağatay Erciyes: The ICAO is a UN specialized agency in the field of civil aviation, established under the Chicago Convention of 1944 in Montreal. The Organization aims to ensure the development of international air transport in a safe, secure, sustainable and environmentally responsible manner. In my opinion, besides technological developments, the ICAO has also substantially contributed to making air transport the most secure and the safest means of transportation in the world. The ICAO continuously sets standards and rules for all aspects of civil aviation, as well as ensuring their successful implementation on a global scale.

These standards and rules cover a wide range of issues including passport control, airspace management, airports, navigation, aircraft safety and security measures, and commercial regulations. The Organization currently has 193 members and 7 regional offices. Having its

headquarters in Montreal, Quebec, the ICAO has a Council composed of 36 Member States with affiliated committees working under it, a General Assembly that convenes once every 3 years, and a Secretariat consisting of approximately 500 international personnel. Many Member States including Turkey also have Permanent Missions to the ICAO.

✈️ Aviation Turkey: What about the course of Turkey-ICAO relations?

Çağatay Erciyes: Turkey-ICAO relations have historically followed a bumpy course. Having actively participated in the establishment of the ICAO during the period from 1944 to 1950 and taken part in the first Council as a founding member of the ICAO, Turkey unfortunately did not attach adequate importance to the Organization during the period from 1950 to 1974. Thus, Turkey missed the opportunity to become adequately involved in the deliberations regarding the sharing of Flight Information Regions (FIR) in the Mediterranean, Aegean and Black Sea regions during this period. After 1974, bringing the aviation dimensions of the Aegean and Cyprus issues to the ICAO agenda has overshadowed Turkey-ICAO relations.

In the following period, an office in charge of the ICAO was established

within the Turkish Embassy in Ottawa in 1978, which was then raised to the level of Permanent Mission in Montreal in 1990. The main duties of the Permanent Mission of Turkey to the ICAO is to protect Turkey's rights and interests in the field of civil aviation and to increase Turkey's level of representation in the ICAO in parallel to the development of the Turkish civil aviation sector as well as to increase its contribution to the Organization.

Turkey, once only best known for the Aegean and Cyprus issues in the ICAO, now comes to the fore with the level of development and large investments in the field of civil aviation. Turkey was re-elected to the Council, the governing body of the ICAO, after 64 years in 2016 for a three-year term. Considering the current level of Turkish civil aviation, Turkey continues to work on achieving permanent representation in the Council.

✈️ Aviation Turkey: Could you express your opinions about the future of civil aviation in Turkey?

Çağatay Erciyes: The future of Turkish civil aviation is very bright. It is not just my opinion. The international community including the ICAO also considers it in the same way. Turkey has one of the fastest growing civil aviation sectors in the world.

With the great achievements that we all are proud of such as the

fact that THY is the airline which flies to the most countries in the world and has become a global brand, the record number of aircraft orders given by Turkish airline companies, the growing operations of the other Turkish airline carriers as well as operating the world's largest airport, the developments in the provision of air traffic and ground services, we are considered to be a model for the international aviation community.

Parallel to this growth in air transport and the developments in the aviation industry also make us proud. I hold the opinion that we should attach special importance to developing our human resources through this growth process, as well.

✈️ Aviation Turkey: Is there a connection between civil aviation and Turkish foreign policy?

Çağatay Erciyes: Exactly. I can easily say that with the rapid development of the Turkish aviation sector in recent years, it has become one of the important soft power pillars on which Turkish foreign policy is based. The newly opened Turkish embassies and the new routes opened by THY, especially in Africa and South America, enable Turkey's bilateral relations with many countries to develop rapidly as well as increase and diversify foreign trade 🌐

wishes



Noyan Dede
Onur Engineering General Manager

"With admiration we have been following the content and work produced by Defence Turkey Magazine which has been an important and reliable news reference source for the defence industry for many years.

With the experience and know-

how derived from Defence Turkey Magazine, I believe that Aviation Turkey Magazine will focus entirely on civil aviation will enable the authorities operating in the civil aviation field in Turkey to get to know the local and national capabilities and competencies, and our companies will be able

to monitor more closely the national and international companies within the ecosystem.

I wish success to the Defence Turkey and Aviation Turkey Magazine team and good luck for the new publication life of Aviation Turkey Magazine."

Osman Okyay
Kale Group Vice President and Technical Group Head



"We are all aware that the defense and aviation industry has a very strategic importance for Turkey in achieving its great targets. In this sector, which develops in a limited ecosystem by its nature despite its enormous impact, it is very critical

that each stakeholder as well as the media have to be specialized. I would like to congratulate you all for assuming a driving role firstly with Defence Turkey Magazine and now courageously with Aviation Turkey Magazine. I believe that with

your unique publishing approach, you will fill the gap in the field of civil aviation journals and take an important place in this field. I wish you success in your first issue as well as a long publishing life."



Alexender V. Neradko
Director General, Federal Air Transport Agency

"First of all, we would like to express our pleasure to be presented writing a few warm words in the first Aviation related magazine in English in Turkey. The press, the media are serving people worldwide as one of the fastest ways to share information, to bring the latest news to everyone. We hope that Aviation Turkey magazine will serve this main rule. We also would like to thank Aviation Turkey magazine knowing that they can inform readers about the links of information related to the old and fruitful relationship between Russia and Turkey in the area of civil aviation.

Historically the cooperation between the Russian Federation and the Republic of Turkey in the field of civil aviation began in the past century in 1967, when the first Air Service Agreement between the countries was signed.

These relations between the two friendly nations in the aviation sector continue to develop and now both of the countries and their citizens feel these benefits. Currently Turkey is the most popular

holiday destination for Russian citizens with its long and sunny summer seasons.

In particular, the Summer-2018 season was marked by the record high achievements in the field of air transport relations between the Republic of Turkey and the Russian Federation. Approximately 20 Turkish and Russian airlines were operating about 400 regular weekly flights between the two countries weekly, Russian airlines were also additionally operating charter flights to all the popular tourist destinations in Turkey which resulted in a total of 1,200 regular and charter operations between the two countries in the Summer-2018 season.

Undoubtedly, such impressive figures confirm the goodwill and sincere relations not only on the official but also on the social levels between two friendly countries.

Such cooperation is also diversified in various areas of civil aviation thanks to the joint work of Russian and Turkish colleagues.

By the way Russia and Turkey have

taken an important step towards strengthening cooperation between the respective institutions of both countries. This step is reflected in the signing during the Fifth National Aviation Infrastructure Show – NAIS-2018 held on February 2018 the Working Arrangement between the Federal Air Transport Agency of the Russian Federation and the Directorate General of the Civil Aviation of the Republic of Turkey on Airworthiness Cooperation.

This Working Arrangement is focused on cooperation in the field of the certification of civil aircraft, aircraft engines, propellers and onboard equipment of civil aircraft designed, manufactured and operated in the Russian Federation and the Republic of Turkey. Thanks to the Working Arrangement, the Russian-made helicopter "Kamov" Ka-32 was imported to Turkey for the first time.

We once again would like to express the deepest respect and great admiration to be a small part of such a project in order to have the possibility to bring the freshest and latest news to the world."

TCI's Distinctive Edge as an Aircraft Cabin Interiors Manufacturer

TCI's journey of success began in 2010 as a joint venture between Turkish Airlines (30%), Turkish Technic (20%) and Turkish Aerospace Industries (50%). In the first few years of its establishment the TCI facility was located at Turkish Aerospace in Ankara and by 2013 TCI relocated to its current location at the Turkish Technic facilities next to Sabiha Gökçen Airport in Istanbul.

The establishment goal and mission of TCI has been to design and manufacture aircraft cabin interior products through the strength and quality of the founding companies and to contribute to the Turkish aerospace industry through the use of local capacity and resources. TCI works relentlessly to accomplish this goal with its 200 employees that are engaged in engineering, sales, programs, procurement, quality, manufacturing and finance departments with the vision of being among the top five global companies in the cabin interior market.

TCI designs and manufactures aircraft galleys, i.e. the kitchen area for food preparation on an aircraft and plans



Aerial view of the Turkish Technic Sabiha Gökçen facilities

to extend its product range in the near future with the full support of its shareholders. TCI has extensive capacity and capability for design, engineering, testing, production and after-sales service of galleys. Light-weight, functional and low-cost production is indispensable for all TCI products as weight and cost factors play a crucial role in aviation.

TCI adopts a smart design philosophy with innovative modeling and profiling,

functional design for usage and maintenance, and lean design philosophy with modularity and standardization. TCI holds EASA Part 21 G (POA), DGCA Part 21 G (POA), ISO 9001, and AS 9100 certificates and is working towards obtaining EASA Part 21 J (DOA).

TCI uses its engineering capabilities to the highest degree to serve its customers in the most efficient way with the awareness of expectations from customers. Flexible

configuration options and tailor-made engineering solutions are the standard steps of TCI's project management philosophy. In Boeing B737 programs, TCI succeeded in the design and production of galleys that are approximately 10% lighter than those of its competitors.

As a strongly established company, TCI has succeeded in receiving orders for many prestigious Boeing and Airbus programs.



Boeing 737 G2 VIP Galley



Airbus A330 G1L Galley



Boeing 737 G2 Galley

Currently, TCI is a certified supplier of Boeing and has been selected for inclusion on the Global Offerable List for Boeing 737 aircraft.

Up to now TCI has been awarded many programs to design and manufacture Galleys and Monuments, including those for Turkish Airlines, SunExpress, Jet Airways, SpiceJet and Donghai Airlines. Most recently, TCI was awarded with the SFE Program of Bar Units for Airbus A350 XWB aircraft. According to this program, TCI will be one of the few selected companies to design and manufacture Bar Units for A350 XWB aircraft. The signature ceremony for this agreement was held at this year's Aircraft Interiors Expo (AIX) in Hamburg with the participation of senior officials from both companies. Thanks to this program, TCI has become one of Airbus' global suppliers and has extended its product portfolio while stepping into the wide-body aircraft segment as a permanent program member. To be a part of this distinguished program is a proof of confidence that Airbus has in TCI through all stages of design and manufacturing and it is a source of pride for all of us as a robust step towards the progress of aviation in Turkey.

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Boeing 737 G4B Galley



Boeing 737 G1 Galley



Airbus A330 Door 2 Complex



Signature ceremony of A350 XWB Bar Unit SFE Program at AIX 2019 Hamburg

myTECHNIC's

Synchronous

Growth and Success

with

Turkey





© myTechnic

It has been 11 years since myTECHNIC started its operations on the Asian side of Istanbul at Sabiha Gokcen Airport. At that time, the myTECHNIC hangar building was the first biggest investment, after the construction of the runway at Sabiha Gokcen Airport; all other maintenance centers were constructed years after myTECHNIC.

myTECHNIC has demonstrated how promising the project would be, right from the start by successfully completing construction within only 18 months. It is the first Lean Greenfield MRO in the world, a state-of-the-art facility building with a hangar area of 16,000 sqm, an office area of 12,115 sqm and a 24,800 sqm warehouse, in addition to a 6,000 sqm engine shop area, in total 60,000 sqm under one roof.

myTECHNIC received certifications in August 2008 for EASA Part 145 and Turkish Civil Aviation Authority (DGCA) with SHY/JAR 145/EASA, and since then myTECHNIC achieved the completion of planned heavy maintenance for 1,150 aircraft from 150 different airlines throughout 50 different countries.

The company decided from the onset that their vision was to become the #1 MRO in the region (Middle East, Europe, Near East, CIS and Northern Africa) for aircraft made by Airbus and Boeing. To achieve this

they accomplished their mission by adhering to local and international regulatory requirements.

myTECHNIC is a customer-centered organization ensures a focus on the following points;

- High standardization, quality and safety in all hangar and support operations
- Flexible and cost-effective solutions for all customers
- Complete transparency in relationships with customers
- A wide range of products and services
- The best value for the money
- Quick turnaround times (TAT) that fully meet customer expectations
- A culture of continuous development that emerged with the application of Lean Management Principles
- Growth and employment opportunities for the Turkish Aviation Industry

Continuous Improvement

myTECHNIC aims to achieve continuous development by combining Lean Management principles with the best practices in aviation.



© myTechnic



Lean implementation is an all-inclusive approach that covers all production elements from strategy to the production environment in the workshop. Implementing and adapting the Lean concept to the aircraft maintenance process is not as simple as in production facilities with fixed and standard production processes. An aircraft maintenance center produces a large amount of variability and wastage, such as in a rough installation / disassembly facility. It is quite difficult to identify processes with added value, but it is relatively easy to identify wastes. Beyond the common usage, the Lean Philosophy defines waste as something that the customer does not want to give in return and has no added value for the customer.

The Lean approach focuses on the reduction of eight types of waste to improve overall customer value such as Transportation, Inventory, Motion, Waiting, Over-production, Processing itself, Defective Product and Unused Creativity

By eliminating all kinds of



waste, costs are reduced in all phases of production, flexibility increases, customer satisfaction rises, and targeted revenues multiply. MyTECHNIC is fully aware that their most important responsibility is customer satisfaction. Therefore, an environment is designed in which all operators can focus on their work and create value for the customer. MyTECHNIC will continuously work toward improving its operations and search for new ways to create more value for its customers.

What type of services and solutions does myTECHNIC Provide?

MyTECHNIC aims to be a “one stop solution provider” for its customers, conveniently offering a wide range of services to customers;

Base Maintenance

myTECHNIC offers heavy aircraft maintenance services in their hangar for;

Boeing

B737-All series

B757-200/300

B767-200/300

B 777-200/300

MD 80 Series

Airbus

A300-B2/B4/-600

A319/320/ (CEO and NEO) /321

A310



Capabilities for airframe maintenance include; Scheduled ‘C’ checks, Structural inspection and / or repair, Modification on the aircraft, engine and related systems, Defect rectification / major component change, Corrosion prevention and control program applications, Cabin modifications / refurbishment and conversion of cabin interiors, Aircraft weighing, Dismantling and painting of aircraft, Non-Destructive Testing (NDT)

Line Maintenance Services

myTECHNIC attaches great importance to reliability and timely departures in their line maintenance stations. They offer all the services that customers need to deliver the aircraft in an efficient and timely manner.

Currently line maintenance services are provided in Sabiha Gökçen International Airport, Istanbul Airport and

Antalya International Airport.

Engine Maintenance Services

myTECHNIC’s Engine Services division offers exceptional maintenance for their customer’s engines. With more than 10 years of experience they have supported millions of engine flight hours. More than 90 engines have been through their engine shop, and customers continue to rely on myTECHNIC as their engine service provider, experiencing reliable partnership service for non-stop flight operations.

GE CF6 - 80C2 Engines

myTECHNIC customers are fully involved in every step of optimized engine work scope preparation and revision; Top-case repairs, CRF Oil leak repair, HPT repairs, Modular replacement for a quick TAT, AD-SB application, Performance Restorations and Full O/H.

PROFILE

GE CF6-50 Engines

With expertise in end-of-life solutions for sunset engines, myTECHNIC enables customers get the maximum life out of their CF6-50: Top-case repairs and VSV bushing replacements, HPT refurbishments, LPT stg.3 disk replacements, Limited work scopes with option to convert the work scope to teardown if the required material costs exceed the expected life of the engine.

Component Maintenance Services

Thanks to the accumulated expertise of their highly qualified technicians, myTECHNIC has developed unique know-how in component repair & overhaul. With large operational capability they offer test, repair and overhaul services for parts on a time & material or flat rate base.

The current ratings for component maintenance are C1, C3, C5, C6, C7, C12, C14, C17, C18, C20

The Shops are; Wheel & Brakes, Batteries, Avionics, Emergency Equipment, Mechanical Components, Oxygen / fire bottles / Masks and regulator, Structural / Composite Components and Cabin Equipment / Sidewall Coating



myACADEMY, a milestone for the industry

Trusting in their own technical strength and being aware of trained technical staff and engineers constitute very serious potential and with this understanding, myTECHNIC established myACADEMY to place more weight on technical training, aviation and space technologies trainings with a project-based approach instead of a customer-based

approach. myACADEMY's priority is to focus on online training, 147 basic and 147 types of specialized training and R&D projects.

10th Anniversary

Last year the company celebrated their 10th anniversary. All of their partners and collaborators were invited to attend an event at which the following words were shared by the company's founder Mr Cizmeci; "We trusted our country, our

people, our technical knowledge. In order to be independent, we believed the necessity of having our own power. We believed the future is in the skies, we did not dread, we worked. From China to Europe, Africa to Russia and Middle Asia; we had the authorization from the governments of many countries. In 10 years, we completed the maintenance of 1,000 aircraft and engines. We look toward the future with belief and trust. We are proud and joyful" 🌟





Şükrü Can
ULS Airlines General Manager

"ULS Airlines has been serving with her cargo AOC for 15 years and proudly carrying the Turkish flag, in so many countries, including the challenging geographies throughout the world. All cargo airlines in Turkey have become competitive, strong,

preferred and important brands in the world, especially in the last 10 years.

ULS Airlines Cargo congratulates the first edition of "Aviation Turkey" that will be a sister magazine to the 14 years old- foremost magazine

"Defence Turkey" which has very important missions, visions and ethical values.

We congratulate all the writers, editors and wish them success in broadcasting."

Alp Delimollaoğlu
Terminal Yapı General Manager



"Turkish aviation has become a star, a cornerstone in the region with increasing acceleration in recent years.

Within this course, the construction and operation of the airport, which has become a world example with the successful 'Build-Operate-Transfer' model solutions, has an important place. Turkey, with its power and prestige, has become more distinct with the activation of the first phases of the Istanbul Airport project, which is closely followed with great interest by the world...

In addition to the rapid developments in terms of operating and industry, the development of communication channels, which cover the developments also affecting "source and production" layers of aviation, and share them with those in the global market, was a long-felt insufficiency. Now it is very pleasing and exciting that Aviation Turkey Magazine will publish its first issue in June 2019 as a publication that promises to fill a gap with its ethical principles as well as its vision and mission.

As a manager of a company that has been performing activities related to airports, as a contractor in Turkey over the last 50 years, and a company that won the Çeşme-Alaçatı airport tender, which will become the first general aviation airport, I believe that remarkable horizons will be opened up to Airmen globally and it will spread excitement among aviation fans. I wish much success to Aviation Turkey magazine throughout its publication life, and I look forward with excitement to read it."



Murat İkinci
STM General Manager

"The capacity that the Turkish defense industry has reached today undoubtedly makes us all very proud. As STM, we transfer our engineering capabilities, superior technologies, know-how, and indigenous designs that we have developed primarily

for the needs of our country to other fields, especially civil aviation. The effective presentation of the produced added value to the public and sector professionals enables these achievements to be recognized and shared among all partners. Thus, I

wish great success to Aviation Turkey magazine, which entered the civil aviation sector with the experience from Defence Turkey magazine, in its publication life for allowing the voice of Turkish aviation to be heard by a wider audience."

Yılmaz Güldoğan
Alpteknik Aviation General Manager



"Dear Aviation Turkey Family,

As a publishing company that does its job diligently and closely follows the sector, you have assumed a valuable responsibility for us in the aviation sector. With your new

publication, we believe that you will assume the role of a bridge in bringing the sectoral information and current news to the masses. We congratulate your new publication, which we believe will always follow

the principles of ethics, and wish you to continue your important work that adds value to our industry by making this information accessible to our social partners in the sector."

Navigating Toward Success with Incentives in Aviation

by Bircem ÖZEKİCİ *Project Manager, VOYTES*

With the advance of technology in aviation industry, Turkish Government offers variety of support program with a purpose of improvement of the potential suppliers in Turkey. Incentive systems are specifically designed to encourage investments that have the potential to reduce import dependence on intermediate goods that are important for the country's strategic sectors like aviation, aerospace and advanced technologies.

The main objectives of the incentive systems are to reduce the current deficit, to expand the investment supports provided to the less developed regions, to increase the amount of support elements, to encourage clustering activities, and to support investments that will provide technology transformation. Technological Product Investment Program is one of the important support program that funded by Ministry of Science and Industry.

Technological Product Investment Program

"KOSGEB" is an incentive program carried out by the Small and Medium Enterprises Development Organization. KOSGEB has announced a call for participation in the "Techno-Investment" program for SMEs by using the motto: "We will provide the necessary support to all SMEs that produce innovative, technological and high added value products and that want to transfer these products to international markets and to focus on exports".

With this program, the aim is to commercialize new products that emerge as a result of R&D and innovation activities in priority technology areas in order to boost Turkey's economy to become competitive on an international level, to create added value for the country's economy, to lead the export of technological products by actively participating

Voytes plays an active role in finding financial solutions through incentives and grants that focus on accelerating industrial development in Aerospace, Aviation, Satellite, Space and Advanced Technologies

in international markets, and to support the investments of enterprises in our country.

The product outcome of the Investment must be as follows:

The enterprise should have a specific certificate confirming that the technological product has emerged successfully. Within 5 (five) years from the date of finalization, the applicant is provided with support for the technological product. Owners of the technological products, the prototype studies of which have been completed or enterprises that have taken over the right of use from the right holder through a contract are able to benefit from this program. For technological products protected by patent specification, it is required that the patent has been transferred by the Turkish Patent Institute and Trademark Office.

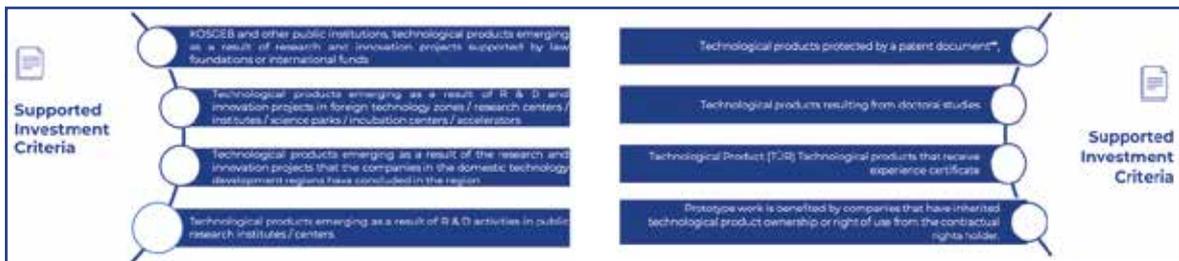
Micro, Small and Medium Scaled SMEs can benefit from this support. The

maximum limit of the support that will be granted under the SMEs Technological Product Investment Support Program is 5,000,000.00 TL (five-million), as refundable and/or nonrefundable. Early payment can be made at a rate of 25% of the total amount of support as set forth in the initial board decision.

Applications will be received on a regular basis throughout the year. In the SME Technological Product Investment Support Program, the duration of the investment project is a of maximum 36 (thirty) months. An additional period of six (6) months can be given by an approval decision of the Board.

Machine- Equipment and Software Expenses Support

Related to the production of the technological product subject to the investment project;



**If the technological product subject to investment is deemed to be at a high technology level, 5% is added to nonrefundable support rates.*

**If the machinery, equipment and software to be purchased for the related investment project are classified /*

differentiated with a domestic goods certificate, 15% is added to the nonrefundable support rates.

**The expenses of letter of guarantee is covered 100% by KOSGEB for nonrefundable or refundable support.*

Machinery-equipment and mold expenses,

The transportation, assembly and insurance expenses of the machinery-equipment and the mold,

Software costs,

Production line design expenses refundable and / or non-repayable support is provided for enterprises.

The machine-equipment and the mold to be received within the scope of the support should be new. However, if previously provided imported machinery-equipment is new on the date of importation and if the machinery-equipment are only 3 years old at the application of the investment project, then it will be considered within

the scope of support.

In case of the purchase of machine-equipment and the mold from domestic or foreign countries, all transportation and insurance expenses from the place of purchase, for the investment to be made, are supported.

Personnel Expense Support

Non-refundable support is given for newly recruitment personnel provided that they work in the investment project. Personnel employed from the date of application of the investment project are considered as new. Non-refundable support is provided for the personnel expenses at the net rate.

Training & Consultancy Expenses Support

Training Expenses: Includes training service expenses related to the use of personnel involved in the investment project, the related machinery and equipment and software from the service provider from which the machine-equipment and software are purchased.

Consultancy Expenses: Covers the costs of consultancy services for technical, design, engineering, finance, etc. to improve and implement the investment project.

The upper limit of this support is 150.000 TL as non-refundable.

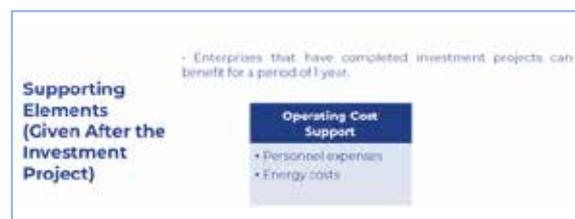
Rent Expenses Support

Rent expenses support is provided when the investment is accepted as an investment project application and the support decision is supported with no refund over the net rental price (except withholding and joint expenses) for the new area to be leased within the scope of the production of technological product. The leased place shall be deemed as new from the date of the application of the Investment Project.

Personnel Expenses Support

Support is provided for new personnel to be hired

Enterprise Scale	Eligible Costs	Support Ratios
Micro Scale Enterprise	Machine, equipment, mold and software costs	%70 (Non-refundable) %30 (Repayment)
	Personnel, training, consultancy, rent support	%70 (Non-refundable)
Small&Medium Size Enterprise	Machine, equipment, mold and software costs	%60 (Non-refundable) %40 (Repayment)
	Personnel, training, consultancy, rent support	%60 (Non-refundable)



under the introduction and marketing of technological products and working toward the use of machinery and equipment purchased within the scope of the investment. Personnel employed within the last 1 year as of the expiry date of the investment project are accepted as new. Non-refundable support is provided for personnel expenses at the net rate.

Energy Expenses Support

Non-refundable support is provided to companies for electricity and natural gas energy costs used for the production of technological products.

Within the scope of the “Technological Product Investment Support Program”, Voytes assists clients with the preparation of project feasibility studies, market research reports, technical and financial analysis, investment phases, project software, execution process and completion of the project.

Who is VOYTES?

Since 2010, Voytes Turkey has been offering financial solutions such as government incentives or private funds to a wide range of companies, supporting them to establish and implement strategies carried out with sectoral associations, professional chambers,

organized industrial zones, universities and the Ministry of Trade.

In addition, Voytes Turkey prepares feasibility studies and market research reports, along with the expertise of incentives to inform investors about favorable and the most profitable investment opportunities. Thereby, through the use of incentives, Voytes Turkey impacts the reduction of costs associated with creating more sustainable investments in Turkey. The company has completed very important projects in strategic sectors in areas such as machinery, defense and aerospace, satellite / space technologies, engines, metallurgy, construction machinery, fabricated metal products, robotics and automation technologies and the digital transformation of industry. Voytes has also been providing accounting, tax and financial regulatory consultancy and expert legal services. Voytes gets to know every single detail about its customers' business by diving in deep with fundamental working principles. With a multidimensional approach, instead of just doing what is expected, Voytes creates innovative and resourceful solutions and has demonstrated proven achievements through the successful implementation of these solutions. It has developed and finalized a wide range

of projects in the fields of incentives, grants and government support project management.

Voytes has executed and continues to execute various projects regarding Turquality Preparation Projects, TÜBİTAK Grant Projects, Ministry of Industry Clustering Projects, Ministry of Trade URGE (Development of International Competitiveness) Projects, Global Supply Chain, Design – Product Development, Industrial Theses (San-Tez) Projects, Project Based Technological Production Investment Grant Projects, KOSGEB Grant Projects, Ministry of Industry Technological Investment Projects, European Union Projects, Ministry of Development – Development Agency Projects and Center of Attention Projects as well as Presidency of Defense Industries R&D Projects and Investment Fund Preparation Projects.

Voytes Turkey carries out incentive and grant project activities in the Defense and Aviation sectors. As of today, Voytes has already prepared and obtained the approval of two grant projects worth approximately US\$ 6 million within the scope of the Ministry of Trade's Development of International Competitiveness Program (UR-GE) for the SAHA Istanbul Association with

32 companies in the fields of Defense and Aviation. Voytes continues with dedication and expertise to provide executive consulting for these cluster projects.

Within the scope of the projects that Voytes is involved in, the reports prepared for requirement analysis, market research, offset applications, cluster analysis, standards and certifications, NATO STO activities, etc. have become an important source of well-founded information in terms of shaping a credible roadmap for the sector. The objective of the roadmap is to also include Turkish companies in the Global Supply Chain later on and to increase their competitiveness.

In addition, Voytes provided cooperation with regional institutions and stakeholders in Kayseri for the establishment of the Center of Excellence under the Aircraft Maintenance and Construction Center which is amongst Turkey's 2023 targets. The company's efforts will continue to generate added value via expert consulting services.

In the next issue, the Global Supply Chain Competence Project will be explained in detail; a concept which includes supporting leverage of up to 50% of expenses for a total of US\$ 1.000.000 over two years 

Airbus Connected Experience Goes from Concept Phase to Reality

Innovative solution for seamless connectivity of cabin elements enabling additional value for airlines and passengers

On April 2th, Airbus is ready to actualize the Lot Platform for the cabin dubbed as Airbus Connected Experience with the contribution of industrial key partners such as Stella Aerospace, Gategroup and Recaro Aircraft seating. Airbus signed a cooperation agreement with aforesaid industrial partners to make the concept study a reality.

The platform will link in real-time interconnected core cabin components, including the galleys, meal trolleys, seats, overhead bins and other cabin elements. As well as allowing data exchange throughout the cabin for the crew, it is also planned that consolidated information could also be uploaded to the Skywise cloud for subsequent trend analytics.

The connected cabin will provide airlines, flight crews and passengers with significant benefits. For flight crews it means that they can access an integrated platform which keeps pre-flight and real-time data in one place, while passengers will receive a more personalized travel experience. And for airlines the platform would enable them to use the aggregated cabin equipment usage

trends (of the connected elements) to perform predictive maintenance

analytics over their entire fleet – thus improving the overall cabin service reliability, quality and performance on board all their aircraft. The platform will also allow wireless streaming to passengers and will enable airlines to host third-party applications for movies.

Soeren Scholz, Airbus' SVP Cabin & Cargo Program said: "As airlines drive to improve operational efficiencies and reliability, they can now look to the Connected Experience, offered by Airbus together with our industrial partners, to link different elements of the cabin, seats, galleys and trolleys into one central data system." He adds: "This seamless interconnectivity within the cabin will also be of tremendous benefit to passengers who will be able to enjoy individually tailored, personalized and high-quality inflight service.

Benefits for passengers and cabin crew

The Airbus Connected Experience consists of three key components such as Connected Galley,



Connected Seat and Connected bin. These components facilitate the cabin crew workload and enrich the passengers experience.

The Connected galley will enable passengers to pre-order from a dedicated prediction of preferred food & beverages for passengers – which also reduces waste and increases passenger satisfaction. It will also enable the cabin crew to benefit from full transparency of inventory management for efficient operations, as well as facilitating remote passenger communication to deliver quick and personalized passenger service based on individual preferences.

The connected seat will provide passengers with personalized seat position settings as well as remote ordering of preferred beverage or

meal via personal devices. Passengers will be able to receive customized content directly on their IFE screens, including movies of interest or relevant advertisements for topics they are interested in – such as recommendations for concerts that they might enjoy at their destination.

As an aircraft manufacturer, the market has clearly expressed interest in having Airbus in the 'driving-seat' to develop an IoT platform integrating data within the cabin. This platform is designed to be line fit and retrofit and will be available on the Airbus A320 family first, before extending to other Airbus programs. Not only is this platform fully compatible with Airbus' Open Software Platform (OSP) currently offered as a service, but the connected experience will also be 'Skywise Ready' for future data analytics – allowing predictive maintenance.



Çeşme - Alaçatı Airport

'Sky Campus' Philosophy

An Aviation Ecosystem

Terminal Construction Corporate Group is based on a philosophy with development and content based on the systematic approach to achieve targets. In this interview Terminal Construction Corporate Group – Chairman of the Board Mr. Alp Delimollaoğlu shares the Group's confident approach to innovative industrial, architectural and environmental projects in the region, following their motto "From Dreams to Thoughts, from Thoughts to Philosophy and from Philosophy to Project" demonstrated through various projects; notably the Çeşme - Alaçatı General Aviation Airport which is currently under construction will feature all the administrative, operational, technical and technological facilities at international standards

✈️ Aviation Turkey: Could you please briefly introduce yourself and the position of Terminal Construction Corporate Group in the Turkish aviation? Also, could you share with us your activities and your vision in terms of aviation?

Alp Delimollaoğlu: I am a civil engineer graduated from Istanbul Technical University. The flagship of our Group, Terminal Construction and affiliate companies have taken part in nearly 40 airport projects, especially those that are directed by the Ministry of Defense's Construction and NATO Infrastructure Department since the beginning of the 1970s.

Terminal Group secured the tender for the 'Ercan Airport Transfer of Operation Rights' in 2012 which subsequently generated indispensable airport construction experience over the years and significant involvement in civil airport operations. Recently we won the tender for the Çeşme – Alaçatı International Airport Build, Operate, Transfer (BOT) Project and we are currently working on building the infrastructure and facilities that will operate to enable the training and professional development of the staff required for General Aviation, Recreational Aviation and the Aviation sector in Turkey.

Based on the development of our projects, we also are

focusing great effort toward extending our business volume regarding aviation and high technology; our expectation is to include this within the structure of our group.

✈️ Aviation Turkey: Terminal Construction Corporate Group's name has been often heard with the Çeşme – Alaçatı Airport Build, Operate and Transfer Project tender that it recently won. How did you become interested in this project, and what are your plans within this scope?

Alp Delimollaoğlu: Actually, we use these definition "From Dreams to Thoughts, from Thoughts to Philosophy and from Philosophy to Project" for this unique process. The demand for pilots, cabin attendants, technicians, flight dispatchers and even aviation managers has been increasing naturally in line with the development and growth of commercial aviation in the world as well as in our country, therefore developing businesses which may be affiliated with the training facilities for fulfilling the aforementioned demand in addition to overall Aviation activities has been within the sphere of our interest for a long time; we were dreaming of ways to actualize these activities. Then, by seizing the opportunity to realize our dreams by winning the BOT tender for the Çeşme

- Alaçatı International Airport, instead of forming a basic airport organization, we formed the 'Sky Campus' philosophy as an aviation ecosystem with interrelated layers supporting each other and which ultimately elevated us to our final target.

In line with this ecosystem philosophy set over a layered development structure and the task of which we assumed the BOT responsibility, we determined our targets and graded our contractual responsibilities as well as our targets alongside these responsibilities. This philosophy really helped us in building the phased development structure that accumulated within the development project.

The Çeşme - Alaçatı General Aviation Airport which is currently under construction will feature all the administrative, operational, technical and technological facilities at international standards demanded by General Aviation as well as training centers, practice, shopping, and entertainment and accommodation centers when all phases are completed. The project of the Çeşme - Alaçatı International Airport will be Turkey's first General Aviation Airport and it is identified as a 'Sky Campus' project.

Targeting based on a philosophy and the

development and content based on the systematic approach to achieve these targets already reveal our plans for the future quite clearly.

✈️ Aviation Turkey: Which distinctive features will Çeşme-Alaçatı Airport have in terms of tourism, economy and social life? What contributions will it make to Turkish aviation in this sense?

Alp Delimollaoğlu: In this structure designed as a project, we will be a General Aviation, Recreational Aviation, Sky Diving Training and Practice Base as of June 2020. The facilities as part of the initial phase of our development project included in the contract will be our country's greatest and will be among the league of Europe's greatest.

With the launch of the facility and implementations containing the other project layers concerning life at the Çeşme – Alaçatı International Airport, we aim to extend tourism visas which presently are limited to a period of 90 days up to 180 days, and even to 240 days with different types of tourism implementations with reformed structure and content in addition to enabling improvement in the quality and quantity of the tourists visiting the region.

In summary, we aim to expand our term linked with tourism in Çeşme as

INTERVIEW

well as increase the number of arriving tourists and improve quality in order to contribute to the tourism economy of our country. We believe that Çeşme increases the value it deserves each day and soon it will reach a position beyond our dreams.

Aviation Turkey: Will there be any differences between your company's previous experiences and present implementations and its approach towards Turkey's future aviation projects? For instance, which type of new initiatives will we be hearing about from Terminal Construction Corporate Group in the next stage?

Alp Delimollaoğlu: Presently, we are conducting our activities focused on this project in order to successfully complete the Çeşme - Alaçatı International Airport - the future of General Aviation in our country - which is our Group's most critical business in the aviation area.

In the near future, we will bring in new initiatives on account of the intellectual power and experience that we own in airport operations related to general aviation. We assess that the Terminal Group will also be one of the candidates in the tender process regarding Atatürk Airport of which we are going through the adaptive re-use process.

Aviation Turkey: Will the companies under the Terminal Construction Corporate Group have developments containing innovation as well as conceptual and practical novelties in their engineering and aviation implementations? If so, what type of impact will these have on a national and global scale?

Alp Delimollaoğlu: "From Dreams to Thoughts, from Thoughts to Philosophy and from Philosophy to Project", our process that I shared in relation to the Çeşme - Alaçatı International Airport is in fact a model and a development innovation.

We also have certain endeavors that demonstrate a new approach during the foundation of intellectual power and experiences supporting this process.

We will embrace model values if the results of our efforts are positive and we will build cooperation with well-known brands on a national and global scale based on common sense in the businesses within the layered ecosystem of our project.

Apart from the aforementioned, this airport which we will operate, has a local structure with natural stones and architectural features that have drawn the attention of the world throughout the history of human kind and it bears



the opportunities to benefit from the use of renewable sources of energy as a result of our location. Therefore, it will not be a surprise to see this airport becoming a candidate at certain global competitions.

I can certainly say that there will be remarkable achievements in industrial, architectural and environmental terms in the region in addition to tourism when all of these activities are successfully completed. I look forward with hope toward meeting targets and contributing to the long awaited and much deserved pride which will be enjoyed by our country and our people as a result.

Aviation Turkey: This is our first published issue of Aviation Turkey magazine. Which novelties do you expect for announcing and developing your activities as the Terminal Construction Corporate Group in our future issues?

Alp Delimollaoğlu: We are happy and excited that

with its interesting vision, mission and its ethical approach which needs to be held up as an example, Aviation Turkey magazine has started its publication life with the motto "Global Communication Conduit of Turkish Aviation" and will be covering the rapid developments in both operational and industrial terms...

In addition to the activities and innovative implementations, with your endeavors to contribute toward achieving remarkable developments in terms of both aviation, tourism and the economy in this structure, I believe that the Terminal Group companies' constant existence within this structure will have a positive impact on all parties involved.

We will always be pleased to see you among us, both throughout the construction process and during the launch of implementations; hereby I would like to repeat my wishes for your success 🍀



Alpteknik Aviation

Established in 2013 as a subsidiary of Alp Aviation located in Eskisehir, Alpteknik Aviation offers after-sales services in the aviation sector in Ankara. Alpteknik has been appointed by Sikorsky Aircraft Corporation, a Lockheed Martin company, as the sole distributor for Sikorsky fixed and rotary wing aircraft spare parts, accessories and repairs in Turkey.

Alpteknik is also the Sales Representative for

the S-76, S-92, S-61 and M28 commercial aircraft in Turkey and Central Asian Countries.

Alpteknik Aviation provides service as a spare parts supplier to the commercial operators of new and pre-owned Sikorsky platforms in Turkey and Central Asia. It is effectively serving its customers through its head office in Ankara and its branches in Istanbul, Eskisehir and the Izmir Free Trade Zone.

Continuing its activities in Istanbul, the Alpteknik Aviation (ALPJET) Istanbul Branch has Commercial Air Operator, Continuous Airworthiness, SHY-145 Authorized Maintenance Center and SHT-33A business certificates, which are granted by the Ministry of Transportation and Infrastructure. In addition to these authorizations, Alpteknik Aviation is the sole maintenance organization in Turkey authorized by the

manufacturer, Robinson Helicopter Company, for the maintenance of the R-44 which is the top selling helicopter in the World.

ALPJET is still carrying on its operations with the Airbus EC-130 B4 helicopter and also the authorized maintenance organization of Sikorsky S76 helicopters under the SHY-145 Certificate.



An Excellent Way to Fly

the Boeing 777X Anticipation Accelerates

by Muhammed Yilmaz

The 777X will be the largest and most efficient twin-engine jet in the world, unmatched in every aspect of performance. The cabin interior of the 777X is inspired by the comforts and conveniences of the 787 Dreamliner, with larger windows, a wider cabin, new lighting and enhanced architecture

6 months ago, if anyone told the American manufacturer Boeing's executives that in the upcoming months the whole world would be speaking about their company; they would all enjoy this news and think that this would be about their new wide-bodied aircraft, the 777X. As it turned out it was not the way they imagined it.

Today, the whole world is talking about Boeing but the reason behind the attention is not the 777X! In fact, the crisis caused by the 737 MAX is so deep that it even has casted a shadow over the enthusiasm created by the latest aircraft of the company which is going through the worst turbulence in its history!

Boeing announced that it will be manufacturing a new aircraft model at the Dubai Airshow held in 2013. The new generation twin-engine wide-bodied aircraft to be manufactured was planned to replace the 777 aircrafts bearing the load of the company in the wide-bodied aircraft market with Boeing's legendary aircraft model 747.

Unveiled after a long design and development process, the 777X would be holding the title of world's biggest twin-engine aircraft. The new generation 777X aircraft family of the American manufacturer will offer a fuel savings more than 12 percent compared with the Airbus A350-1000, and 20 percent compared with the Boeing 777-300ER.





777X's wings will fold!

At the same time the 777X undoubtedly draws attraction with its foldable wing structure that was released to the market for the first time in the commercial aviation industry. The Boeing 777X aircraft were designed in a way to feature a spectacular wingspan of 235 feet in other words nearly 72.75 meters. However, this implied a wider distance than the passenger boarding bridges that it would approach at airports across the world when the aircraft are launched to

service and also the door of the hangars planned for the production of the 777X aircraft.

Instead of trimming the wings of the aircraft or asking for bigger hangar doors to be built, Boeing engineers installed hinges to the aircraft's wings and enabled the tips of the wings to be folded up and down. In this way, when the aircraft is on the ground, the wingspan could be reduced to 212 feet in other words to 64.82 meters.

The folding capability of the wings will be active only when the aircraft is on the ground and fuel will not

be stored in the foldable parts of the wings. The tips of the wings cannot be folded during the flight or when the wings of the aircraft were not available due to a mechanical problem. Every aspect was considered in detail during the design process. Each of the latches of the mechanism were designed redundantly.

Until today, foldable wing models were utilized on military aircraft as they covered less space. The efforts to integrate this design to commercial aircraft date back many years. Without doubt, the issues such as the design of the aforementioned

system, its launch to production and its impacts over flight performance involved substantial effort for Boeing.

These long and lightweight wings with a special design made of carbon fiber are subject to less friction in the air and they remove the vortex at the tips of the wings. In this way, a significant amount of fuel is saved. This indicates that the aircraft will make a considerable economic contribution to the airlines that operate the aircraft. 777X aircraft will offer a 10% advantage to the airline in terms of total operational expenses.





777X group has two members

The Boeing 777X group has two different models composed of the 777-8 with a 350-375 passenger capacity and the 777-9 with a passenger capacity of 400-425. The price tag of the 777-8 is US\$410.2 million and the 777-9 goes for US\$442.2 million. When the range of the aircraft are examined the 777-8 provides a range of 8,690 nmi (16,090 km) and for the 777-9 the range is 7,525 nmi (13,940 km).

The Boeing 777-9 with a length of 251 feet, 9 in (76.72 m) will win the title of the world's longest passenger aircraft as well. Previously, the Boeing 747 with the nickname queen of the skies used to hold this title with its length of 76.3 meters. The length of the 777-8 model will be 229 feet (69.79 m).

Aircraft engines setting new records

777X aircraft will be powered by two GE9X turbo fan jet engines. Moreover, the GE9X

engine that will power the 777X will be win the title of the world's biggest commercial aircraft engine. The diameter of the GE9X engine manufactured by GE Aviation is nearly the same as the diameter of the body of Boeing 737 aircraft.

The GE9X engine also bears the feature of being the model manufactured so far offering the greatest fuel savings.

The brand new GE9X is a winner in several disciplines. Its front fan spans a full 11 feet in diameter (3.35 meters), a world record. The engine also has 3D printed fuel nozzles and the most extensive use of parts made from lightweight and ultra-heat-resistant materials called ceramic matrix composites (CMCs).

As well as being more powerful, its bypass and pressure ratios are better than its predecessor, and it stays within Stage 5 noise limits, meaning a quieter

ride for passengers. It features the largest fan ever produced by GE, with just 16 fan blades, the lowest number of any wide body engine in service.

Silently rolled out from the factory

On March 13, 2019, the roll-out ceremony was held for the first prototype of 777X aircraft. Boeing officials had planned a grand launch and expected distinguished guests from across the world, but rather, on that day they silently removed the aircraft from the factory and launched the 777X at the facilities in Seattle with the participation of a few employees due to the huge crisis caused by the crash of an Ethiopian Airlines 737 MAX aircraft in Addis Ababa only 3 days prior to the planned ceremony. The 777-9 was painted in classic Boeing blue and was introduced to the aviation authorities with a small ceremony.



Design Differences with the cabin

With their wide and spacious cabins, the 777X aircraft will offer a more comfortable and relaxed travel experience. These aircraft are designed to increase the enjoyment of air travel with attention to temperature, sound quality and a new lighting system in the cabins. The business class cabin has a unique design which has a very appealing seating configuration and also many other fine details as well.

The 777X will provide an additional space of 4 inches per passenger in the cabin. This design will even allow placing 7 seats in the same line while fully reclined, meeting the wide personal space expectations of business class passengers.

The windows are 16% larger than the ones in the Boeing 777 and are positioned higher on the body of the aircraft allowing for better natural lighting in the cabin while offering a perfect viewpoint for passengers. The overhead bins and individual storage spaces were broadened as well.

In the 777X aircraft there are optional packages will be offered for ceilings, lighting and chambers dividing the cabins, the market will see aircraft with 4 different cabins composed of first class, business class,



premium economy and economy classes with different ceiling and lighting applications.

In the images Boeing provided, giving an idea about the cabin of the aircraft, a seating plan of 3-4-3 was displayed in the economy cabin; however, the cabin looks available to accommodate many more seats with a different seating configuration.

The passengers will not feel turbulence!

The Boeing 777X was equipped with the new generation Smoother Ride Technology. This technology was first launched within the 787 Dreamliner aircraft with the balance control system. On account of this technology, when the aircraft goes through turbulence, hundreds of sensors perceive the changes, interpret and transmit the data acquired

to the flight control computers. The momentum and the maneuvers of the aircraft are regulated automatically as well. In this way, the effect of turbulence on passengers is decreased significantly.

First delivery to the Emirates!

Boeing already received a total of 344 777X aircraft, which were ordered by Nippon Airways, British Airways, Cathay Pacific, Emirates, Etihad, Lufthansa, Qatar Airways, Singapore Airlines and by a customer whose name has not yet been disclosed. In the beginning, regarding the 777X aircraft, it was announced that the first delivery would be made to Lufthansa which was the first company to place the first order. However, in a later statement, Boeing announced that the first delivery of the 777X aircraft was planned to be made to the Emirates around mid-

2020. Putting in an order of 150 aircraft, Dubai-based Emirates is currently the greatest customer of the 777X aircraft.

Despite the sector's great enthusiasm about the new Boeing 777X, there is quite little information on the progress of the manufacturing activities. Furthermore, recently the rumor has it that the maiden flight will be delayed due to certain problems emerging at the engine of the aircraft, the GE9X. The date set for the 777-9 to embrace the skies is a key concern. It is obvious that the date specified for the first delivery would not be achieved if the delays in manufacturing and test programs continued.

Boeing is trying to eliminate doubts that are circulating especially with the 737 MAX, and it seems that more time is needed to fully enjoy the excitement of 777X 🌐



Emirates launched its first flights from Dubai on October 25th, 1985 with a Boeing 737 and an Airbus 300 B4 that it had leased. Our goal was also quality instead of quantity in those days, and over the years we entered the regional stage with tiny steps, we have always been a globally influential travel and tourism corporate group that is known for its high-quality standards. Even though it is owned entirely by the Dubai Government, Emirates has always grown in size and gained its popularity with competition instead of protectionism. The number of international carriers benefiting from Dubai's free zone policy has been increasing constantly. We do not only defend this policy, but also acknowledge its great importance in terms of maintaining our own identity and competitiveness at the same time. After making the initial investment, the Dubai Government realized that it would be more appropriate to regard the Emirates as a fully independent business and thus laid the foundation of our current success. Emirates has publicly released its annual profits for each budget year as of its third year in operation. Maintaining its high rate of development while constantly working in order to provide the best

Enriched Experiences with Emirates

With 18 weekly flights from both the European and Anatolian Coasts of Istanbul, Emirates provides easy connection facilities to Dubai and Asia, Africa, Oceania, Far East and Middle East flight lines.

Bahar Birinci – Emirates Turkey, Bulgaria and Romania Manager

ARTICLE

services in the sector have been the most significant factors in Emirates' success.

Our passengers are in fact the most crucial element for us; our passengers are a focal point of our business and we have been exerting utmost efforts in order to offer them the best possible experience. We improve and determine our services and destinations in accordance with the expectations and wishes of our passengers. Currently, we are transporting our passengers to 158 different flight points in 86 countries and on six continents; we make a total of 18 flights per week from Istanbul Airport and Istanbul Sabiha Gökçen Airport.

As Emirates, we aim to provide our passengers with an impeccable travelling experience. Therefore, our most recent motto is "Fly Better". Besides its superior products and services in general, Emirates has unique features distinguishing it from other airlines.

We have made a great effort to provide the best services to our passengers in the sky and on the ground without compromising quality. We are the airline with the world's greatest Airbus A380 and Boeing 777 fleet. We pay close attention to



realizing many firsts by equipping our airplanes with state-of-the-art technology products. For instance, while passengers in all classes enjoy award winning meals prepared by gourmet chefs, they have access to more than 4,000 channels, hundreds of songs and games contained in the awarded in-flight entertainment system "ice" at Emirates' modern airplanes equipped with high end technology. Moreover, they also benefit from the expertise of a multinational cabin crew from over 135 countries. The passengers are capable of benefiting from the high-speed

Wi-Fi access and mobile phone services in flight. Emirates brings First and Business Class experience and luxury to another level with its A380 airplanes. The First Class and Business Class passengers are capable of socializing at the in-flight bar and rest areas while the First-Class passengers can enjoy the shower and spa services inside the airplane.

We have been making our mark on many breakthroughs and services that will facilitate the lives of our passengers. For instance, picking up our passengers in Dubai from their houses or hotels, having their

check – in made and carrying their luggage to the airport and at while at the airport, transferring passengers directly to passport control and security are one of our new services. Our passengers are able to tour inside the airplane via the emirates.com website with 3D technology on the digital platform and they can select their seats.

New Generation Cabin Design Launched for the Boeing 777X Program

Emirates announced that it ordered 40 A330-900 and 30 A350-900 airplanes to be delivered



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respectively in 2021 and 2024 in line with the contract signed with Airbus in the beginning of the year, valued at US\$ 21.4 billion. The company will also be increasing its

total number of A380 to 123 by purchasing 14 more airplanes in 2019, until the end of 2021.

Moreover, launching US\$ 150 million in new programs for the renewal

of its Boeing 777-200LR fleet, these 10 new airplanes of Emirates have a more spacious and airier cabin order which is composed of two classes, with 38 Business Class

seats and 364 Economy Class seats, placed in the order of 2-2-2.

Recently launching the fully enclosed First Class special suites, in-flight entertainment systems



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with higher quality and newly designed seats for the Business and Economy Class cabins, Emirates is currently working on the new generation cabin design as part of the Boeing 777X program. In the new generation A380 airplanes to be launched after 2020, Emirates plans to launch its Premium

Economy product with a series of touches offering special design and diverse experiences.

In addition to the new and wider seats in Business Class, Emirates also fully renewed Economy Class in order to improve passenger comfort and launched a new program

to renew 10 Boeing 777200LR airplanes as well.

As Emirates Airlines, we attach great importance to the Turkish market and Istanbul is one of our first destinations; we have been conducting flights to Istanbul for 32 years, uninterruptedly. As another indicator of the importance we place on this point, we execute 18 flights per week to two points in Istanbul. In this way, we are capable of offering our services to more passengers by utilizing two different airports in Istanbul.

With the 18 weekly-flights we conduct from both the European and Anatolian Coasts of Istanbul, we provide easy connection facilities to Dubai and Asia, Africa, Oceania,

Far East and Middle East flight lines. We aim to contribute to Turkish tourism while increasing the number of tourists arriving in Turkey from the world and the United Arab Emirates.

Emirates Airlines has been playing a crucial role in the relations between Turkey and Dubai since 1987. Individuals travelling for business and leisure gain access to connections to popular destinations via Dubai, from the Maldives, Seychelles, Australia, Thailand, Indonesia Jakarta, Manila, Kuala Lumpur, Middle and South Africa with the help of the wide variety of destinations offered by Emirates, due to the weekly 18 flights from Istanbul Airport and Sabiha Gökçen to Dubai ✈️

18 Flights per Week to Dubai from Sabiha Gökçen and Istanbul Airports



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ENMAKGROUP

Dreaming of a Greener Tomorrow

Enmak Textile was founded by ENMAKGROUP in 1988. The core business of Enmak Textile is home textiles, comfort collections and innovations for Air, Rail and Cruise carriers.

Enmak Textile is the manufacturer for economy class pillow covers and headrest covers with SBPP non-woven fabrication as well as 100% cotton. In 2019 the company introduced their new product line "ECO" as a focus on sustainable & biodegradable products are importance to the company.

Mojen Industrial A.Ş. joined ENMAKGROUP in 2016 and is responsible for the paper, cardboard and more industrial products. Mojen Industrial A.Ş. is the producer for lunchboxes, air sickness bags, safety

instruction cards and further industrial products. In 2019 the company successfully began to dedicate their focus more and more on economically sustainable products. More than 300 products from ENMAKGROUP are being used from customers in different countries and cities worldwide. The certificates that they have obtained over the last years have made it easier to gain the trust of our customers in the long term.

During a long-haul flight in the beginning of 2017, the company was made aware of a few discomforts caused in flight catering operations. Complaints came from the crew complaining that the reoccurrence of technical problems with the galley



equipment sometimes caused them physical pains.

To name but a few: Non-closing trolley doors, not holding trolley brakes and unhygienic outside frames.

Addressing these complaints compelled the MOJEN team to explore different ways to resolve these issues and in doing so Mojen Endüstriyel A.Ş. MRO "Maintain, Repair and Overhaul" was founded at the end of 2017. Mojen Endüstriyel A.Ş. is certified by Turkish Civil Aviation 145. Achieving Certificate 145 was well worth the challenging process. They are the first Civilian Company in Turkey that

received Certificate 145. The company proudly expresses the honor they attribute to receiving the certification from the Turkish Civil Aviation as it further strengthens the value of the company created by a dedicated and professional team. Ambitious plans are envisioned for ENMAKGROUP as the company focuses on expansion through strategic investments that are continuing systematically and apace. The company has been developing manufacturing and has evolved over 30 years as a premium manufacturer of choice worldwide.

STM Products Stand out in the Civil Aviation Sector

Playing a leading role in the Turkish Defense Industry, STM Savunma Teknolojileri Mühendislik ve Ticaret A.Ş. is making critical investments in the civil aviation sector in order to utilize the experience and know - how gained in military aviation and thus making its mark on critical indigenous technologies which is a newly emerging area in Turkey. STM conducts activities through the consultancy and certification services it provides to elevate the civil aviation to the next level.

Currently executing its activities in three main areas composed of engineering, technology and consultancy services, STM was established in 1991 upon a decree of the Defence Industry Executive Committee for providing consultancy services to the Turkish Armed Forces and Presidency of Defence Industries with the purpose of serving in the development of critical technologies.

The advanced technologies developed by STM towards flight safety and flight operations stand out in the company's activities conducted toward utilizing experience gained in the defence industry.

Also providing consultancy services in the area of civil aviation in design, certification, system engineering, program management and other similar areas, STM undertakes a crucial role toward building a sustainable eco-system through cooperation.

Technologies making difference in the cockpit

STM introduces the Paperless Cockpit - Cabin - Operation Control Center Integration Application **AeroSuite™** and the Portable Electronic Flight Bag **AeroTab™** to facilitate the process during flight operations and to increase efficiency. By launching groundbreaking technologies in Turkey particularly in the technology area, STM aims to fulfill national demands while marketing the indigenous and innovative products that it manufactures to the whole world.

AeroSuite™ maintains a paperless integration between the cockpit, cabin and the operation control center. All the solutions; **AeroCharting** - the automatic flight charter generator within the **AeroSuite™**, **Aerocabin** the cabin crew management provider, the electronic flight bag solution -

AeroTab™ are presented in a digital environment.

The user - friendly application compatible with all types of aircraft **AeroTab™** enables a paperless integration of the cockpit and the operation control center by replacing the conventional flight bag. The Electronic Flight Bag stands with the easy-to-use interface designed for the pilots. The portable Type B electronic flight bag solution it contains and its modular infrastructure supporting the "Paperless Cockpit" concept create effective utilization throughout all the stages of the flight. The system integrated with the Airport Operation Management Systems reduces the workload of pilots and allows easy access to data whenever requested. In this way, through the automatic take-off and landing estimations the fuel/maintenance expenses are reduced as well.

Developed through fully indigenous and national resources, the **AeroTab™**

is being actively used in all flight operations by Atlasglobal Airlines in Turkey, Iraqi Airways of Iraq and by Atlasjet Ukraine since 2014.

Indigenous products in civil aviation

Turkey's first indigenous integrated flight surveillance system **OpsEye™** and again Turkey's first meteorological analysis application with civil aviation purposes the **OpsMET™**, are among the critical products introduced to the civil aviation sector by STM. Enabling real-time aircraft and vehicle traffic surveillance at the apron area and approach courses at the airport, **OpsEye™** provides support to flight operation control units and directly contributes to the decision support mechanism during tactical operations. This system transfers live data on the airplanes' door closing, push-back, approaching, ground surveillance and

location settings, and functions integrated with the internal operational systems of the airlines.

At present, on account of the OpsEye™ civil aviation traffic over the air space of Turkey and its neighbor countries could be instantly tracked. Developed with the know-how support of Turkish Airlines, OpsEye™ has been conducting its task of being “Turkish Airlines’ Eye in the Operation” 24/7 at 11 airports in Turkey including Istanbul Airport and the system installed at TRNC Ercan Airport since 2015.

A web-based meteorological analysis application OpsMET™ uses the first indigenous big data analysis platform OVERA infrastructure also developed by STM. This system with a database generated from METAR, TAF and SPECI reports spanning about twenty years for airports where airlines conduct flights, or at airports with flight potential enable a rapid analysis of meteorological data. This system enables the identification of a convenient timetable, improvement of the number of the passengers, allocation of sources regarding the airports’ weather forecasts as well as identification of the facilities of airports and requirements considering maintenance equipment.

Developed fully through the resources of STM, OpsMET™ is the first web application published via STM servers and has been actively used during the flight planning process within the Turkish Airlines’ Operation Control Center since 2016.

Certification services

Regarding the civil aviation area, STM has been providing consultancy services on airworthiness certification since 2011. Establishing the safety function and the infrastructure for airworthiness certification, airworthiness assessment, airworthiness certification and certification training are among the services provided by STM.

With the EASA (European Aviation Safety Agency) Certified Design Organization authorization granted by the EASA following an application and supervisions, various services are being provided to the military and civil aviation authorities, civil airlines, production and maintenance institutions, and other institutions taking part in the aviation industry. Consultancy services are being conducted for the design and ratification of certification projects with updates, modification and repairing purposes for civil

air vehicles, for providing training and achieving international recognition of our country’s existing institutions.

Critical cooperation between the SHGM and STM on civil aviation

In order to extend its activities in the area of civil aviation, STM signed a Cooperation Protocol with the Directorate General of Civil Aviation (SHGM) last January. The two aforementioned institutions agreed to cooperate on training, consultancy, execution of joint R&D activities, building/ conducting technology development/ technology acquisition projects, organization of joint seminars and conferences.

Within the signed protocol, cooperation primarily on areas of “cyber security”, “aviation safety” and “airworthiness” were agreed upon. Within the scope of the Cyber Security Cooperation Agreement a joint workgroup will be established and services on cyber security operations, penetration tests will be provided as well as cyber intelligence and cyber operation services, cyber security training services and joint activities will be executed at international

platforms. The Cooperation Agreement on Aviation Safety covers the areas such as collective representation at international workgroups, safety devices and technologies, the certification of such technologies, security training, risk and threat assessment, explosive detection dogs, behavior analysis, screening qualification and certification, passenger awareness, biometrical systems, and machine readable travel documents. Execution of technical consultancy services to strengthen the certification infrastructure of SHGM and supporting the activities to be conducted as part of informing the sector are included in the cooperation established on Airworthiness.

Moreover, with the aforementioned Protocol an understanding was reached on the promotion and supporting of STM’s aviation solutions by the SHGM at local and international platforms, and the establishment of cooperation as part the process with the design, production and marketing of products that increase the efficiency of the parties, as well as the identification and implementation of strategies.

Emerging Threats from Unmanned Aerial Vehicles and **Anti-Drone Systems**



By Saffet Uyanik

Anti-drone technology, also known as counter-UAV or C-UAS technology, refers to the systems that are used to detect and neutralize unmanned aerial vehicles. As concerns grow

around the potential security threats drones may pose to both civilian and military infrastructure, a promising new market for anti-drone technology has emerged.





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Unmanned Aerial Vehicles (UAVs), or commonly known as drones, are aircraft without a human pilot on board. The introduction of UAVs has been one of the most significant technological advances in recent years. The capabilities and availability of UAVs are developing quickly and they now present both challenges and opportunities. Drones are now being used widely owing to their availability, ease of use and low cost. While their widespread use and popularity

bring benefits to certain industries, drones also pose significant risks to aviation, public security, and military operations. As drones become more common in the skies, so too do incidents.

Serious risk of collision

Since drone prices have become more affordable, drone sightings near airports have been on the increase for years, as have the reports of drone near misses with aircraft. At least seven collisions have

been reported between aircraft and drones worldwide. It has become an especially serious issue in the United States with around 100 reports per month. A majority of the incidents occur within 8 km of the airport, which is prohibited airspace for drones.

According to the Directorate General of Civil Aviation, the number of UAV pilots in our country has increased to 35 thousand, and the number of UAVs has increased to 27 thousand as of the end of last year.



In just one year, 7,000 more UAVs were registered to the General Directorate of Civil Aviation (DGCA), while the number of UAV pilots increased by 13,000 with record growth. As a result of this increase in the number of UAVs and drone users, the DGCA has prepared a draft regulation that reorganizes UAV instructions. One of the most important changes in this legislative amendment is the introduction of the UAV operator definition, as in the case of airlines, so that companies that meet the necessary requirements can become UAV operators. Another important change is the removal of the definitions of uncrowded, crowded, and overcrowded areas and replacing them with green, restricted (red), permit-required, and no-fly zone definitions.



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Gatwick RAFAEL Advanced Defense Systems - Drone Dome

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The Drone Sighting Reports released by the United States Federal Aviation Administration (FAA) in 2016, states that there were 1,274 drone sighting reports February through September, compared to 874 for the same period in 2015. The Alliance for System Safety of UAS through Research Excellence (ASSURE) released a detailed report on November 28, 2017, stating that rigid materials allow drones to cause greater structural damage than birds of the same weight for a given impact speed. The 14-month study evaluated the potential impacts of two quadcopters and two fixed-wing drones on a single-aisle commercial transport jet and a business jet. The FAA warned about the potential threats that drones pose to airplanes

and recommended that the drone manufacturers use less metal, so that drone collisions wouldn't damage planes upon impact.

Drone chaos at airports

Commercial drones started to cause a significant amount of disturbance to airports in recent years. They pose an extreme safety risk to passenger jets and disrupt airports by forcing airlines to suspend flight operations. In late December, the second largest airport in the UK, Gatwick Airport near London, England was shut down after three days of drone sightings. The reports caused major disruption, affecting 1,000 flights carrying approximately 140,000 passengers at

an estimated cost of over £50 Million over the course of 36 hours. Authorities regained control of Gatwick airport only after the British army deployed an Israeli-built Drone Dome defense system and the flights resumed three days later. Airport authorities indicated that the radars used for air traffic control were not effective for small UAVs and the drones can only be detected through thermal imaging systems.

To protect themselves from future incidents, both Gatwick and Heathrow airports confirmed that they have acquired and installed their own anti-drone systems. This attack by an unidentified person or persons was considered to be the most effective drone attack on an airport in recent years. In similar incidents, both New Jersey Newark International

Airport and Frankfurt Airport were shut down earlier this year as a result of the disruption caused by the drone sightings. Since 2015, at least 29 major drone-related incidents occurred at airports in 17 different countries around the world.

Next tool of terror

Unfortunately, drones are emerging as a cheap and effective way to deliver a variety of physical threats. It is a very well-known fact that various terrorist groups use drones during their attacks. The new drone systems have become smarter in recent years with the development of various technologies, accelerating the work on anti-drone systems. Defending civilian infrastructure differs from



that of military facilities. Drones can now be pre-programmed with GPS coordinates allowing the device to automatically move to their destination without user input during the flight.

Drones are preferred by terrorist organizations due to their low cost, speed, maneuverability, payload capacity, and risk-free advantages. They have become a serious threat for critical plants such as nuclear power plants, stadiums as well as airports. Although there hasn't been a tragic incident so far, the fact that drones strengthen the psychological effects of terrorism makes the issue even more sensitive. As the popularity of drones increase, it will be easier to obtain them, causing greater risk to both safety and security. The widespread availability of drones and the potential

danger of this situation is one of the most important reasons for the development of anti-drone systems.

Countering the threat

The number of anti-drone systems has increased dramatically in recent years as a result of drone-related threats against critical facilities and civil aviation. Conventional air defense systems designed to counter manned air platforms cannot provide efficient results against unmanned systems. Since air defense systems are generally designed against large aerial platforms, they could be ineffective at detecting drones with much smaller radar cross-section (RCS) at long distances. Furthermore, developing low-cost solutions is one of the most important requirements when

designing dedicated systems to counter UAV threats, unlike conventional air defense systems.

According to the CSD Counter Drone Systems Report published by The Center for the Study of the Drone at Bard College in February 2018, there are currently 235 anti-drone solutions sold by 155 companies from 33 different countries. The AUDES consortium (Blighter Surveillance Systems, Chess Dynamics and Enterprise Control Systems) product counter-UAS defense system, IMI Systems (Israeli Military Industries) product Red Sky Drone Defender system and Israeli RAFAEL Advanced Defense Systems product Drone Dome system, which was reportedly used at Gatwick Airport, are among the most capable anti-UAV systems available worldwide.

The development of anti-UAV systems is directly related to the characteristics of the areas where such systems will be used. In residential areas and metropolises, anti-UAV systems are frequently used to protect centers with a high concentration of civilians and critical facilities against terrorist threats. Anti-UAV systems to be used in rural areas and residential areas can have significant

differences between them. This situation creates numerous challenges for the use of these systems in important locations with a potential threat.

Anti-drone systems utilize different types of technologies such as Radar, RF Scanners, Acoustic Sensors, and Electro-Optical Thermal/IR Cameras to detect mini and micro UAVs. Anti-Drone systems employ radars as their primary detection technology. Special radars capable of operating in all weather conditions are used to detect low-flying UAVs and differentiate them from other aerial platforms and birds.

As a passive detection method, RF scanners can detect drones by scanning their frequency bands. The operating principle of RF scanners is similar to that of radars but differs from them by using passive detection technology. Anti-drone systems can also be integrated with acoustic sensors that can detect drones from engine and propeller noise. To identify and classify drones detected by these active (Radar) or passive (RF, acoustic) techniques, anti-drone systems use electro-optical camera systems that can detect UAVs with day/night or infrared (IR) sensors. Since the technologies alone are not effective in detecting all different types of UAV

threats as standalone systems, existing anti-drone systems use these methods an integrated way. Moreover, artificial intelligence can also be used for the identification and classification of UAVs. Anti-drone systems use a combination of different techniques to eliminate threats, such as RF jammers, Net Launchers, and GPS jamming, Spoofing. As the most commonly used method, RF Jammers neutralize the UAVs by disrupting their radio transmission or satellite communication signals used for navigation. The disconnected drones either proceed to land on their current position or return to their take-off point. RF Jammers are also capable of blocking the audio and video feed transmitted from the UAVs. However, this method is ineffective against autonomous systems as they do not rely on a permanent connection with their users. Along with GPS jamming and Spoofing, RF jamming is the most widely used method by anti-drone systems today. GPS jamming refers to deceiving GPS-capable devices by broadcasting false GPS signals relaying incorrect geo-location coordinates. Spoofing, also known as protocol manipulation, is used against UAVs to take control of the targeted

drones by hijacking their command-control or satellite/navigation communication.

However, one major drawback of RF jammers is the level of precision required to jam the drone signals while not interfering with other frequencies. RF jammers must be continuously pointed at the drones to work as intended. Another problem is, RF jammers cannot counter specific radio signals but a range of frequencies (typically from 2.4 to 5.0 MHZ) which means that any communication device operating in the jammer's frequency range would also be disrupted. According to the FAA study published on July 19, 2018, airport environments have numerous sources of potential interference which may adversely impact the safety of airport operations, air traffic control, and other air navigation services. In an airport environment, this will severely hinder the communication between the pilot and the tower, leading to potential disasters. Another method that Anti-Drone systems employ against UAVs is to disable their propellers by using nets. The nets can be carried by another drone or launched from different devices. This particular method was first used in April 2015, in

Japan to catch a rogue drone that landed on the roof of the Prime Minister's office while carrying small traces of radioactive material in protest against the government's nuclear energy policies.

Examples from Turkey

With the coordination of the Presidency of Defense Industries, Turkish Defense Industry companies have developed anti-drone technologies to counter the proliferated drone threat against civilian and military areas. Developed by well-renowned defense companies Aselsan, Meteksan, and SDT respectively, the anti-drone systems are designed to protect critical facilities by neutralizing

potential Unmanned Aerial Vehicles (UAVs) threats with their integrated RF Jammer capabilities and optional hard-kill features.

Aselsan IHTAR Anti-Drone System

Developed in co-operation with the Turkish Armed Forces and the Presidency of the Defense Industries (SSB), the Aselsan IHTAR Anti-Drone System is designed to counter mini and micro UAV threats in urban and rural environments. The system is used to protect critical military and commercial sites from Micro/Mini UAV threats. The IHTAR system consists of a Radar and Electro-Optical sensor, RF Countermeasure, Tactical Signal Emulator



IHTAR Anti-Drone System



KAPAN Anti-Drone System

and Command Control system. In order to utilize the most effective countermeasure in terms of efficiency and security, Aselsan's IHTAR system provides an integrated and coordinated operation of Radar, Electro-Optical sensor, and RF Jammer with command and control capabilities. The system can be operated in mobile or fixed configuration.

IHTAR uses the Advanced Capability Aselsan Radar (ACAR) as its primary surveillance sensor. It is a solid-state pulse-doppler radar which operates in Ku-Band (12.5-18 GHz) frequency. ACAR uses a mechanically scanned

antenna with selectable rotation speed. The highly accurate radar can scan 360° or a specific sector with adjustable sector width. It can track multiple targets automatically and has a track-while-scan capability in surveillance mode. The radar can also detect mini-UAVs with a radar cross-section of 0.5 m² at 5 km. ACAR is used together with an E/O imaging system with both thermal and daylight cameras. This is used for the identification of targets once they have been detected by the radar.

As the primary countermeasure, IHTAR

uses GERGEDAN Active RF Jammer System to provide protection against all known micro and mini UAV attacks. GERGEDAN system covers all frequency bands and provides simultaneous jamming capability against Remote Control (RC) Devices, Radios (PMR and FRS), GPS receivers, WLAN Applications, ISM Bands, GSM 900, DCS 1800, 3G and 4G. The system also provides directional jamming against specific threats and omnidirectional jamming against swarm attacks with its specially designed antenna creating a semi-spherical protection umbrella.

In addition, IHTAR can also be integrated with the Aselsan CHAMELEON Tactical Signal Emulator to take control of drones by emulating the signals of the RF controller. CHAMELEON can be used as an arbitrary waveform generator or programmable noise generator. It can generate both Electronic Warfare (EW) waveforms and civilian communication waveforms with a single waveform generator.

Meteksan KAPAN Anti-Drone System

The appearance of drones as a threat is a new topic from the past few years, and there are discussions worldwide

about what may be the most effective solution to this threat. There are several aspects to this issue, all of which need to be addressed separately. Meteksan Defense has developed the KAPAN Anti-Drone System as a scalable solution that can handle various missions. The KAPAN Anti-Drone System offers superior drone detection and tracking performance with Retinar FAR Anti-Drone Radar, EO camera system and countermeasure systems provided by Meteksan Defense's solution partners, such as jamming and laser weapon systems.

Unveiled at IDEF 2019, Retinar FAR is a product of Meteksan Defense's in-depth analyses and rigorous field tests regarding drone detection. This version of the Retinar fields a new antenna that has been designed specifically for the surveillance of air space and for the detection of drones with high-performance hardware and special algorithms. Retinar FAR is a pulse-doppler, multi-mode radar using different waveforms, which operates in Ka-Band (26.5-40 GHz) frequency. The KAPAN Anti-Drone System offers superior drone detection and tracking performance with a radar system and thermal/day cameras and allows for

the elimination of drones with an RF jammer and an optional laser system. Different systems have been appropriately integrated into the KAPAN Anti-Drone System with standard interfaces and scalable architectures to create an effective solution against drone threats in different situations and scenarios. Retinar FAR can detect aerial targets at longer ranges (9 km) and scans a broader area (40°), thus turning KAPAN into a more potent drone hunter.

The KAPAN Anti-Drone System is capable of classifying and identifying targets at far distances in low visibility conditions where detection with camera systems is difficult. The highly flexible system can be used on a stationary position or on a vehicle thanks to its single-axis integration and single point connectivity features. The KAPAN Anti-Drone System provides continuous 360° coverage as well as angular surveillance in selected sectors with alarm zone management. Designed to be functional against swarm UAVs, the system can be integrated into existing security systems and reduce unwanted electromagnetic interference with directional jamming.

Furthermore, a Laser Countermeasure System can also be integrated

into the KAPAN Anti-Drone System as an optional feature to provide hard-kill capability when requested. The system is capable of destroying and neutralizing drones at 500m with a high-power laser emitter located on the optical tracking and guidance unit. The E/O unit is mounted on a stabilized 3-axis gimbal for precise orientation, and it consists of a SWIR camera, MWIR camera, daylight camera, laser rangefinder, laser optics, GPS, magnetic compass, and image processing sub-units.

President of Meteksan Defense, Selçuk Alparslan emphasized that the KAPAN system has the ability to rapidly respond to newly-emerging threats: “When we talk about airport security, though the first thing that comes to mind is the intervention of the security forces in the events that could occur inside the terminal, in fact, a greater and higher threat is the intrusions to the airport and as the result of these, the sabotage attacks that could be realized in the airport region. The increasing popularity and widespread availability of drones are causing big threat both for safety and security. Collisions with aircraft or the threat of terrorism is a subject which becomes gradually more critical for airports. The appearance of drones as a threat is a new topic

from the past few years, and there are discussions worldwide about what may be the most effective solution to this threat.

There are many aspects to this issue, all of which need to be addressed separately. We have developed the KAPAN Anti-Drone System as a scalable solution that can handle various missions. KAPAN Anti-Drone System consists of Retinar FAR Anti-Drone Radar, camera system and countermeasure systems provided by Meteksan Defense’s solution partners, such as jamming and laser weapon systems. Retinar FAR is a product of Meteksan Defense’s in-depth analyses and rigorous field tests regarding drone detection. This version of the Retinar fields a new antenna that has been designed specifically for the surveillance of air space and for the detection of drones with high-performance hardware and special algorithms.”

In the last quarter of 2017, Meteksan Defense secured the first export contract of the Retinar PTR with an undisclosed country. The company scored its second export success on July 12, 2018, with the Retinar PTR-X, an improved version of the PTR Radar. The system was selected as the perimeter surveillance system of an undisclosed airport in the capital of a

European country, and it has been in use ever since.

SDT AVCI Anti-Drone System

The SDT AVCI Anti-Drone System is designed to detect, track and defeat Micro and Mini Unmanned Aerial Vehicles (UAVs) and Unmanned Aircraft Systems (UAS) engaged in hostile airborne surveillance and potentially hostile activity. SDT developed the AVCI system to meet the specific requirements of the Turkish Armed Forces and security forces. AVCI is a smart-sensor and countermeasure package capable of remotely detecting small UAVs and then tracking and classifying them before providing the option to disrupt their activity. The thermal cameras on the system are provided by Turkish company Mikro-Tasarım. The system combines electronic-scanning radar target detection, electro-optical (EO) tracking/classification and directional RF jamming capability. Unlike other similar Turkish systems that use mechanically scanned radars, AVCI system employs PESA (Passive Electronically Scanned Array) radars produced by UK based Blighter Surveillance Systems. During IDEF 2019, SDT signed an agreement with Blighter to locally produce the radars.



AVCI Anti-Drone System

AVCI Anti-Drone System uses A400 Series Radars which operate in Ku-band frequency. The radar is a modular non-rotating, electronic-scanning (e-scan) system using power efficient PESA (passive electronically scanned array) and FMCW (frequency modulated continuous wave) technologies to provide reliable, Micro and Mini UAV detection in all-weather conditions. It is capable of detecting UAVs with

a radar cross-section of 0,01m² at ranges up to 10 km. A400 series radars use D3 (Digital Drone Detection) technology that enables them to extract the tiny radar reflections from modern plastic bodied UAVs even when flying close to the ground or near buildings where clutter reflections are relatively large. The radar covers 180° and can be used in back-to-back configuration to provide 360° surveillance. Target tracking software

and extensive zone filtering features allow drones to be detected while reducing false alarms from birds.

AVCI system weighs around 350kg and SDT is currently working on a lighter version of the system to be used on military surveillance vehicles. The system may be used in remote or urban areas to prevent UAVs being used for attacks or malicious activities against sites with critical infrastructure. The SDT AVCI Anti-Drone System can use various sensor subsystem configurations based on requirements. The detected drones can be defeated using directional/ omnidirectional jamming solutions or hard-kill solutions.

Although these indigenous counter UAV systems were designed and developed to primarily protect military bases and critical facilities, the growing interest in commercial unmanned systems and the changing threat environment by extension, created a need for the use of these systems in civilian environments. Ever since the drone-related incidents raised questions about the security of crowded places, counter-drone systems began to appear at various events and risky locations such as airports, stadiums, and convention centers with increasing regularity. Regarding the recent incidents, the growing demand for anti-drone

systems apart from the military domain is expected to play an important role in accelerating the efforts to develop more integrated and cost-effective solutions in the coming years.

Conclusion

The need for anti-drone systems has once again been revealed with the increasing number of illegal activities carried out with drones, which are now easily accessible from civilian markets. There has been a significant increase in drone-related incidents and illegal activities that were reported over the past years. It is clear that drones can be used for malicious intent, and this will pose a far greater threat in the future with the advancement of technology. Thus, it is highly essential to introduce the necessary regulations and establish a nationwide multi-layer defense network against UAV threats for the protection of critical facilities. Preventing the use of UAVs by terrorist and criminal organizations for the national security of our country is also another issue that should be taken into consideration. Considering the new developments in UAV technology and the possibility that today's anti-drone systems would not provide enough protection in the future, studies on anti-drone systems should proceed without slowing down ●

The Debate Over the Safety of the B737 MAX at FAA Organization in U.S.

On May 29th, 2019, activities conducted and measures adopted for the relaunch of the flights suspended due to the inspections made after the fatal accidents met by the Boeing 737 MAX Series aircraft, first in Indonesia (LION Air) and then in Ethiopia (Ethiopian Airlines), were discussed at the meeting held in Fort Worth, TX, USA, organized by the FAA on May 23, 2019.

In addition to the representatives from 31 different countries such as France, Germany, UAE, Singapore, Brazil, China, Hong Kong, New Zealand, Australia, South Korea, Indonesia, India, Japan and Canada, a total of nearly 100 authorized experts from international organizations such as the ICAO and the EASA attended the meeting. Turkey was represented with a Technical Team of 4 representatives composed of Control Pilots and Engineers employed at the UOD (Flight Operation Department) and the UED (Air Worthiness Department) Departments led by the Vice Director General of the Directorate General of Civil Aviation Haydar Yalçın.



The information acquired during the investigations made on the accidents resulting in the suspension of the flights was assessed during the meeting, and the implementation status of the immediate Airworthiness Directive issued right after the first accident and the software updates on the Maneuvering Characteristics Augmentation System (known as MCAS) installed especially to these type of aircraft were examined as well. It was underlined in the meeting that the MCAS was developed with new software required for a safe flight in addition to the requirement of reflecting these types of activities to the simulator supported activities along with existing pilot training.

The report to be published as a result of the activities launched at the end of April by the Technical Consultancy Council established by 8 different countries/organizations under the leadership of the FAA and projected to finalize by the end of July is expected to become a crucial resource during the relaunch of such aircraft.

The FAA's Vice President shared with the participants that the activities were being executed precisely in a way to prioritize flight safety and that they would continue to share the results in a transparent manner.

Turkey has a total of 13 B737 MAX series aircraft and the flights of which were suspended. This

figure is expected to exceed 30 with the additional aircraft projected to be delivered until the end of June 2019.

In the statement declared by the Directorate General of Civil Aviation regarding the meeting, it was stated that the activities conducted for the technical developments to rectify the technical faults causing the accidents of the B737 MAX series aircraft on a local and global scale were followed closely, and that the relaunch of the flights of these aircraft were absolutely not an option without both design modifications and software updates and the fulfilment of the requirement of training emerging as a result of the new system.

Vizyon Aviation Certain to Soar

in a Dynamic Sector Providing Valuable Products and Services

Ferhat Yenibertiz *Vizyon Aviation, General Manager*

In the last 15 years, while the global aviation sector has achieved nearly 6% growth, Turkey has performed at a growth rate of about 16% in the same field during this process and it has not yet reached the saturation point. Considering performance criteria such as the number of active airports open to civil traffic, the number of wide-body aircraft, the number of countries with air transport agreements, the number of passengers carried and the number of people employed in the sector, our country has grown systematically every year. The turnover of the sector reached nearly

US\$ 21 billion from US\$ 2.2 billion over the last 15 years.

Vizyon Aviation started to perform activities in the aviation industry in 2014 with high added value services that are a recognized necessity throughout the world. High value-added operations such as pilot training, air taxi and hangar operation have been carried out in a manner worthy of our country. Vizyon Aviation is designed to be one of the important actors of the sector and is a company that bears our national values which are of importance especially in the current conjuncture.



As one of the companies of Çam Group, the vision of Vizyon Aviation was set forth by combining years of experience, know-how and

prospective initiatives and it has become a corporate company that has been progressively developing in the aviation sector.

Vizyon Aviation made a giant hangar investment at the Ankara Esenboğa General Aviation terminal, during the period when making investments was more valuable and the hangar was put into service in October 2018. Vizyon Aviation has begun to make agreements with local and foreign businesses for new service opportunities and has been delivering services in its hangar with the latest generation equipment for about 7 months now.



Vizyon Aviation effectively incorporates many skills and competencies with systematic investment plans and programs based on service items that are currently needed in our country. Some capabilities include Air Taxi Services,



7/24 Business Jet and light aircraft hangar services, AOC (Air Operator Certificate) services, PPL (Private Pilot License) and ATPL (Airline Transport Pilot License) training with its ATO (Approved Training Organization) authorization at its own academy. In addition, the fully equipped SHY-145 Approved Maintenance Agency authorization is currently in the midst of the DGCA approval process. With this authorization, which is to be obtained soon, the aim is to deliver maintenance services to third parties and to establish Vizyon Technic within the next 3 years and for it to become

one of Turkey's considerable aircraft maintenance organizations.

Vizyon Aviation's inventory includes the following aircraft: 1 Bell 429, 5 Cessna 172S Skyhawks, 3 Gyrocopters, 1 Guimbal Cabri G2, 2 CC11 - 160 Carbon Cub SSs, 2 Piper Seminoles and 1 Piper Arrow.

Headquartered in Ankara, Vizyon Aviation also has an office in Kandilli/Istanbul. In order to become one of the esteemed pilot training institutions in the short and medium term, to meet the needs of domestic aviation pilots, the company has also started to collaborate with allied countries alongside domestic airlines in order to train pilots.

In addition, cooperation agreements are being made with many universities which already have or intended to have educational programs in aviation. Agreements are being signed based

on business models to be carried out through joint programs for theoretical and flight training, which are the two components of pilot training.

The facilities leased from DHMI are used at Cappadocia Airport for flight training. Within the scope of the cooperation agreement to be signed with Cappadocia University, different approaches will be used in flight training.

According to ICAO data and aircraft sales statistics, there will be a need for approximately 800,000 pilots globally by 2035, and our country will need 7,000 commercial pilots in the next 5 years. Vizyon Aviation has the expertise and competencies to meet such stringent requirements with the best quality and the fastest approach; impressively the company has already started its international initiatives to bring students from abroad.

For pilot training services, negotiations continue especially with Gulf countries to bring students to Turkey in order to provide training. It is known that the biggest problem in the sector is pilot deficiency and that the number of trainer pilots inevitably decreases in response to the increasing need for training. This has been discussed with the academies under the auspices of the DGCA and medium and long-term solutions are being explored. Considering the pilot needs of airline companies, this issue is a critical one that needs to be resolved with the participation of all stakeholders.

Vizyon Aviation will continue to invest in the aviation sector, a dynamic sector which has high value products and services and one which provides critical added value to our country's level of prosperity and well-being.



© Vizyon Aviation

Civil Impacts of Unmanned Aerial Systems

By Murat Kanber, Co-founder of Zyrone Dynamics



An Unmanned Aerial System (UAS) is defined as a system that is included in at least an air platform, ground control and a datalink unit. Although this is enough for defining an Unmanned Aerial System in today's world, the UAS concept involves many more elements such as autonomy, mission-based payload management and swarming.

At the beginning of the applications for UAS, the defence sector was dominant. Therefore a lot of application examples belong to this side. Through the development of cheap micro-controllers such as arduino, raspberry,

Do It Yourself (DIY) robotic and IoT, examples can now be seen everywhere. The development of mainstream civil the UAS, called the drone, started as a side effect of this phenomena.

There are variety of essential areas of application for the UAS as they are utilized in projects such as Search and Rescue, Remote Sensing, Construction and Infrastructure Inspections, Precision Agriculture, Delivery of Goods, Real-Time Monitoring of Road Traffic, Surveillance Applications of UAV and the Provision of Wireless Coverage.

In this article, the most promising UASs today and for the future will be covered from related areas of application as listed above, with a focal point on the topic of UAV application for the delivery of goods.

Delivery of Goods

This is a very popular subject from the usage areas of UAS. Many delivery companies toward developing not only their shipping strategies but also concepts. Although there are many avoidances about airworthiness and legal regulations, development of these types of projects keep advancing forward at full throttle.

Today's market size is about 8 billion \$ and it is estimated that it will swell to around 30 billion \$ by the end of 2027 according to ResearchandMarkets research.

Up until now, there have been so many different and futuristic UAS concepts introduced to the market. Despite the fact that Amazon has a lot of delivery concepts on the bench, it has also recently filed a patent for a self-driving airship. According to the filed patent, the big UAV which is much like a zeppelin will store inventory and be used as a base to launch delivery drones.





The other big rival DHL has developed the third version of the parcelcopter. The parcelcopter is a kind of wing-tilt UAV platform which can complete VTOL then transition into forward flight.

The concept of parcelcopter includes local distribution centers which store packages and serve a UAVport where the UAV can easily be deployed and land.

By using these ports, DHL aims to connect counties that cannot be reached easily by roadway vehicles and also to reduce delivery time.

Another example is UPS's approach, entering into the market by modifying their trucks into a mobile UAV deployment vehicle.

According to this concept, the van arrives at the distribution center that is geometrically the closest point of delivery to addresses. The UAV platform is loaded automatically in the van as a second step. After that, the UAV is raised by a scissor lift mechanism and deployed.

There are many concepts about residential delivery that have been studied, however no large scale solution has been applied in the real world. But this does not mean that there is no real-world solution for all logistics items.



© DHL DHL ParcelCopter

Healthcare logistics is an important example of sub-division of delivery of goods but it also is unique with real-world examples used officially in at least three countries.

Zipline is the pioneer in this sector which is supported by UPS and was founded from many non-profit organizations such as The Bill & Melinda Gates Foundation.

According to Zipline's concept, the fixed-wing UAV platform is launched by a launcher which contains a critical payload of medical items and medicine from a storage center. The UAV flies to the designated point autonomously and drops its package and then returns home. When the UAV returns home, a net catches the UAV in the air and provides a bag filled

with air for it to fall upon.

Currently Zipline's delivery system has been established in Rwanda and Ghana. Furthermore, the studies continue in Kenya. Numbers have been given indicating that they have completed 14617 lifesaving deliveries up to now.

Up to this point in the article, UAV delivery concepts have been explained. After this point, a patent pending UAV platform will be discussed, one which claims to be the most efficient platform not only for delivery of goods but also to areas where a UAV is needed.

The "Variable Volume UAV" concept is developed by Zyrone Dynamics. To define the concept in a single sentence, the Variable Volume UAV

is an aircraft platform which is fast and has the endurance of a fixed-wing aircraft and can take-off and land and complete maneuvers like rotor aircraft (drones) but in the size of similar drones.

Thanks to patent-pending features, the UAV can resize its volume in the air by folding and expanding its wings. With this advantage, the UAV can fly into very narrow areas like drones. Furthermore, when it deploys its wings in the air, it flies at least 1.5 times longer/more and faster than a drone of the same size.

Platforms are scalable and can be applied easily for transporting any size of payload, even human.

In conclusion, although the delivery of goods via UAS appears to be a small slice of the cake, it is certainly the fastest growing field and is supported by large companies when compared to other areas of application.

With the development of autonomy, areas of application and the types of material to be transported are sure to increase rapidly.



© UPS UPS Delivery Van Concept

Onur Engineering Increases Safety

in Air Traffic Control and Management Sector with its Communication Solutions

Onur Engineering with over 39 years of accumulated expertise in voice communication systems aims to contribute much more to Turkey's civil aviation industry.

Onur is specialized in 4 main fields, comprising IP Based voice communication and recording systems, mobile air tower control systems, network enabled communication systems and cyber security solutions.

Onur has been a very motivated player in the communications sector with dedicated R&D activities. With its separate Research and Development Center, Onur is continuously engaged in collaborative product

development efforts while contributing to international standardization efforts within EUROCONTROL and EUROCAE working groups.

For the civil aviation industry Onur provides value added software development, mission critical communication systems design, complex voice communication applications, adaptation of legacy radio and telephony systems into IP networks, operator consoles, voice and data communication and recording systems, radio over IP (RoIP) systems, IP over Radio (IPoR) systems, voice over IP (VoIP) systems, training and simulation systems, and mobile air control tower systems.

Onur is a permanent member of EUROCAE Working Group (WG)-67, who defined the first Voice Over IP (VoIP) in Air Traffic Management standard and is working in close cooperation with EUROCONTROL, industry and Air Navigational Service Providers (ANSPs). Additionally, Onur takes part EUROCAE WG-105 Unmanned Aircraft Systems (UAS), tasked to develop standards and guidance documents for the safe operation of UAS in all types of airspace, at all times and for all types of operations.

Beyond its presence in EUROCAE WG's, Onur also participates in The Federal Aviation

Administration (FAA) Voice Over Internet Protocol (VoIP) Interoperability Event to determine the industry's readiness level in interoperability as per ED-137C standard.

As a company, it not only delivers projects to the defence sector, but also to the civilian market. Onur consistently meets and maintains the high standards of air traffic control and management, knowing that clear voice communication between the tower and aircraft is a crucial element for safe air traffic control and management operations. Considering that air traffic controllers need systems with a high level of functionality as well as



efficient and easy to use human machine interfaces (HMI). Onur designs user friendly operator consoles and interfaces, paying close attention to operator evaluation reports.

When we look at the key trends in the evaluation of aeronautical communications, we can see widespread implementation of ground communication network based on distributed IP technologies to enable network centric architectures and voice over internet protocol (VoIP) supporting communications.

Onur's products, end to end IP Based Voice Communication and Recording System (VCS&VRS) are completely compliant to the VoIP ATM System Operational and Technical Requirement (ED 136), Interoperability Standards for VoIP ATM components (ED 137 B) and Network Requirements and Performance for VoIP ATM systems (ED 138) and therefore can be regarded as a responsive solution to address key trends.

In addition to complete coverage in the defense sector, Onur's VCS&VRS systems are now serving the Turkish ANSP DHMI (General Directorate of State Airports Authority). After the planned delivery of 7 new systems Onur's solutions will be present in 11 airports in Turkey.

Onur always been a strong believer in the importance of closely following industry needs. Therefore, it has been a permanent participant at the annual World Air Traffic Management Congress. As the only Turkish company at this year's Congress in Madrid, which was held in March, Onur had the opportunity to present its capabilities to a global audience and share its vision with the decision makers in the civil aviation sector. By participating in this event, Onur also discern the dynamics of the sector from a technological and operational perspective.

At this year's congress Unmanned Aerial System (UAS) Traffic Management (UTM) and Remote-Control Towers were on the agenda.

At the congress around 60 companies and organizations with an interest in UTM held exhibitions and 40 presentations/discussion events were held on UTM issues. The UTM concept in summary deals with how airspace will be managed to enable multiple UAS operations to be conducted beyond the visual line-of-sight (BVLOS), where air traffic services are not provided and/or how to provide cooperative interaction between drone operators and the ANSPs to determine and communicate real-time airspace status.

ANSPs are trying to develop



appropriate communication performance standards for UTM systems, and it's clear that soon it will be important for drone communications solutions to be capable of sending information over long distances. Because of this it is unlikely drones will be able to support normal means of communication, such as VHF and other cooperative surveillance systems as aircraft.

Since integration of unmanned aerial systems to manned civil airspace is going to be the next big focus in our sector, Onur has decided to participate in these efforts in its own areas of expertise. Onur is the only company with a dedicated Voice Communication and Recording Solution developed especially with Unmanned Air Vehicle (UAV) and Remotely Piloted Aircraft (RPAS) applications in mind.

As a UAV/RPAS Radio IP Gateway product developer and with its experience in UAV Ground Control Station Communication and Airborne Radio Gateway

Solution; Onur is now the best candidate to work on developing a drone communication system for UTM. Onur can also carry its Network Enabled Communication Systems expertise forward into this field and work on how its wireless network devices can be integrated to drones and be used as a backbone of communication.

Moreover, when we consider the strong trend toward centralized air traffic control centers managing multiple small to large airports from a central facility; Onur systems with an end-to-end IP architecture, compatible for network centric architectures is also regarded as a complete communication solution for Remote Tower Applications.

Onur intends to remain a key player in aviation communication applications and will be announcing several new capabilities in the area of voice communications with a strong emphasis on security in voice communications.



Uber Copter on Demand Service From Manhattan to JFK

Uber is starting a helicopter service, flights booked from Uber's app will take 8 minutes and accommodate up to 5 person in a lump.

Uber Copter will be available only to users who are Platinum and Diamond members — the top two tiers — of the company's loyalty program, Uber Rewards

Bell, Displayed Nexus, Future Air Taxi

Bell Helicopter, a Textron company, revealed the configuration and full-scale vertical-takeoff-and-landing (VTOL) air taxi vehicle early 2019. Bell Nexus, is powered by a hybrid-electric propulsion system and features Bell's signature powered lift concept incorporating six tilting ducted fans that are designed to safely and efficiently redefine air travel.

Nexus captures the long-sought-after vision of quick air travel with a unique in-flight experience, keeping passengers connected to their lives and saving valuable time. Safran will provide the hybrid propulsion and drive systems, EPS will provide the energy storage systems, Thales will provide the Flight Control Computer (FCC) hardware and software, Moog will develop the flight control actuation systems and Garmin will integrate the avionics and the vehicle management computer (VMC).



Lilium Celebrates its Maiden Flight

On May 16th, 2019, Lilium, the Munich-based startup developing a revolutionary on-demand air taxi service, revealed its new five-seater air taxi prototype for the first time. The unveiling of the new Lilium Jet came as the all-electric aircraft completed its maiden flight in the skies over Germany earlier May. The full-scale, full-weight prototype is powered by 36 all-electric jet engines that allow it to take-off and land vertically, while achieving remarkably efficient horizontal, or cruise, flight. Lilium can reach up to maximum 300 km/h speed and 300km distance with electric jet

engines. The simplicity of the aircraft design, with no tail, no rudder, no propellers, no gearbox and only one moving part in the engine not only contributes to the safety and affordability of the aircraft, but it has also allowed the design team to focus their efforts on creating a magical customer experience in the cabin, from panoramic windows to gull-wing doors.

Lilium will manufacture and operate the Lilium Jet as part of a revolutionary on-demand air taxi service and it expects to be fully-operational in various cities around the world by 2025.





Bilen Air Services Delivering Expert Aviation Services

As Bilen Air Services, first of all we would like to congratulate Aviation Turkey Magazine and wish you success in your publication life. We believe that other publications in the aviation sector in Turkey will also spring up with the momentum of your participation and example.

Bilen Air Services is an aviation service company established in 1995 to provide a wide range of solutions in airport representation, supervision and all types of aviation services and it gained a new and dynamic management team in 2007. Under new management, Bilen Air Services extended its

services in representation, supervision and ground services in Turkey by providing services in 23 airports. Our vast experience in the aviation industry enabled us to reach a distinctive understanding of the demands of the industry and for the frequently changing aircraft operations and requirements. This paved the way to a wider variety of services, ultimately turning Bilen Air Services into a center for all kinds of aviation requirements. We provide the following services 7/24 with our expert staff: computerized flight plans, flight planning with weight and balance calculations,

runway analyses, weather conditions, notam, atc plan preparation and slot – parking permits; landing country permits, over-flight country permits, flight permits with airport availability and organization of working hours; organization of flights in line with airport tariffs, permit and slot applications, counter services and supervision services for each aircraft and supervision and monitoring; local and international credit fuel services; hotel reservation and car rental services with our class A Tourism and Travel agency Bildays. Bilen Air Services has incorporated Turkmen Air Group which conducts air taxi services with its 2008

7-person LearJet60XR model aircraft in December 2015 and included aircraft operations in its existing charter and flight organization services. In this way, Bilen Air Services has reached the capacity of providing services to fulfill all demands of its customers in terms of its existing flight operations, ground services, flight support services and charter and aircraft operations. As part of our strategic globalization process, we changed our aircraft operation company's name Turkmen Air to 'JETGLOBE' in 2018 and we have been conducting aircraft operations and charter services under Bilen Air Services.

Apronjet

Leading Aircraft Charter Provider in Turkey

Apron Aviation, also known as Apronjet, offers a wide range of high quality and quick charter services including but not limited to, private or group jets, cargo ambulances, humanitarian aid, offshore air bridges, evacuations from conflict regions, all with the best price guarantee around the clock, in order to thoroughly meet client requirements.

The company was established in 2005 by Mr. Zafer Yeşilgül (Chief Executive Officer - CEO) who is a former Air Traffic Controller, for more than 20 years. Since then, with his dedication to aviation, and

customer focused mindset, Apronjet grew exponentially and eventually became the leading aircraft charter provider in Turkey. As a result of such a well-deserved reputation, Apron Aviation has been appreciated by its clients and stakeholders in the market.

Throughout its journey, Apronjet has not only focused on economic growth but also has channeled its considerable efforts toward promoting better ethics and moral values. Apronjet strives to place utmost importance on moral values rather than on economic profits.

With commitment, trustworthiness, integrity and professionalism Apronjet adheres to their motto “Customer First, Safety and Ethic Always”.

The regional network upon offices located in Turkey, Europe, Asia, Africa and global long-term business relationships afford Apronjet expeditious access to all available resources (private jet aircraft, airliners, helicopters, air ambulances cargo aircraft etc.) to swiftly measure up to client's expectations. The company has allocated significant resources and subsequently has acquired an extensive

aircraft portfolio, state of the art technology, high quality and safety standards, profound knowledge and experienced professionals. As a natural consequence of such an interactive business model, apart from being a solution partner in crisis situations like humanitarian aid, quick evacuations from conflict regions or establishing offshore air bridges, Apron Aviation has successfully conducted thousands of private charter flights each year with the transportation of;

Presidents, Prime Ministers and Ministers; Owners of Well-known Companies; Directors and Members of Boards, CEOs of Companies; High Level Officials of Private, Governmental and NGOs; Diplomats and Attachés; Celebrities, Sportsmen/women; Press; Other Organizations and Institutions.

Apronjet has made the decision to expand its functional areas to other air charter related subjects such as ACMI, aircraft

appraisal, training, process improvement and software solutions as an air charter brokerage. This strategic decision will usher in a new area of services and opportunity.

The company places a primary focus on customer needs. With a commitment to listen carefully to their customers and evaluate feedback, customers understand that their involvement is valued and that Apronjet will be there for them.





PROFILE

Along with VIP services, Apronjet also specializes in air ambulance services offering worldwide (including crisis regions like Libya Iraq, Afghanistan, Mali) air

ambulance services with bed-to-bed patient care. Their dedicated aircraft are fully equipped with a stretcher and an ICU as well as all other equipment,

much like a flying hospital. All missions are completed with a medical team consisting of a specialized physician and a flight nurse.

To do so, each one of the

aircraft operators within their network has been carefully selected to ensure a level of standard on par with Apronjet. Clients choose Apronjet because they know



that all aircraft chartered on their behalf are audited and accredited by designated associations to ensure exceptional service, safety and security.

From light private jets through to the largest VIP aircraft, they are able to source any aircraft that matches precise requirements. Alongside this, Apronjet ensures that aircraft are configured to meet customer travel needs.

Personalized service is available 24/7 to clients and operators. The self-motivated and knowledgeable team is very skillful and aware that attention to detail is paramount and that an acute understanding

that the client's interest is always at the forefront. Apronjet finds the best option available and sorts out possible operational limitations, restrictions and challenges without delay. Customers are assured that they will get the best option that fits their urgent needs, without compromising service principles; best service, high quality, safe trip and, reasonable price.

Apronjet demonstrates that they full heartedly believe in "How people treat you is their karma; how you react is yours."

Therefore, they take every action in a respectful and responsible manner and in accordance with global ethics principles and for the sake of customers, avoiding conflict of interest amongst all stakeholders involved in their business.

Apronjet looks forward to being one of the main regional players, and to further contribute to the economic development of the charter aircraft sector based on enhanced safety standards, ethics and established codes of conduct.



Segar Aviation

Certified Expertise in Safety Analysis, Modelling, Training & Consultancy

Expert Consultancy and Analysis Segar Aviation

Segar Engineering & Aviation provides Consultancy, Aeronautical Engineering, Obstacle Solutions, Aeronautical Analyses, Air Navigation Services and Training for Airports, Civil Aviation Authorities, Local Administrations, Energy Companies, Construction Companies and Airport Operators

Segar Engineering & Aviation has been providing services to civilian and military authorities since 2015 with innovative solutions that focus on safety, innovation and protect the welfare of the general public. Segar Engineering & Aviation provides Consultancy, Aeronautical Engineering, Obstacle Solutions, Aeronautical Analyses, Air Navigation Services and Training for Airports, Civil Aviation Authorities, Local Administrations, Energy Companies, Construction Companies and Airport Operators.

Having quickly attained a pioneering position in the sector, Segar Aviation provides the most appropriate solutions for its customers by combining many data processing techniques such as analysis, synthesis, measurement and evaluation, modelling and simulation, which

are required in the aviation sector. It holds the authorized expert organization certificate approved by the Directorate General of Civil Aviation, international standards (ICAO, FAA, EASA, IATA)



and competent domestic expert staff. It provides Safety Analysis, Simulation and Modeling training which is conducted by expert staff who have received training abroad, making the company one of the leading companies in the sector.

Segar Aviation creates the necessary urban structure elevation data appropriate for air operations by conducting GIS analyses and by modelling spatial data in the most appropriate way and integrating such data to the GIS database, and performing flight safety analyses regarding the flight procedures published



Technical Impact Analyses, Flight Procedures Design and Analyses, Airport Master Plan, Airport Planning and Design, Aircraft Performance Analyses.

in airports. Analysis of the CNS (ILS, VOR, TACAN, NDB, RADAR) devices, which are located at airports or that are planned to be located at airports, and simulation studies for location selection are carried out using Ohio University's software, the training for which has already been received.

The services provided by the Company include: Aeronautical and Shading Studies, Obstacle Plan Analyses, Heliport Design, Heliport Obstacle Plan Design, Spatial Geographical Modelling, Wind Turbine Simulation Projects, Safety Analyses, Navigation Systems

While offering its competencies to its customers within the country and abroad, Segar Aviation is also the Turkey Representative and solution partner of aviation companies located in Spain, the Netherlands and Australia. Except for the studies performed at the airports necessary for flight operations, the company also demonstrates proficiency in Obstacle Plan Design, Safety Analyses and Heliport Design for heliports where helicopters land and take off.

Segar Aviation continues to produce innovative projects in the Turkish aviation industry.





Leonardo SMART System Expands in Turkey

Leonardo has been leading the air traffic control and surveillance in Turkey since its SMART (Systematic Modernisation of ATM Resources in Turkey) project was inaugurated.

SMART is a unique ATC example providing testing, simulation and training missions as well as a seamless disaster-recovery capability recognize top class suppliers in the ATC field and the project already developed by Leonardo has been operational since 2015.

In the framework of the Program for the Systematic Modernization of ATM Resources in Turkey (SMART) Leonardo has also provided a fully integrated Approach and Tower Center embedded with the SMART system

delivered by the company. It will be installed in the Atatürk APP Center and the new Istanbul Third Airport, the new and biggest international airport in Europe, with future six runways capacity hosting 250 airlines.

Technological innovation represents a cornerstone in Leonardo's worldwide offer and the company's state of the art SMART (Systematic Modernization of ATM Resources in Turkey) system acquired by Turkey's General Directorate of State Airports (DHMI), reflects a significant contribution to the innovative solutions for a comprehensive modernization of ATM systems in Turkey by enhancing the country's ATC infrastructure and

services. Deployed in Ankara, with a backup in Istanbul, the SMART system supports air traffic management operations in 50 of Turkey's airspace sectors (both upper and lower) located in Istanbul, Izmir, Antalya, Ercan, Dalaman and Bodrum. The system connects more than 20 remote control towers encompassing over 600 ATC-related workstations. Uniquely in the field of international ATC, Leonardo's system provides testing, simulation and training missions as well as a seamless disaster-recovery capability. In the event of a disaster, air traffic operations safely and swiftly move from Ankara to Istanbul with no loss of data or system performance. Flight information from

the regions is securely transferred, along with communications between ATC operators and pilots, airlines and airports.

All facilities connected by the ATC system are able to monitor and share air traffic information including surveillance, flight plans, meteorological information, aeronautical and auxiliary data. Turkish radio and voice communications are accessible through digital VoIP (Voice over IP) technology. Connections are safeguarded by ground and satellite-based Wide Area Networks (WAN), which can be switched automatically when necessary. This design allows the system to meet Turkey's needs as they respond to a growth in air traffic beyond 2020.



Spotting an Ideal Reflection of Aviation

By Sitki Atasoy
Spotter & Author of
Aviation Turkey

What is Aviation and Aviation Spotting?







When we speak of Aviation, airplanes are the first thing that comes to mind. However, Aviation is a much broader concept as opposed to popular belief. We can include all the activities carried out in many areas ranging from the production of aircraft to their use for various purposes, from maintenance services to passenger & ground handling services and even corporate promotion is included in the concept of Aviation.

Aviation Photography can be defined as a hobby and

an Art that introduces aviation with a visual display of magnificent images of aviation. Aviation Photography, which is quite popular abroad, has started to be recognized in our country in recent years. Although aviation photography predominantly covers airplanes, photographing all subjects within the aviation concept is also a part of this field. Aviation Photography is internationally known as "Spotting", and Aviation Photographers who are interested in this hobby are called "Spotters".

Aviation Photography appeals to the various members of aviation from different standpoints. While taking photographs signifies escaping from the chaos of the world to get away from stress and focus on the moment for spotters, it is considered as an advertising activity for airline companies and airports.

Currently in our country, spotters are the preferred source of promotion for airline companies. Because spotters willfully engage in this activity with a passionate spirit, with love and self-sacrifice, and they face harsh conditions that cannot be tolerated for any reasonable price, and for them money is



not the driving force to catch that perfect shot. Waiting for hours under the sun for the illusive and magical perfect shot, walking for miles scouting and fighting nature in the snow, in the storm can only be endured by infatuation with capturing that perfect shot. While performing their arts, spotters also introduce aviation to people by combining composition, lighting, direction, timing, and multiple other factors when demonstrating that perfect shot.

Sometimes they look through the eyes of a pilot, sometimes they look through the eyes of a passenger or a cabin attendant, but they look with their heart and with their devotion. They convey their appreciation of aviation to people with their photographs. For spotters, this is more than a hobby, it is a form of therapy, fulfilling





a deep desire. They do not feel anything but the beauty of the “moment” and they provide passage into the multidimensional world of aviation.

Spotters look at aviation from a different perspective than most people, as if they are creating a composition. That’s why people are willing to see aviation through their eyes. When people look at photographs, they want to see not only the metal and concrete or the catalog shoot, but also the composition and beauty behind it. Telling their stories through various mediums such as magazines, television, and especially social media, the main goal of spotters is to share their love and art with their devoted and passionate followers.

With hundreds of thousands of followers, spotters are not only the favorites of

business partners but also an integral element in introducing the abilities and strength of all modes of aviation to the whole world.

What does Aviation Photography mean to people?

Besides aviation enthusiasts, spotters are also closely followed by aviation professionals. Because spotters always want to show what is inside the frame in the best way possible. You can see their happiness from the smile on their faces when they look at the photographs. The visualization of airport capacity, the service quality of airline companies, and the comfort of the aircraft can be best seen through the eyes of spotters. When it comes to

aviation, even major media organizations with an army of photographers leave it to the intrinsic experts.

That is why spotters are first to come to mind whenever an airline goes to a new destination, a new plane is added to its fleet, or a new airport is opened. Because even if the technical features of a product are presented in written text, during the marketing process, the visuals are what will be remembered.

Therefore, aircraft manufacturers, airline companies, airport operators, flight training centers, and commercial

partners organize spotting days in various parts of the world, creating special areas at airports for spotters and give them special permissions to execute their craft.

Notably, the Eurasia Airshow 2018, Teknofest Istanbul 2018, Sivrihisar Airshow, and two separate welcoming ceremonies organized by an Antalya based airline company for the addition of two different types of aircraft to its fleet during Karain Fly in Airshow can be considered as examples.

Spotters may come from various backgrounds including engineers, pilots,





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executives, students, doctors, DJs, and many other professions. Introducing and inspiring people toward aviation, spotters may be the cause of great changes in people's lives without realizing it. They inspire little kids to look at photos of planes that they have never seen before, then take a picture of them and perhaps dream of flying with them as a pilot one day.

I want to be an Aviation Photographer, where should I start?

Before you start aviation photography, you need to choose a suitable camera for your budget.

Before mentioning the basic features of cameras, it is useful to know that there are rules that are not written but ethically followed, and the failure to comply with these rules may have negative consequences for all parties. Because these rules are not written, it will be quite helpful to exchange information with experienced spotters, benefit from their experiences, and meet with them in various events if possible. Since the airports are considered restricted areas, participating in aviation festivals until you have sufficient experience in this hobby will protect you from the legal and security problems that you may encounter.

In terms of equipment, if we consider the conditions



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when shooting fast moving planes at long distances and various heights, a high-resolution camera with a fast processor and 70-300 mm telephoto lens is preferred. Later on, you can consider switching to a 24-70mm lens for close-up shots as your expertise progresses.

It should not be forgotten that it is not the camera that takes the photographs but humans. For this reason, it would be appropriate to start with a telephoto camera that is suitable for your budget to understand whether you have the ability to do this and to discover

your potential in this field and then gradually switch to higher level equipment after you gain enough experience.

Conclusion

Aviation photography is the art of reflecting the concept of the spirit of aviation with the support of technology by kindred spirits, those who feel the passion of aviation in their hearts. With the support of business partners who are aware of the added value of spotters, this beautiful hobby has also captured the attention of the masses and has become indispensable for commercial aviation activities...🚀



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Airbus Celebrates 50 years of Pioneering Progress

Airbus has Launched a Global Campaign Celebrating the Company's 50-year anniversary, showcasing key moments of pioneering progress throughout the past five decades. The campaign began by marking 50 years since the French Minister of Transport, Jean Chamant and the German Minister of Economic Affairs, Karl Schiller, signed an agreement at the 1969 Paris Air Show for the joint-development of the A300 aircraft, a first

European twin-aisle twin-engine jet for medium-haul air travel.

Guillaume Faury, CEO of Airbus said: "Airbus' story is one of ambition and progress and has been a showcase of European integration. Over five decades, we have brought together civil and defense aviation businesses from throughout the continent. For 50 years, we have pioneered many firsts through our passion and innovation, transforming the industry and helping to move society forward.

Airbus is a story of incredible men and women, a story of great achievements in the past and, above all, in the future."

Running from 29 May to 17 July, the campaign will bring stories to life through new, engaging content published across Airbus channels. With a new story released each day, for 50 consecutive days, the campaign will highlight the people and ground-breaking innovations that have driven the company. The campaign shines a light on many different aspects

of the Airbus business, including commercial aircraft, helicopters, space and defense, in addition to programs and initiatives.

The 50th anniversary campaign also looks to the future, exploring how Airbus continues to shape the industry with pioneering innovations that address some of society's most critical issues, whether that be pioneering electric flight to reduce emissions, digitizing aerospace design, or developing new urban air mobility options.



Havaş Shakes Hands with the IATA on Timatic Mobile App

Havaş the first company worldwide to adopt the IATA Timatic mobile App

Havaş, a pioneering brand in the ground handling services sector, has become the first company in the world to use the latest Timatic Mobile application in their operations. The new mobile app was designed by the International Air Transport Association (IATA) to make life

easier for airline and ground handling agents when verifying travel document requirements, making them quickly accessible and reliable. A signature ceremony sponsored by Havaş for Timatic Mobile was held at the IATA Ground Handling Services Conference organized in Madrid, Spain

Providing ground handling services to over 200 airline companies at 30 airports in Turkey, Latvia and Saudi Arabia, Havaş has started using the Timatic Mobile application, a mobile platform developed by the International Air Transport Association (IATA) to transfer their guidance including varying legislations of countries regarding visa and passport procedures related to passenger services. Having an extensive database and continuous update support, Timatic Mobile application enables airline companies to scan the travel documents of the passengers by a mobile device during check-in and cross-check the documents against the

latest visa regulations; therefore, making passport controls more reliable and faster. Timatic Mobile can automatically recognize different passenger documents with the touch of a button and can assist the agent if it detects any issues with the document and walks them through possible solutions, such as scanning an additional visa or residence permit.

As part of the agreement regarding Timatic Mobile application, a signature ceremony was held at the IATA Ground Handling Conference, of which Havaş was also among the sponsors of the event. Havaş Deputy General Manager of Operations Mehmet Bozdemir and Senior Vice President for Airport, Passenger, Cargo





© Havaş

and Security Nick Careen attended the ceremony.

Havaş General Manager Kürşad Koçak stated, “We are very pleased with our collaboration with the IATA and to be the first user of Timatic Mobile Application in the world. With the latest technologies and solutions, we intend to develop our operations by a particular focus on the satisfaction of our passengers and airline customers. Thus, we will use the Timatic Mobile application, a new approach in document control processes, in our passenger services and provide faster service with the updated data we get on the mobile platform. The application avoids the complexity regulations written in legal language and speeds up

visa and passport control processes. Furthermore, the system cross-checks the constantly amending entrance rules of the countries and personalized data and results in reliable outcomes. Hence, I believe we will enhance positive passenger experiences during pre-boarding processes. We will continue our investments in our operations and maintain our status as a preferred business partner.”

IATA Senior Vice President for Airport, Passenger, Cargo and Security Nick Careen stated, “Given the high number of regularly changing visa and country entry requirements, Timatic checks have become an integral part of the passenger acceptance process. Timatic mobile

is a stand-alone solution that allows ground support personnel to access the Timatic database anywhere, expanding service coverage where automated options may not be available. The new mobile scanning feature enables agents with the ability to scan many types of travel documents and visas, even where they are non-standard and unusual or different. This improves the boarding experience for passengers and makes travel even more seamless. We congratulate Havaş for becoming the first ground handling company in the world to adopt Timatic mobile.”

Having an extensive database and continuous update support, the Timatic Mobile application

enables the control process of all visa, passport and travel documents required during check-in carried out by smart scanners through a mobile platform instead of traditional swipe readers. Scanning and transferring passports, visas, residence permits and ID cards to the system and analyzing the different legislations of the countries according to personal data, the application also provides the fastest and the most accurate results during pre-boarding processes. Whilst the application simplifies check-in, bag drop and boarding processes, it also eliminates any missing data flow from amending country entrance rules which are updated regularly.

On May 10th, Boeing and the Ministry of Trade collaborated to hold a conference in Ankara titled Developing Supply Chains and Exportation with the participation of more than 100 suppliers. Manufacturers were given information about the Global Supply Chain Support Program of the Ministry of Trade at the conference. The firm Gür Metal, which received support from the Ministry of Trade under this program and developed cooperation with Boeing shared their experiences with the participants.

The Minister of Trade Ruhsar Pekcan and Managing Director of Boeing Turkey Ayşem Sargin delivered the keynote speeches at the conference which discussed the steps that need to be taken to support the rise of Turkey in aviation as a global player and in order to increase the export volume of the Turkish aviation industry. At the conference, talks were also held between Boeing Supply Chain personnel and firms which receive Global Supply Chain Assistance from the Ministry of Trade on building cooperation.

Prior to the conference, Boeing Supply Chain technical staff held a three-day long training course for Turkish manufacturers on the processes involved in joining Boeing's supply chain, bidding stages, competitiveness in

Boeing and the Ministry of Trade to Cooperate Strengthening

the Aviation Supply Chain and Exportation in Turkey



aviation, cost and quality optimization, efficiency and innovation. The training course was the second in a series of courses that Boeing will conduct in order to increase the share of the Turkish aviation industry in its supply chain as part of the Boeing Turkey National Aviation Plan.

Noting that Global Supply Chain Support (project-based support mechanism) was established to increase the volume of commodity exports from Turkey, the Minister of Trade Ruhsar

Pekcan said: "Turkey has already taken significant steps in the aviation industry. It needs to be improved further. We've passed the infancy stage and the aviation industry has confidently advanced forward on the right path. Now we have to ascend with the support of key global players in the aviation sector as well as the Ministry. We need to increase our exports of high-tech products, particularly in the aviation sector. Currently, only three

companies take advantage of Global Supply Chain Support in the aviation sector. We reach out toward many companies to utilize this support. We, as the Ministry, are sponsors of 75% of the consultancy services that are received and to procure all kinds of certificates that will enable companies to become exporters, with UR-GE projects in aviation, especially for AS 9100 certification. If you receive your certificate, we grant 50% of the cost, as part

of our support for market entry documents. Our goal is to enhance your export of high-tech products in global supply chains, and our existing target and policy is to regulate our support mechanism according to your requests in production and supply processes when you become a reliable member of the global supply chain.”

Boeing Turkey Managing Director and Country Representative Ayşem Sargin said: “Turkey is among the countries where Boeing seeks strategic growth. We have already carried out significant investments and cooperation under our Boeing Turkey National Aviation Plan, which establishes the framework for our strategic partnership with Turkey. One of the most important elements of this plan is our Program for Developing the Aviation Industry. The Global Supply Chain Assistance provided to manufacturers in Turkey by the Ministry of Trade is very significant for firms which want to produce and export in this sector. At present Boeing’s total trade volume with Turkish industry has reached US\$1.8 billion and Boeing’s annual purchases are worth over US\$ 200 million. To raise these figures higher, we are cooperating with all relevant state organizations. Our aim is to enable Turkey to secure a larger segment of Boeing’s global manufacturing activity and in turn increase Turkey’s exports via profitable contributions in the aviation industry.”



Turkish DGCA and TRtest Signed Cooperation Protocol

The Directorate General of Civil Aviation (DGCA) and TRtest have signed a protocol agreement for cooperation in various fields of civil aviation.

TRtest was founded by the SSB, TSE, TÜBİTAK, TSKGV and STM to efficiently utilize Turkey’s existing test infrastructure, as well as to ensure infrastructure evaluation conformity for tests, inspection, analysis, certification, calibration and qualification. This key collaboration will provide continuity in testing and evaluation processes required in the field of aviation.

Within the scope of the protocol various essential activities will be performed, such as training, consultancy, joint R&D activities, the composition

and management of technology development/ technology acquisition projects, organizing common seminars and conferences, support of TRtest aviation solutions at home and abroad by the DGCA, comprising but not limited to the preparation of study plans for designing, production and the sale of products (goods and services) to enhance the efficiency and accessibility of parties, and the determination and implementation of strategies.

Under the coordination of the protocol, collaboration will be improved by parties in areas of aviation security, safety equipment, certification / airworthiness consultancy services, civil aviation safety and security.

In accordance with the Cooperation Agreement in Aviation Security, collaboration will be made in areas such as opportunities to provide representation in international working groups, the establishment of testing and certification centers regarding safety devices, ensuring the accreditation of these centers to the ECAC, the provision of notifications to foreign civil aviation authorities regarding the capabilities of test centers to be established in Turkey, security devices and technologies and the certification of these technologies, the design and production certification of calibration test equipment for security equipment, Anti-UAV systems tests and certification.



Gulfstream Showcases its Record Breaking Business Jets at EBACE 2019

Hosting the world's leading aviation professionals, the 19th European Business Aviation Convention & Exhibition (EBACE) was held in Geneva, Switzerland. Gulfstream's record-breaking and award-winning fleet drew attention at the fair where the world's largest aircraft and helicopter manufacturers were in attendance.

Nearly 13 thousand aviation professionals from all over the world were hosted at the EBACE 2019 fair which was held at Palexpo and Geneva International Airport on May 21-23, 2019. At the fair major companies participated in the business jet market; Gulfstream, the authorized sales

representative of which is Kaan Air in Turkey, attended with its G650ER, G600, G550 and G280 models.

Owner of 90 city-pair records

Gulfstream's flagship the ultralong-range G650ER, having a range of 7,500 nm/13,890 km attracted attention. It can connect Geneva to Singapore at Mach 0.90 and Geneva to Santiago at Mach 0.87. The aircraft recently set a record for the farthest, fastest, nonstop business jet flight in history, connecting Singapore to Tucson, Arizona – a distance of 8,379 nm/15,518 km, in 15 hours and 23 minutes.

Connecting Geneva to Tokyo

Another model showcased at the fair, G550, having a flight range of over 12,000 km, can connect Geneva to Tokyo. As a popular choice for both commercial and special mission applications, G550 was amongst the jets that drew interest at the fair.

Gulfstream's G280 model, which was also displayed at EBACE 2019, can fly

3,600 nm/6,667 km and easily connects Geneva to Dubai at Mach 0.84. The jet holds more than 65 city-pair records, including New York to Geneva in 7 hours and 34 minutes.

In addition to Gulfstream (Kaan Air is the authorized sales representative in Turkey), Leonardo Helicopters, the exclusive distributor of which is also Kaan Air in Turkey, attended EBACE 2019 as well with its AW169 model.





Air BP and London Biggin Hill Airport Continue Long Standing Relationship

May 22, 2019, Air BP, the international aviation fuel products and services supplier, has renewed its contract with London Biggin Hill Airport (BQH/EGKB), following 25 years of successful collaboration. Air BP will continue to supply the airport with Jet A-1 and Avgas 100LL, with customers able to use the Air BP Sterling Card and RocketRoute MarketPlace to pay for fuel.

Laura Peña-Gutierrez, Air BP regional general aviation director, Northern, Central & Western Europe,

commented: “We are delighted to renew our contract with London Biggin Hill Airport, a customer we have enjoyed working with for over a quarter of a century, as they evolved from an RAF base to a thriving business aviation airport. We are excited to be part of their expanding future and committed to supporting their growth through our safety, technical and operational expertise.”

Robert Walters, business development director, London Biggin Hill Airport said: “This contract

renewal marks over 25 years of continued support and trust in Air BP, who continue to reliably supply us with fuel and provide high quality, safe operations. We’re looking forward to working closely with Air BP to help facilitate the next phase of our development.”

Paul Augé, Air BP general manager UK & France, said: “We’re proud to be working with London Biggin Hill to improve the experience of our mutual customers; the airport’s dedication to high-quality customer service and operational

innovation makes us a natural fit as their fuel supplier.”

London Biggin Hill Airport is located just 12 miles from central London and is the only dedicated business aviation airport in the capital. As London’s fast-track gateway, last month the airport introduced a new streamlined pricing structure to support the uninterrupted flow of business aviation traffic into the city. Over the last 12 months, the airport has enjoyed a nine percent increase in activity, according to WingX.

Aviation's Call to Action Awaiting Tenfold Engagement from our future Women Aviators

by Mireille Goyer – Founder & President Institute for Women of Aviation

March 8 was an historically important day for women pilots worldwide, long before the United Nations designated March 8 as International's Women Day in 1975.

It was on that very day, 65 years earlier, that Raymonde de Laroche earned the world's first female pilot license. Four more women would earn a pilot license before the end of 1910. De Laroche's achievement is one of the rare fully documented and unquestionable aviation firsts for women pilots on a global scale.

Today, the subject of women and aviation, and more particularly their striking absence 110 years after the first women opened the doors of the industry for all others to follow, has made it to the forefront of the industry. It was not always that way.

When Mireille Goyer, a female airline-rated pilot, was looking for upcoming celebrations of the momentous female pilot milestone in late 2019, she found none.

10 years ago, there were no global outreach initiatives to introduce women and

girls to aviation and space opportunities, there were no special programs to specifically celebrate all women's contributions to the industry, and women were virtually absent in industry publications.

In other words, women were not on the aviation radar - even on March 8th.

Goyer decided to do something about that. She launched the Fly It Forward® Challenge using her own money to fund prizes and awards. The idea was to remember the legacy and to celebrate the achievement of women by fulfilling the vision of the female pioneers – to see more women enjoy and contribute to the industry.

The call to action together with the incentives aimed to encourage aviation enthusiasts, professionals, and organizations to invite girls of all ages to discover the multiple facets of the industry.

More than 1,600 women and girls in 36 countries responded to the 2010 invitation with huge smiles and caught the attention of an industry that once presumed and dismissed women as “not interested in aviation”.



As we are preparing to celebrate the 10th anniversary of Women Of Aviation Worldwide Week (WOAW) and its Fly It Forward® Challenge in 2020, the initiative has not only already made it possible for more than 350,000 women and girls to discover aviation around the world, including in Turkey since 2015, it has also admirably inspired an industry to reflect and act.

Over the past few years, Turkey has taken a leadership role in organizing most of the events across the country during the Week. Individuals such as Can Erel and corporate organizers such as TEI and THK have proudly won Fly It Forward® Awards.

Turkish girls of all ages

have visited aerospace factories, control towers, museums, training centers, and airports, and have met with accomplished women currently working in the industry, they've flown in various aircraft and simulators, and launched thousands of Pink Paper Planes in a symbolic gesture to raise awareness.

To close the gender gap and to celebrate the 110th anniversary of the world's first female pilot in a meaningful manner, let's introduce women and girls by a multiple of tenfold at each Turkish aviation or space location from March 2 to 8, 2020. We look forward to it.

Learn more at www.WomenOfAviationWeek.org

The 75th IATA Annual General Meeting

The 75th IATA Annual General Meeting (AGM) and the World Air Transport Summit hosted by Korean Air was held for the first time in the Republic of Korea with the participation of 295 officials from 120 countries airline leaders. Onur Air General Manager Teoman Tosun and Prof. Ahmet Bolat Turkish Airlines' VP responsible for Investment and Technology attended IATA Annual General Meeting held in Seoul. At the 75th AGM top topics were environment, rising costs slowing demands in the aviation sector.

Airlines call for implementation of global carbon offsetting scheme

The 75th IATA Annual General Meeting overwhelmingly approved a resolution calling on governments to continue important work for full implementation of the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) agreed on through the UN's International Civil Aviation Organization (ICAO).

CORSIA is the first global carbon pricing instrument for an industry sector. It will cap net CO₂ emissions from international aviation at 2020 levels (carbon-neutral growth, or CNG). "Airlines know that effective plans to cut emissions are critical to earning their license to meet the growing demands for air connectivity. In fact, the strongest demand growth is in the developing world, reflective of aviation's contribution to 15 of 17 of the UN's Sustainable Development Goals. CORSIA sets the stage by capping emissions at 2020 levels. Between 2020 and 2035 it will mitigate

over 2.5 billion tons of CO₂ and generate at least \$40 billion in finance for carbon reduction initiatives," said the IATA's Director General and CEO, Alexandre de Juniac. The AGM urged ICAO member states to: Implement CORSIA as the single global market-based mechanism for climate change mitigation and avoid implementing overlapping or duplicate measures such as unilateral carbon taxes. Consider volunteering to participate in CORSIA in the pilot phase. Align domestic regulations on the monitoring, reporting and verification of emissions with CORSIA's internationally agreed upon standards, to prevent market distortions through multiple requirements.

IATA and Star Alliance extend cooperation to improve passenger experience

The International Air Transport Association (IATA) and Star Alliance have renewed their collaboration on traveller document verification to improve the passenger experience. Star Alliance and the IATA, in a signing ceremony at the IATA's 75th

Annual General Meeting in Seoul, agreed that the IATA's Timatic AutoCheck solution will continue to power the Automated Document Check (ADC) for Star Alliance member carriers.

Airlines commit to improve travel for passengers with disabilities

The International Air Transport Association (IATA) 75th Annual General Meeting (AGM) approved a resolution to improve the air travel experience for the estimated one billion people living with disabilities worldwide.

The AGM confirms the commitment of airlines to ensuring that passengers with disabilities have access to safe, reliable and dignified travel, and calls upon governments to use the IATA's core principles for accommodating passengers with disabilities.

These principles aim to change the focus from disability to accessibility and inclusion by bringing the travel sector together with governments to harmonize regulations and provide the clarity and global consistency that passengers expect. An

IATA survey of 48 airlines reported that the requests for wheelchair assistance grew 30% between 2016 and 2017, putting strain onto the quality of the service provided. Airlines and airports are working together to ensure that wheelchair assistance is available to those who need it. In parallel, they are also working to develop other forms of assistance for passengers who are mobile but do not feel comfortable navigating through a large airport.

For passengers with disabilities who travel with their own mobility aids, damage when stowed is a major concern. Airlines are working with associations of passengers with disabilities, airports, ground handlers, and regulators, to look at ways to improve this. One option under consideration is to develop standard procedures related to the loading of passengers' mobility aids.

The International Air Transport Association (IATA) announced that KLM Royal Dutch Airlines will host the 76th IATA Annual General Meeting (AGM) and World Air Transport Summit in Amsterdam, the Netherlands, on 22-23 June 2020.

ConnectJets Takes it Green

New ConnectSkies Focuses on Sustainability in Private Jet Charter and Aircraft Sales

ConnectJets is marking its 10th anniversary this summer with the launch of a new division – ConnectSkies, the business aviation charter industry’s first independent ‘sustainable’ aircraft sales, marketing and logistics platform.

With sustainability at the forefront of the industry and the world, especially among millennials, ConnectSkies will explore a range of options in all categories of air travel for environmentally-conscious clients who

need to make their private aircraft bookings more compliant with their corporate responsibility.

Kicking off ConnectSkies is the business’s newly ratified agreement with VRCO, the Midlands, UK-designer of NeoXCraft – a hyper luxury multi-modal electric craft.

The XP2 – two-seater, emphasizes safety, but with significant attention given to a spacious interior and high performance. The NeoXCraft XP2 is an all-new electric vertical take-off and landing aircraft,

designed to transform urban and rural mobility and take the stress off congested motorways, flying for up to 60 minutes.

With electric motors in shrouded propellers, the NeoXCraft, offers computer supported flight. It can also launch and land from water.

“The introduction of e-VTOLs, complementing current sustainable business aviation turboprop aircraft such as the Piaggio Avanti EVO and other electric aircraft will empower the private

jet traveller to make informed decisions.

The NeoXCraft pledges a seamless transition from more remote locations and airfields, and offers a true point to point service whilst consciously retaining a lower CO2 offset,” said ConnectJets founder and Managing Director Gabriella Somerville.

She added: “ConnectJets has built its reputation with a focus on tailored services. Together with our wide network of contacts in the business



aviation and luxury sector, this has enabled us to provide alternate options to our clients, bringing private aviation to a wider audience. With increased demand for the Avanti EVO and a raft of aircraft that promise more sustainable and cleaner travel, ConnectSkies is excited to build a platform wholly focused on sustainability.”

ConnectJets was a guest at last weekend’s Sustainable Alternative Jet Fuel (SAJF) event at TAG Farnborough Airport, organized by EBAA and the SAJF Coalition. Praising the initiative, she noted: “As a sector we need

to adapt and take roles as leaders in the aviation industry, demonstrating to future generations that we are all actively looking to create cleaner skies and lower our emission output.”

“We are truly entering the age of AirVolution™ and electrification of the skies will play a big part in improving lives and reducing our carbon footprint globally. The XP2 is fully equipped to recharge from solar energy thus making it essentially powered from the sun. VRCO is a leading innovator in the sector.” commented Michael

Brown, chairman of VRCO. “We welcome anyone interested in learning more about ConnectSkies to get in touch with the ConnectSkies Team”.

As the sales agent and ambassador for the Piaggio Avanti and successor new-generation EVO since 2014, ConnectJets understands the eco credentials and importance of sustainability within the private aviation sector and to support client CSR.

The Avanti EVO was one of a dozen business aircraft that flew in to EBACE Geneva on alternative

blended fuel. The twin turboprop EVO delivers a 40% reduction in fuel burn compared with a jet within the same light-class category, saving valuable resources and finances for owners and operators.

“ConnectJets are looking forward to conversing with all the current business aircraft OEMs, e-VTOLs and electric craft manufacturers in aviation to help champion cleaner skies for the future. Anyone interested in learning more about ConnectSkies should get in touch with us,” Gabriella said.





May 30th, 2019, Emirates is gearing up for a big summer in Muscat with the deployment of double

daily A380 flights from 1 July, 2019. The airline will operate the A380 on EK 862/863 and

Emirates' Shortest Network with Airbus A380

EK864/865 to and from Muscat International Airport (MCT). Muscat will become Emirates' shortest scheduled A380 flight, flying a distance of 340 kilometers each way. Scheduled flight time will be 1 hour 15 minutes. The Emirates first A380 aircraft touched down a

year ago, June 1st 2018, in Muscat. Both A380s flying to Muscat will be operated in a three-class configuration, with 429 seats in Economy Class on the lower deck, as well as 76 flat-bed seats in Business Class and 14 First Class Private Suites on the upper deck.

Gogo to Launch 5G network in 2021

Gogo is first inflight connectivity provider to announce a 5G network for aviation

On May 29, 2019 – Gogo the leading global provider of broadband connectivity products and services for aviation, today announced its plans to build a 5G network for aviation. The new air-to-ground (ATG) network will be designed for use on business aviation aircraft, commercial regional jets, and smaller mainline jets operating within the contiguous United States and Canada. Gogo expects the network to be available for business and commercial aviation in 2021.

“We expect to launch Gogo 5G at the same time as the terrestrial telecommunications companies are deploying the same generation of technology on the ground – a first in the inflight connectivity industry,” said Oakleigh Thorne, CEO of Gogo. “Gogo 5G is the next step in our technology evolution and is expected to deliver an unparalleled user experience, pairing high performance with low latency and network-wide redundancy.”

Gogo will build the 5G

network on its existing infrastructure of more than 250 towers and will use unlicensed spectrum in the 2.4GHz range, along with a proprietary modem and advanced beamforming technology. Gogo's 5G infrastructure will support all spectrum types (licensed, shared, unlicensed) and bands (mid, high, low), and will allow Gogo to take advantage of new advances in technology as they are developed. Similar to how wireless carriers provide redundancy across their networks,

Gogo will continue to employ its 3G and 4G networks throughout the continental U.S. and in Canada that will provide backup to the 5G network when needed.

When compared to satellite technologies, ground-based network technologies in general deliver certain operational advantages – specifically lower cost of operation and lower latency. Gogo is committed to provide easy upgrade paths to 5G for existing Gogo air-to-ground customers.

Garmin Debuts the MARQ Collection

Garmin International, Inc., a unit of Garmin Ltd. in celebration of its 30th anniversary, promoted the MARQ Collection, a series of connected tool watches of traditional watch manufacturing quality, forged from Garmin's long-standing heritage in the aviation, automotive, marine, outdoor and sport markets. Garmin has redefined the multisport watch market, and now, it's created the ultimate connected timepieces, equipped with the modern utility of smart features – MARQ Aviator, MARQ Driver, MARQ Captain, MARQ Expedition and MARQ Athlete – each designed and engineered for those inspired by their passion for flying, racing, sailing, exploring and sports performance.

The MARQ Collection uses very select materials, meticulously crafted and designed with the utmost attention

to quality that help guarantee performance in the most demanding of environments. It represents an authentic outward expression of its owners' highest aspirations. Each watch is built from titanium, which is lightweight, yet incredibly strong. Combined with a domed sapphire crystal for ultimate scratch resistance, this creates the solid core for all MARQ watches. To complement the character of each MARQ watch, an innovative premium strap or bracelet completes the look,



allowing owners to match their style with Garmin's interchangeable QuickFit strap solution.

The watches feature an always-on, sunlight-readable display, performance GPS and advanced sensors like wrist-based heart rate

and wrist-based pulse ox2 to track a wide variety of sport activities like running, cycling, swimming and skiing. It also provides premium smartwatch functionality including built-in music storage, Garmin

The MARQ Aviator is customized for the exclusively for pilots. The combination of brushed titanium and a polished black ceramic GMT-bezel gives the MARQ Aviator a very classic style. This watch is complemented by an aviation inspired multi-link titanium bracelet with a "swept wing" design and micro adjustment which is comfortable on the wrist for in-flight wear and transitions to a stylish timepiece out of the cockpit, too. The GMT bezel gives pilots quick access to GMT-time, plus two additional time zones represented through local airport codes on the watch face. The MARQ Aviator also comes with dedicated aviation features including maps with airport details and advanced safety features such as Direct-To-Navigation, Nexrad Weather Radar, a worldwide airport database and Garmin cockpit integration.

Piaggio Aerospace Delivers Two Aircraft to Swiss and East-African Customers

Piaggio Aerospace, a leading Italian aircraft manufacturer announced the delivery of two P.180 Avanti EVO in V.I.P. configuration respectively to a Swiss and an East-African customer.

A first Avanti EVO is being delivered – through the Italy-based aviation company Orion Fly – to Sir Lindsay Owen-Jones. Sir Lindsay already owns, since a decade, the forerunner of the Avanti EVO – notably the first Avanti II manufactured by Piaggio Aerospace – currently operated by Fly Wings SA and managed from an airworthiness standpoint by Alpiwings, two Lugano-based companies.

In the next few days, a second Avanti EVO will perform its ferry flight from Italy to the African Continent, where the aircraft will be taken over by an undisclosed customer. In the meantime, Piaggio Aerospace is actively working at developing a support organization in the area.

A few days ago, an Avanti EVO – the first in the region – entered into service in India: the aircraft had been delivered, through Piaggio Aerospace partner in India Business Aviation Private Limited (BAIPL), to an undisclosed customer who already owns and operates an Avanti II.



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Pegasus, Turkey's Digital Airline Joint Forces with Turkey's Digital Operator Turkcell

Pegasus General Manager Mehmet Nane and Turkcell CEO Murat Erkan gathered and talked about digital solution partnerships and signed agreements to reinforce ongoing programs.



PWC Announced New President

After Retirement of John Saabas, Maria Della Posta Named President of Pratt Whitney Canada, Della Posta joined Pratt & Whitney in 1985 and progressed through roles of increasing leadership in Supply Chain, Finance and Customer Service. She was named vice president, Customer Support in 2001, senior vice president, Sales and Marketing in 2010 and senior vice president, Pratt & Whitney Canada in 2012.



Boeing Launches a new BBJ Services Bundle with Metrojet



Boeing launched a new Boeing Business Jet (BBJ) services bundle and signed the first multi-year agreement for this service with Hong Kong-based business jet operator Metrojet in EBACE19.

The new services bundle provides essential digital aviation tools for BBJ flight and maintenance crews which includes 24/7 technical support, onboard performance tools and maintenance planning data, all tailored to meet customer needs.

Metrojet's five-year agreement for the new

services bundle will streamline procurement of the products and services needed to reliably and efficiently operate their BBJ fleet.

"We are thrilled to provide this comprehensive services solution for Boeing Business Jet customers," said William Ampofo, vice president of Business & General Aviation for Boeing Global Services. "Readiness is critical, and this solution creates a true one-stop shop for customers like Metrojet to get the support they need to keep their jets in peak operation."

Maiden Flight of Delta Air Lines First A330neo Aircraft

On May 7th, the first A330-900 widebody destined for Delta Air Lines made its inaugural test flight from Toulouse Blagnac Airport in southwestern France. The highly fuel-efficient twin-engine jet, one of 35 that Delta has on order, is due to be delivered to the Atlanta, Georgia-based airline in the coming weeks.

The A330-900 is the larger of the two A330neo variants that Airbus launched in 2014. The A330neo brings significant efficiency improvements while also introducing the award-winning Airspace by Airbus cabin, which offers the newest and most advanced in-flight experience with extra personal space, larger

overhead luggage bins, the latest generation in-flight entertainment system and state-of-the-art ambient lighting.

Incorporating the latest-generation Rolls-Royce Trent 7000 engines, along with aerodynamic enhancements – including new extended composite wingtips which provide 3.7 meters of increased overall wing-span, as well as increased lift and reduced drag – the A330neo is a more efficient aircraft, delivering 25% lower fuel burn than previous generation aircraft and the lowest seat-mile cost in its category. The A330-900 range is 6,550 nautical miles in a typical three-class configuration.



China Southern Airlines Begins Flight from Wuhan to Istanbul Airport

China Southern Airlines, operating flights from Pekin to Istanbul, started flights from Wuhan to Istanbul Airport. Wuhan is the 6th most crowded city of China

first flight was operated from Wuhan to Istanbul on 30th May 2019 with Boeing 787 Dreamliner. Zhou Jun Bao, Vice Chairman of the board of China Southern

Airlines, in his opening speech told that this new destination will contribute the commercial and cultural relations between China and Turkey.



Company to Break Ground on 82,000 Square-Foot Facility in July 2019

Honda Aircraft Company announced plans to expand its global headquarters in Greensboro, NC by investing an additional US\$ 15.5 million in a new 82,000-square-foot facility on its 133+ acre

campus in Greensboro. This will bring the company's total capital investment in its North Carolina facilities to more than US\$ 245 million.

Scheduled to break ground in July 2019, the building will house a new

wing assembly process for the HondaJet Elite, the fastest, farthest and highest-flying plane in its class. The new facility will allow for more wings to be assembled concurrently, resulting in a major increase in production

efficiency. Additionally, this expansion will add more storage for service parts for the growing fleet of HondaJets around the globe. The facility is expected to be completed in July 2020.



Lufthansa Technik Ready to Offer Cabin Completions for the Airbus A220

Lufthansa Technik AG is ready to offer cabin completions for Airbus' smallest commercial aircraft family, the A220. The company has already developed a first VIP cabin interior concept parts of which showcased for the first time on this year's European Business Aviation Conference and

Exhibition (EBACE) in Geneva. The full concept will be unveiled during the Monaco Yacht Show in September.

The spacious SkyRetreat concept will feature a totally new and unconventional design approach. As a consequence, the cabin interior envisaged by

Lufthansa Technik's designers for the Airbus A220 calls for a reduction to the essential, thereby cleverly and discreetly integrating latest cabin technologies, from 4K roll-up displays and smart touch surfaces to a totally unique Observation Lounge to be revealed in the coming months.

Besides the VIP completion capabilities, Lufthansa Technik already supports the Airbus A220 family with a comprehensive portfolio of services ranging from line maintenance and component services to engine services for its PW1500 geared turbofan engines.

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