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VOLUME 1 - ISSUE 5 - YEAR 2020

AVIATION TURKEY

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Passenger Opinions on Airtravel on COVID-19 Concerns

The IATA has recently released public opinion research showing that the willingness to travel is being tempered by concerns over the risks of catching COVID-19 during air travel. The industry's re-start plans address the main concerns of passengers.

The 11-country survey, which was conducted during the first week of June 2020, assessed traveler concerns during the pandemic and the potential timelines for their return to travel.

According to the survey, travelers are taking precautions to protect themselves from COVID-19 with 77% saying that they are washing their hands more frequently, 71% avoiding large meetings and 67% having worn a facemask in public. Some 58% of those

surveyed said that they have avoided air travel, with 33% suggesting that they will avoid travel in the future as a continued measure to reduce the risk of catching COVID-19.

When asked to rank the top three measures that would make them feel safer, 37% cited COVID-19 screening at departure airports, 34% agreed with mandatory wearing of facemasks and 33% noted/wanted to see social distancing measures on aircraft.

Passengers themselves displayed a willingness to play a role in keeping flying safe by: undergoing temperature checks (43%), wearing a mask during travel (42%), checking-in online to minimize interactions at the airport (40%), taking a COVID-19 test prior to travel

(39%), sanitizing their seating area (38%).

The survey also pointed to some key issues in restoring confidence where the industry will need to communicate the facts more effectively. The top on board concerns of travelers include: cabin air quality and social distancing.

Travelers have not made up their minds about cabin air quality. While 57% of travelers believed that cabin air quality is dangerous, 55% also responded that they understood that cabin air quality was as clean as the air in a hospital operating room.

While nearly half of those surveyed (45%) indicated that they would return to travel within a few months of the pandemic subsiding, this is a significant drop from



the 61% recorded in the April survey. Overall, the survey results demonstrate that people have not lost their taste for travel, but there are barriers impeding a rebound to pre-crisis levels of travel:

A majority of travelers surveyed plan to return



FROM THE EDITOR

to travel to see family and friends (57%), to vacation (56%) or to do business (55%) as soon as possible after the pandemic subsides. But, 66% said that they would travel less for leisure and business in the post-pandemic world and 64% indicated

that they would postpone travel until economic factors improved (personal and broader).

One of the biggest blockers to industry recovery is quarantine. Some 85% of travelers reported concern for being quarantined while traveling, a

similar level of concern to those reporting general concern for catching the virus when traveling (84%). Among the measures that travelers were willing to take in adapting to travel during or after the pandemic, only 17% reported that they

were will willing to undergo quarantine.

Enjoy the issue..

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by Muhammed Yilmaz
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The Aviation sector has been going through the biggest crisis in its history. State aid seems to be essential for the survival of the airlines. The topic of state aid is certainly on the minds of many who are wondering if the massive amounts of state aid is really free, or does state aid and support drag airline companies down into another bottomless pit?

Global air traffic came to a halt when the World Health Organization realized that COVID-19 was not a usual virus that affected a certain region and declared a pandemic. With the sudden and unexpected interruption in operations, the aviation sector started to work on various analyses and to build scenarios to estimate the negative financial impact of the pandemic. For the accurate identification of strategies for the recovery and survival of the sector, initially the existing status of the sector had to be defined.

The picture revealed upon review of studies

Does State Aid Actually Help the Recovery of Airlines?

and efforts of many different organizations and enterprises, the IATA in particular is quite pessimistic. While it is mentioned that even airlines with the most robust financial structures have means that would keep them afloat for about 3 months, the survival of any airline does not seem possible without government support.

After emphasizing the critical role that aviation plays in countries throughout the modern world, a statement made by the IATA on March 24, 2020 underlined that support is needed to sustain this sector that creates significant economic value and employment opportunities for countries worldwide. The IATA clearly called for the financial support of governments and the statement included a list of suggestions addressing the governments on what they could do.

1. Direct financial support to passenger and cargo carriers to compensate for reduced revenues and liquidity attributable to travel restrictions imposed as a result of COVID-19;

2. Loans, loan guarantees and support for the corporate bond market by the Government

or Central Banks. *The corporate bond market is a vital source of finance, but the eligibility of corporate bonds for central bank support needs to be extended and guaranteed by governments to provide access for a wider range of companies.*

3. Tax relief: *Rebates on payroll taxes paid to date in 2020 and/or an extension of payment terms for the rest of 2020, along with a temporary waiver of ticket taxes and other government-imposed levies.*

The Airline Passenger Experience Association (APEX) encouraged governments worldwide to issue immediate tax relief for the airline industry due to the unprecedented disruption caused by COVID-19. APEX advocated that \$250 billion should be issued in global government support for the aviation industry, with 80% going directly to airlines and 20% allocated to airline suppliers.

As a result of the pessimistic picture revealed by studies and assessments made by the sector's most esteemed organizations, some countries have started to announce their support programs for the sector.

Aircraft OEMs also affected by the global aviation crisis!

Perhaps many people at the time did not anticipate that the pandemic could last so long. As the process extended, the demand for travel remained at the zero level and the aviation sector struggled to stay alive, surviving only through evacuation and cargo operations. All these deepened the crisis and caused support programs to fall short of expectations.

The sector now has a bigger problem! As the pandemic extends on with no clear ending in sight, airlines have been reviewing their fleet, their processes, network and personnel plans and have started to make radical decisions. In addition to decisions such as retiring the relatively less efficient and older aircraft earlier than planned, and also returning leased aircraft before the expiration date of leasing, airline officials have started to reach out to Airbus and Boeing to cancel or postpone deliveries. As entire production programs and delivery schedules were flipped upside down,

manufacturers asked for support from their governments as well.

Boeing is seeking at least \$60 billion in government aid for the aerospace manufacturing industry, which it says will be one of the most significant ways to help airlines, airports, suppliers and manufacturers remain in good financial standing as the coronavirus further strains their businesses and puts 2.5 million jobs at risk. Boeing's request comes the same day President Donald Trump pledged to assist Boeing and travel-related industries. After that, with seven vaguely written words in the \$2 trillion federal stimulus law, Congress carved out a special provision for Boeing, one of the nation's largest manufacturers.

Boeing isn't mentioned by name in the 880-page bill, but the aerospace giant will qualify for as much as \$17 billion in taxpayer relief through the language threaded into the fourth paragraph of page 513 of the CARES Act: "businesses critical to maintaining the national security."

Additionally, European aircraft manufacturer Airbus has suggested that some government support may be needed if the coronavirus crisis lasts several months, that was as of mid-March 2020.

In early June France's government announced 15 billion Euros in rescue money for the pandemic battered aerospace industry, including plane maker Airbus and national airline Air France.

The money includes direct government investment, subsidies, loans and loan guarantees. It also includes a special fund jointly financed by the government, Airbus and other big manufacturers to support small suppliers. Airbus secured bailout cash as part of the French Government's rescue deal for the aviation sector.

Tactical moves of Lufthansa CEO Spohr!

During this period of intense discussion regarding state aid, Lufthansa, the national flag carrier of Germany, stated that they were losing €1 million per hour during the pandemic.

Carsten Spohr, CEO of the company, declared that the company did not have any chance to survive under these circumstances. Spohr and Germany's Prime Minister Angela Merkel started to negotiate on the rescue program of €9 billion. Support was granted but not wanting government interference in the management decisions of the airline, Spohr wanted distance to be maintained

STIMULUS PACKAGE OF GOVERNMENTS



- **Australia** has announced an A\$715 million (US\$430 million) aid package comprising refunds and forward waivers on fuel taxes, and domestic air navigation and regional aviation security charges.
- **Brazil** is allowing airlines to postpone payments of air navigation and airport fees.
- **China** has introduced a number of measures, including reductions in landing, parking and air navigation charges as well as subsidies for airlines that continued to mount flights to the country.
- **Finland's** government has provisionally agreed to provide a state guarantee of up to \$642 million to assist flag-carrier Finnair.
- **Hong Kong**, SAR is supporting the Airport Authority of Hong Kong (AAHK) in providing a total relief package valued at HK\$2.6 billion (US\$335 million) for the airport community including waivers on airport charges and certain licensing fees, rent reductions for aviation services providers and other measures.
- **New Zealand's** government will open a NZ\$900 million (US\$580 million) loan facility to the national carrier as well as an additional NZ\$600 million relief package for the aviation sector.
- **Norway's** government is providing a conditional state loan-guarantee for its aviation industry totaling Nkr 6 billion (US\$533 million) with half available to Norwegian Air.
- **Qatar's** Minister of Finance has issued a statement of support for the national carrier.
- **Singapore** has undertaken relief measures valued at S\$112 million (US\$82 million) including rebates on airport charges, assistance to ground handling agents, and rental rebates at Changi Airport.
- **Sweden** approved a proposal to issue credit guarantees of up to \$488 million to airlines, of which 30% will be allocated to Scandinavian Airlines.
- **Taiwan** has announced nearly \$1 billion in subsidies and loans available to carriers.
- **Turkey's** President has issued a statement of support for the national carrier and in domestic air transport, the VAT rate has been reduced from 18% to 1% for 3 months.



between the government and the company to avoid the bureaucracy's intervention in the competitive structure of Lufthansa.

Being very aware of its function as a protective shield, Spohr always brought up the option of bankruptcy on the agenda. Though it may seem quite a radical step, bankruptcy might provide the company the breath it needed to build a healthier future. Upon the decree of bankruptcy, restructuring of the company would be maintained while legally certain warrants might be obtained against the company's creditors. Shortly before the pandemic, the German airline company Condor went through a similar process upon the

bankruptcy of its main company Thomas Cook.

Following lengthy negotiations Lufthansa was granted state aid of €9 billion. Of this amount €5.7 billion would be provided by Germany's Economic Stability Fund; €4.7 billion of the amount would be transferred as equity capital and €1 billion would be transferred in cash to Lufthansa. According to the agreement, the Economic Stability Fund will own 20% of Lufthansa yet will have no say in the management of the company. Germany's government will buy €300 million worth of Lufthansa shares (each at a cost of €2.56) and two members of the Executive Board of Lufthansa will be identified upon the recommendation

of Germany's government. Moreover, €3 billion was provided to Lufthansa from various banks on condition that it will be repaid in 3 years. The government intends to sell its Lufthansa shares by the end of 2023 as Lufthansa manages to weather the financial crisis. Carsten Spohr seems to have gained more than he demanded during the negotiations.

However, the aforementioned aid package frustrated other airlines, particularly Ryanair, on the grounds that it removed the conditions required for fair competition and as a result of the objections made, for the ratification of the aid program, the European Union stipulated that Lufthansa should

give up 72 slot pairs at Frankfurt and Munich airports. Spohr gambled once again by claiming that they would experience severe economic losses and fail to pay their debts, and he rejected the aid program and used the bankruptcy card again.

After lengthy negotiations between the European Union and Lufthansa, the parties reached an agreement on the transfer of 24 slots. Moreover, Lufthansa's executives managed to benefit from the situation by including two additional clauses in the agreement. According to these clauses, for the available slots, only the airline companies that do not conduct flights to Frankfurt and Munich and are registered in European Union member countries would be able to apply for the first one and a half years. Other airline companies will be able to make requests for these slots if no applications are made within the foreseen period. In the meantime, the airline companies that have previously received state aid from the European Union are prevented from obtaining the available slots in Frankfurt and Munich. Thus, Carsten Spohr managed to receive the aid package from the German government on his own terms.

#siziönemsiyoruz



Yaşadığımız bu yeni dönemde havalimanımızdan başlayacak tüm seyahatlerinizi daha sağlıklı yapmanız için, süreçlerimizi daha güvenli hale getirdik.

Çünkü sizi ve sevdiklerinizi önemsiyoruz.



Alitalia Boeing 777-200ER

Alitalia receives \$540M in government aid

After providing multiple bailouts and announcing plans to take over Alitalia, the Italian government is injecting another \$540 million into the airline. Alitalia is the only airline in Italy operating under a public service obligation agreement, and thus will be the sole recipient of funding. The government unveiled plan to eventually shrink Alitalia's 113-aircraft fleet to a maximum of 70 to save on costs. Alitalia will also furlough an additional 2,900 employees until October 31, which amounts to half of its workforce. The Italian government provided \$3.26 billion in capital for the newly nationalized Alitalia.

The Russian government has issued an order to distribute over \$315 million in state funds to airlines suffering losses as a result of COVID-19. The Aeroflot Group, which is 51.2% state-owned and includes Aeroflot, Aurora, Pobeda and Rossiya, is set to receive a third of the financial aid, while the rest will go to other major carriers including the S7 Group, UTair and Ural Airlines.

The French government provided its local aerospace industry with

The biggest support program in U.S. history

The U.S. Senate and White House agreed on a large-scaled economic support program that aims to support employees and businesses to lessen the impact of the pandemic throughout the economy. The amount allocated to this pandemic program is higher than the rescue program that was approved for economic survival during the crisis in 2008 and 2009. Total value of the program is \$2 trillion and one of the greatest shares of the package will be granted to the aviation industry.

A total of \$58 billion has been earmarked for the aviation industry, with

\$25 billion in loans and loan guarantees going to passenger airlines and an additional \$25 billion going to grants to pay workers through September. Cargo air carriers have been allotted \$8 billion in relief funds. The aid package prohibits stock buybacks and share dividends for at least a year after the loans have been repaid and restricts executive compensation.

Despite the controversy caused by the grant structure applicable to the largest US carriers, 10 major airlines have confirmed they will accept financial aid under the CARES Act. They can only accept 70% of the funds as grants, while the remaining 30% will be provided as a low-interest

loan. American will receive an aid package worth \$5.8 billion in grants and loans, and Delta will receive \$5.4 billion. Southwest noted that it is set to receive \$3.2 billion and JetBlue revealed it is getting \$935 million in assistance. The other airlines accepting aid are United, Alaska Airlines, Allegiant Air, Frontier Airlines, Hawaiian Airlines and SkyWest Airlines.

All commercial service airports, all reliever airports and some public-owned general aviation airports in the US are eligible for a share of \$10 million in CARES Act funding to go towards airport capital expenditures, operating expenses including payroll and utilities, and debt payments.

\$17 billion, a figure that includes \$7.9 billion in loans previously set aside for Air France as well as support to keep Airbus and smaller companies competitive. Air France-KLM CEO Ben Smith announced the airline will be cutting 40% of French domestic flights by next year in accordance with the environmental conditions included in a \$7.9-billion bailout.

The Hong Kong government provided a \$5-billion bailout for Cathay Pacific in exchange for a 6.1% stake in the company and two “observer” seats on the board of governors. Bailout for Cathay Pacific avoids an Air China takeover of the airline for now.

The Austrian government will back Lufthansa’s Austrian Airlines by providing it with \$508 million in loans and grants, which is expected to save most of the company’s 7,000 jobs.

Swiss government approved US\$1.34 billion in loan guarantees, which were directed largely towards flag carrier Swiss Air Lines and sister airline Edelweiss.

KLM Royal Dutch Airlines has announced that it secured a total amount of EUR 3.4 billion of financial state support.

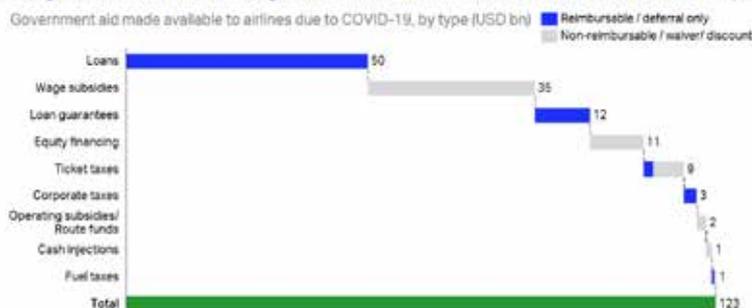
The financing ensures that KLM can continue its activities and that



IATA Economics' Chart of the Week

29 May 2020

Airlines got USD 123bn of government aid but USD 67bn to be repaid



the company’s position is strengthened towards the future.

How much of the state aid is to be reimbursed?

While the aviation industry struggles to recover from the most challenging turbulence it has ever hit throughout its long history, the IATA declared the total amount of state aid received by airline companies as of May 15 was \$123 billion. At this point, it will be useful to underline that the \$9 billion in state aid granted to Lufthansa by Germany’s government is not included in this amount. Therefore, it is projected that the amount of support received by airline companies may increase until the end of the pandemic.

These incentives granted to airline companies

by states involve many different breakdowns as well. Low-interest loans, payment support, tax discounts, direct cash flow are only a few of them. In other words, a part of the state aid is registered as debt for the companies and they are to be reimbursed.

The report prepared by the IATA reveals that \$67 billion of the \$123 billion received by airline companies are composed of liabilities to be repaid. \$50 billion out of the liabilities to be repaid has been registered as state aid granted as direct loans. State guaranteed loans are second on the list of items to be reimbursed. In other words, if the airline companies fail to pay their debts, the liabilities will be transferred to the governments.

On the other hand, while the state aid in the U.S.

correspond to nearly one-fourth of the turnover of the airline companies, this amount is 15% in Europe and at the level of just 1% in South America, Africa and in the Middle East.

Even though the state aid granted to airline companies are vital for the normalization of the sector after the crisis, there’s also the opposite side of the coin to consider. According to the IATA, the amount of debt incurred by airline companies may reach \$550 billion by the end of 2020! This means that after the pandemic, airline companies may face the risk of bankruptcy due to the debt burden caused by the aid, and this is one of the factors that support the argument claiming that after the global pandemic **nothing will ever be the same in the aviation sector...**



Second Half of the Year will be Financially Turbulent for Airlines!



Dr. Batuğhan Karaer
Chairman of the Finance
Association, Turkey

Although the world is still struggling with COVID-19, the resulting economic circumstances have made normalization unavoidable. Despite concerns about the second wave of the pandemic, many countries have already launched normalization processes and sectors are slowly gaining dynamism as time progresses.

Unfortunately, tough times will continue for the aviation sector. Ambiguity concerning the relaunch of flights and business trying to return to normal will continue until the elusive fight against COVID-19 is over. However, the following point should not be dismissed: Yes, the virus rapidly spread across the world via airline travel

and companies and global trade suffered a major blow as a result. To be able to facilitate the revitalization of global trade, the aviation sector needs to be revitalized as well, this is an inevitable fact.

In its statement, the IATA underlined that the sector will face a loss of over \$84 billion this year and around \$16 billion in 2021, adding that the worst collapse in global traffic would be over if the second wave of the virus does not occur. Flights decreased by 90% from the day the first effects of the crisis emerged and almost stopped during the months of April and May; the financial flow of the sector has been significantly disrupted accordingly. Aircraft manufacturers,

leasing companies, sector professionals, suppliers and many companies in the sector failed to either partly or completely fulfill their financial liabilities as revenues fell due to an insufficient amount of inflow of funds; these companies will not be able to cover these liabilities for some time.

The shares of all airline companies started to fall in the second half of March across the world. The market value of Lufthansa fell by 40% in six months and decreased to \$5.5 billion (as of June 12 THY's market value is \$2.6 billion and the market value of Pegasus is \$878 million). Besides, one of the world's greatest airline companies, Lufthansa is set to be removed from

the DAX stock index which represents Germany's 30 biggest companies with the highest level of liquidity. Lufthansa is amongst the founders of the Frankfurt Stock Exchange and its shares are traded in this market. Lufthansa is subsequently being included in the list of medium scaled companies.

COVID-19 caused many companies in the airline sector to change their individual game plans and retreat to a commonly adopted approach coined the "Strategy of Survival". In order to achieve this strategy, companies launched many solutions and implementations that cover the finance sector, suppliers, and employees. Above all, they have been



searching for ways to emerge from the crisis in stronger positions and to obtain competitive advantages.

The IATA underlines at every opportunity that problems cannot be feasibly solved in the short run and that direct funds, credit, and tax exemptions should immediately be made available to the sector. Companies have tried, and in some cases have been successful in receiving support and aid from their partners as well as their states. The support received by Lufthansa from the state is the most striking one. While Germany's fund of stabilization WSF contributes € 5.7 billion including the equity capital to the assets of the

company, the banks will be granting credit support of € 3 billion with a 3-year maturity.

In addition;

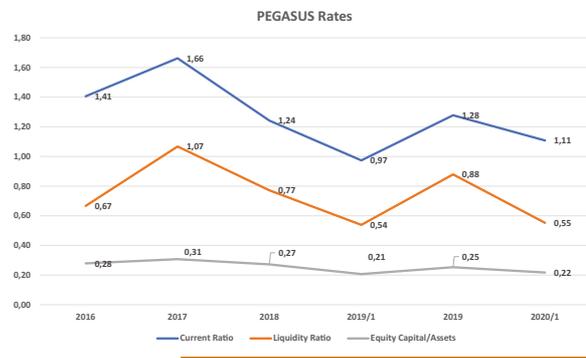
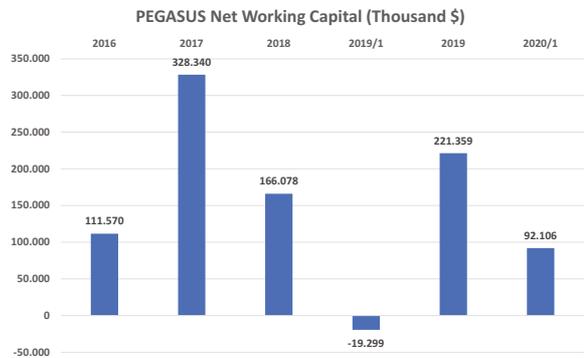
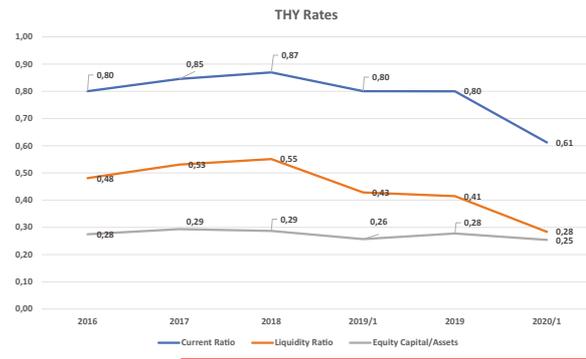
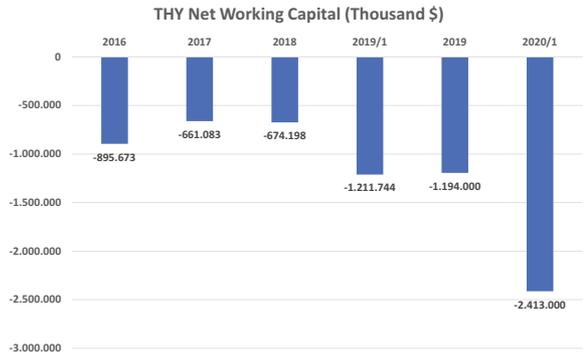
- *Air France & KLM receive the support of € 11 billion from their respective states.*
- *Alitalia will become nationalized in June; an aid package of € 2 billion is expected but no sufficient financial support has been provided yet.*
- *As part of the COVID Corporate Financing Facility (CCFF) provided by the British Government, EasyJet received credit worth \$750 million.*
- *Ryanair which has one of the best financial accounts in the sector announced that it would be objecting to the state aid provided to other airline companies. The company also declared*

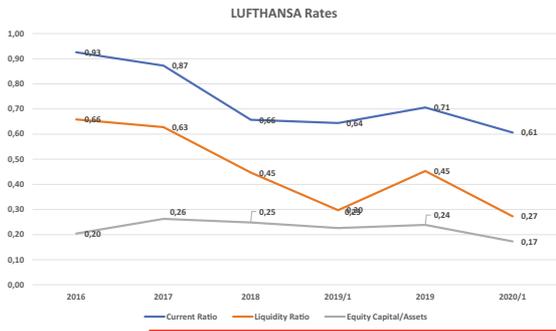
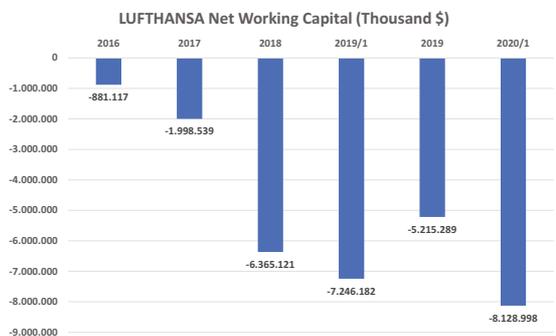
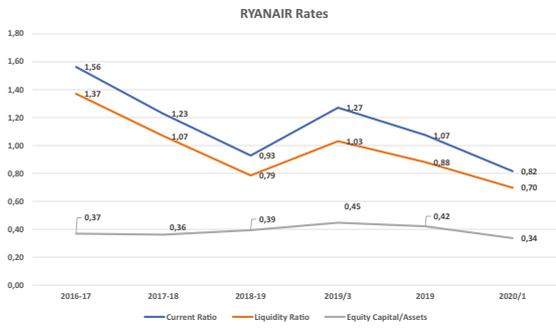
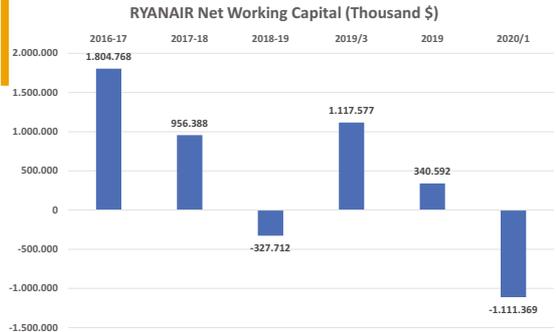
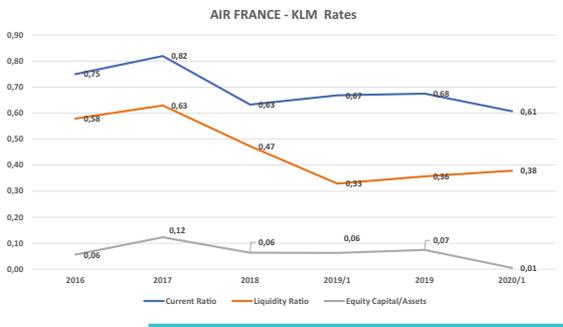
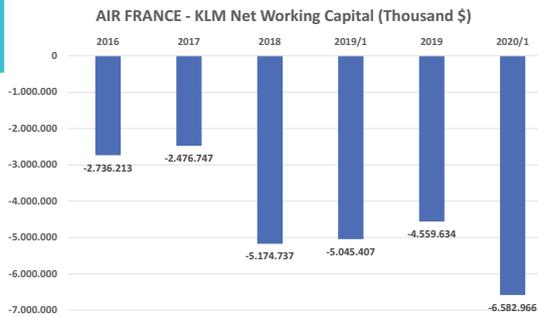
that it would cut up to 3,000 jobs and decrease payments by 20%.

- *56% of Finnair is state-owned and the company decided to launch a €500 million rights offering to rebuild its equity.*
- *American Airlines received \$5.8 billion in payroll support and the company has carried out negotiations for a loan of \$4.75 billion.*
- *SAS airlines received \$ 446 million in support from Sweden, Denmark, and Norway.*
- *By taking over the shares against the liabilities of Norwegian Air, the aircraft leasing companies owned over 50% of the company. Moreover, the company launched a convertible bond issue of NOK 400 million.*
- *Though it received \$5.4 billion from the US Government, Delta Airlines also applied for a loan of \$4.6 billion. The company will be asking for certain flexibilities by also negotiating with creditors.*
- *United Airlines has also been conducting negotiations for additional loan support of \$4.5 billion in addition to the previously granted \$5 billion.*
- *While receiving support of \$600 million, Virgin Atlantic has been endeavoring to obtain certain contributions from its partners.*
- *Cathay Pacific is seeking a contribution of \$5 billion from the government of Hong Kong and its shareholders.*
- *Singapore Airlines has prepared a plan to raise \$6.3 billion under the guidance of its greatest shareholder Temasek Holding which is owned by the Government of Singapore.*

- *The Malaysian Government announced that it has worked on providing \$352 million in aid to three local carriers including Air Asia. Meanwhile, Air Asia has been working on strengthening its financial position by increasing its capital.*
- *International Airlines Group (IAG) incorporating airline companies such as Aer Lingus, British Airways, Iberia, LEVEL and Vueling received credit support of €1.1 billion through aid programs provided by the Spanish Government.*
- *The Thai Government transferred a part of its shares to the Vayupa Fund owned by Krungthai Asset Management as part of the restructuring of Thai Airlines and thus abandoned its majority shareholder position. This has turned Thai Airlines into a business enterprise acting on business decisions instead of political decisions. While there are discussions to nationalize airline companies around the world, the Thai government's decision to reduce its shareholder position to a 'minority' stake is a noteworthy development.*
- *Furthermore, in the US, to protect qualified labor, the Senate has been working on a plan to support the aviation and aerospace industries with a public & private partnership.*
- *It was announced in Turkey that support to the tune of \$30 million would be granted to four tour operators owning airline companies. Certain discounts and postponements in airport payments and rents, as well as income support, postponement of taxes and social security expenses for 6 months have all been implemented.*

FINANCIAL STATEMENT OF THY-PEGASUS-KLM&AIR FRANCE AND RYAN AIR





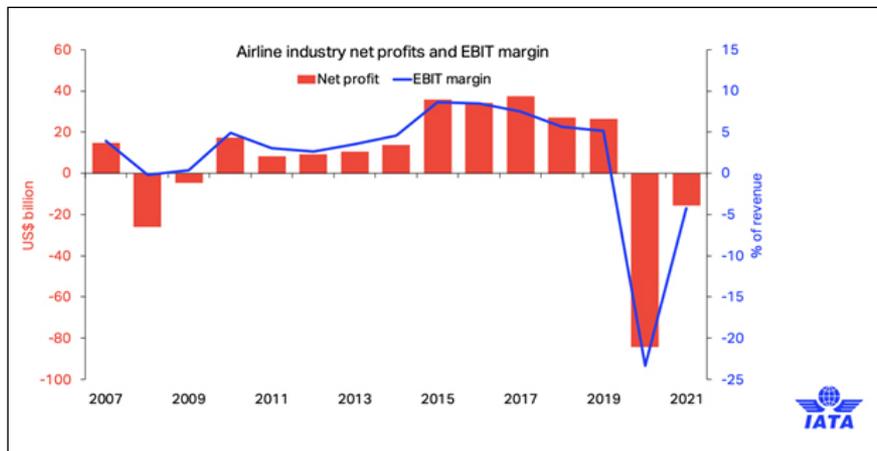
FINANCIAL REVIEW

However, despite all the aforementioned support and loan facilities, aviation companies did not stop reducing their fleet and staff numbers and decreasing salaries. With each passing day, we hear downsizing news in the sector. Without a doubt, certain airline companies will gain an advantage from the opportunity of aid and incentives and will come out ahead of competitors. We will keep an eye on the effects of this situation and observe upcoming activities such as company acquisitions, staff transfers, and investments in the days to come.

The impact of awarded incentives and aid will show whether the companies in Turkey can return to previous positions observed before COVID-19 or to higher level or a diminished level. Whatever the case may be, many companies in the sector will transform and end up holding considerably different positions than before the crisis.

The aid and incentive programs provided both in Turkey and around the world are all focused on airline companies, no efforts have been exerted for other companies in the sector so far.

Though the impact of the crisis have not fully been reflected the financial



data of 2020 Q1, as it can also be seen from the table that a critical increase in the EBIT loss occurred compared to the same period of the previous year. It is not difficult to estimate that the table indicating the change in losses of a few airline companies will become far worse toward the end of the 2nd quarter. In the report published on the profitability of the sector, the IATA forecasts EBIT company margins to drop by the end of 2020 to -23.4% and to -4.2% within 2021.

While the net debt of the airline companies was 4.6 times the EBITDAR

(Earnings before Interest, Taxes, Depreciation, Amortization, and Restructuring or Rent costs) in 2019, according to the IATA, this ratio will increase to 16 in 2021 after the losses experienced / to be experienced due to Covid-19 and it predicts that this debt situation is not sustainable. In other words, we can say that airline companies need about 16 years to cover their debts (if they do not encounter any other problems).

In my previous article 'Financial Impact of Coronavirus on Aviation Industry published in April, 2020, I discussed

the "insufficient financial structures of airline companies." I would like to take a moment again to revisit this topic in more detail by assessing the statement I made with the matrix which I've presented again in this article, based on data of the airline companies.

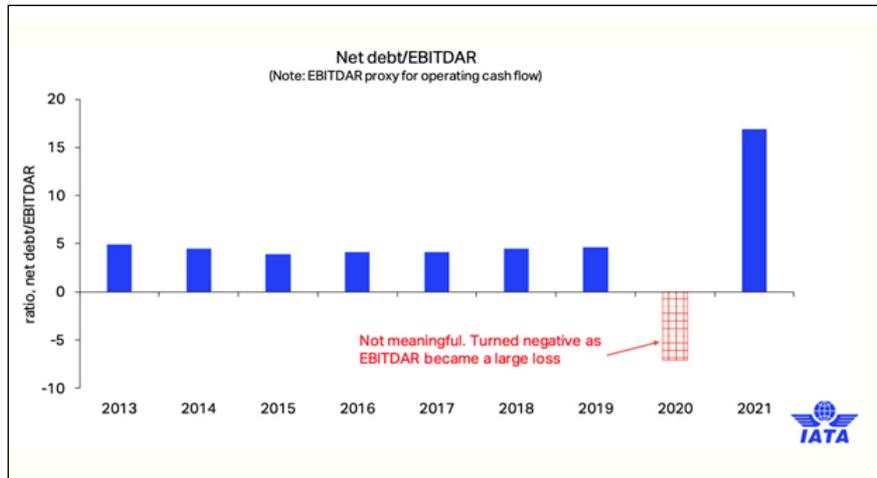
First of all, the key aspects I consider in the financial outlook of airline companies are the status of their financial structures/leverage ratio, the sufficiency of the working capital, and liquidity ratios. The assets of a company could be financed by foreign assets or equities and the rates of

| EBIT (Earning Before Interest and Taxes) | | | |
|--|----------|------------|-------------|
| (Thousand \$) | 2019 | 2020 | Variation % |
| Pegasus | -24.644 | -57.751 | 134% |
| THY | -198.914 | -337.000 | 69% |
| Lufthansa | -400.804 | -2.836.198 | 608% |
| Ryanair | -244.749 | -721.343 | 195% |
| Air France-KLM | -386.209 | -1.682.621 | 336% |

these two demonstrate the strength of the financial structure of the company. Though there is no single rule applicable for all the airline companies in the world, in my opinion, I would expect a company to finance at least 25% of its assets from its equities. According to my analysis, the financial structure of the company weakens as this rate decreases. In other words, a leverage ratio over 75% or the assets of companies are financed by foreign assets, these should also be evaluated as indicators of higher risk.

On the other hand, the availability of a sufficient amount of working capital and the capacity of companies to cover short term liabilities for the continuation of activities are among priority issues. Though they had robust financial structures and sufficient profitability, we witnessed the insolvency and even bankruptcy of many airline companies in the past, due to payment difficulties as a result of insufficient working capital. Therefore, in addition to strong financial structures, I would expect airline companies to have positive net working capital, a current ratio of minimum 1 (though ideally 2), and a liquidity ratio of over 0.50 (in other words acid-test ratio of ideally 1).

The changes in the



financial structure, net working capital, and liquidity ratio of certain airline companies including THY and Pegasus since 2016 are provided in the graphs. When these graphs are examined, the effects of COVID-19 can be clearly observed for the first quarter of 2020. As I mentioned previously, the figures for the second quarter of the year will not be favorable.

Again, the graphics assure that THY and Pegasus clearly have more positive conditions compared to Lufthansa and Air France-KLM. We can observe that the financial status of THY and Ryanair remained well despite the crisis and Pegasus remained strong in the short run in terms of working capital and liquidity. The reason why Lufthansa has been included in the €9 billion aid package after its net working capital went from positive to negative of over \$8 billion is clear. Of

course, the same applies to Air France-KLM.

It is surely not possible to evaluate an airline company or any company over a few percentages and figures; however, I believe that the financial leverage ratio, sufficient working capital, and liquidity position are points to be considered in principle with the evaluation of financial risks.

As part of the steps towards normalization, airline companies have been gradually increasing their flights. The lower oil prices, the discounts availed in personnel costs, the support, and premiums granted by suppliers will be a critical contribution to the activities of airline companies. On the other hand, flexibilities such as the discount unwillingly accepted by suppliers, postponement of receivables during the period where activities

were suspended may be replaced by a stricter approach with the relaunch of flight operations. Moreover, a rise in costs will be inevitable as part of the measures adopted due to COVID-19. The operators wishing to execute operations without any interruptions will have to manage relationships with their suppliers and their cash flow with more caution, discretion and finesse. These are uncharted waters. Besides, with the relaunch of activities, some pressures will emerge for the readjustment of staff salaries and rights towards the level they had been before the COVID-19 pandemic. We will surely hear more about upcoming financial bottlenecks that many companies will face and the myriad of new issues that will arise as the number of flights increases in the second half of the year ☺

**Antalya Airport's
Decisive Actions
Provide Peace of Mind
to Travellers**

TAV
AL

Airport



In this exclusive interview, FRAPORT TAV General Manager Peers Mr. Deniz Varol and Mr. Bilgehan Yilmaz explain the detailed preventative measures implemented to ensure safe travel via Antalya Airport. With the highest of standards and expertise, the entire FRAPORT TAV team awaits passengers and welcomes visitors to stay and enjoy the allure and beauty of Antalya.

Aviation Turkey: First of all, we would like to thank you for your time. Antalya Airport is a critical destination for Charter airlines which constitute an essential part of tourism. What was the share of charter flights and charter airlines in your total yearly traffic in period before the unprecedented era we have been going through? And as an airport operator, how do you evaluate the impact of charter and scheduled airlines over your income table?

Deniz Varol (DV) and Bilgehan Yilmaz (BY): Nearly 95% of international flights are composed of charter flights while the remaining 5% are conducted by scheduled airlines. On the other hand, the domestic air traffic is fully composed of scheduled flights. This breakdown of international



flights does not have a negative impact over the revenue yet still it requires substantial planning and follow-up. Last-minute changes and resource planning requirements are among the most critical problems that need to be solved in such operations.

Our revenues are fixed based on the fees identified by the PPP charges tariff announced by the General Directorate of State Airports Authority. Therefore, the charter / scheduled flights ratio has the same effect over the revenues as well.

Aviation Turkey: What types of changes have been made and which measures have been implemented concerning passengers at the airport in response to the pandemic?

DV & BY: The measures

adopted at Antalya Airport within the scope of the regulations notified by the Directorate General of Civil Aviation start with the mask control at the entrance of the airport and continue with the warning visuals and messages that are reflected over various billboards and digital screens at the entrances of the parking lots and terminal area which are needed in order to grab the attention of travelers, reminding them about the requirements of using masks, maintaining social distance and obeying hygiene rules. At the entrances, passengers who do not wear masks are not allowed inside the terminal buildings, the staff in charge checks the HES codes and the body temperatures of the passengers and staff are checked via the thermal cameras. Lines are drawn

to create social distancing awareness at the terminal entrances and at all potential waiting areas set for our passengers inside the terminal. Hygiene and disinfecting processes are uninterruptedly conducted at all points of the terminals inside Antalya Airport. Automatic sanitizer dispensers have been placed at several points at the airport and all sitting areas inside the airport have been rearranged in line with social distancing rules. Utilization of personal protective equipment by all the staff operating at the airport has been maintained. Visuals on the measures to be adopted against the pandemic were installed at various points across the terminals and audio warnings on precautions are announced on the loudspeaker at certain



intervals. On account of the plexiglass barriers placed at all areas such as the check-in, boarding and passport counters, cash desks of stores, information desks, etc. where the staff conducts face to face communication with our passengers, contacting and the risk of infection have been minimized at Antalya Airport. POS terminals enabling transactions via contactless credit cards to minimize cash transactions have been activated in all stores. The sitting areas in food courts have been rearranged according to social distancing rules and food is served with disposable cutlery, plates, cups, napkins, and spoons. Fresh air is supplied to all terminals by the ventilation systems of Antalya Airport.

✈️ Aviation Turkey: What kind of practices particularly regarding working order, workplace environment, hygiene and cleaning are planned for staff that are in direct contact with passengers in various departments of the airport?

DV & BY: All staff active in the airport have started to utilize personal protective equipment to the extent required by their workplace environment. Plexiglass barriers have been installed where staff directly contact the passengers in order to minimize the risk of infection through minimizing the contact, these are located at numerous points such as the check-in, boarding and passport counters, cash desks of the stores and help desks. Training on

social distancing, hygiene and other measures against the pandemic are being provided to the staff regularly and disinfectants are being provided for the utilization of all staff in the food courts, duty free shops and in all commercial areas. Rest areas and dressing rooms of the staff have been rearranged to comply with social distancing rules, these measures have been implemented into use in a controlled manner. Single-use equipment such as disposable cups, stirrers, etc. are being used during tea and coffee breaks.

Meetings and training sessions have been delayed; compulsory training sessions are being conducted in line with social distancing rules with the minimum number of participants or in the form of distance/remote training while

mandatory meetings are being executed through teleconferences or video conferences. Necessary methods have been identified to keep employees in risk groups away from the office such as the implementation of work-from-home method or compensatory work, allowing annual leaves, short-term working allowance that would protect the employees against the pandemic while also supporting them financially.

✈️ Aviation Turkey: The air quality inside the airport and aircraft is amongst the most discussed topics nowadays. Which actions have been taken to increase the air quality inside the terminals and for sterilization? Will the passengers experience major changes in the ventilation and air



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INTERVIEW

conditioning systems when compared to the process prior to the pandemic?

DV & BY: All air conditioning plants inside our terminals are being operated in a way to provide the circulation of fresh air at the maximum level. The specified maintenance periods of the air conditioning systems have been revised and plans required to increase the frequency of maintenance have been made. All filters within the air conditioning plants have been cleaned and replaced (irrespective of their condition and cleanness) with new ones upon the declaration of the pandemic. All air curtains at the entrances and exits of terminals and hand dryers (located at wet areas) have been deactivated as they operate with internal air.

✈️ Aviation Turkey: Do you plan to launch a special implementation to identify violations of social distancing rules and for intervention in cases of such violations?

DV & BY: We have been welcoming only the passengers to the terminals, and domestic passengers are requested to state their HES Codes and entry to terminals without masks is prohibited. Prior to the security checks, at the entrance of the terminals,

both passengers and staff pass through the thermal cameras to check their body temperatures. The mascot of Fraport TAV Antalya Airport and all staff in charge are warning our passengers to keep social distance.

✈️ Aviation Turkey: Let's take a look at the big picture at the airport. Which item is the most costly as part of the changes made to adapt to the new order after the pandemic?

DV & BY: The highest expenditures have been made for the rearrangement of spaces, warning signs and preventive healthcare equipment required by the measures adopted against COVID-19.

✈️ Aviation Turkey: Have any changes, transformation and innovations, been conducted or accelerated which were previously planned yet could not be launched due to various reasons, during the lengthy pandemic period when operations were suspended?

DV & BY: During this rather long period, corporate training has been provided to our entire staff via virtual platforms. Moreover, the beginning of the season and the suspension of flights coincided. Yet, the activities that needed to be conducted were



completed prior to the travel season. Before the start of the travel season, quarantine and laboratory units were launched rapidly by taking advantage of the period of suspended operations.

✈️ Aviation Turkey: What are your expectations and targets regarding the number of passengers at your airport by the end of 2020 in line with sectoral reports, contacts with airlines and information relayed by the authorities and governments? When comparing numbers to last year, is there a passenger decline limit or number that would indicate that the pandemic process

and changes have been successfully weathered?

DV & BY: We have not identified a specific figure for the time being as the performance of countries play a major role in this regard. The date of the opening of the borders of countries such as Russia and Germany, and the demands of the passengers are quite critical. Declaring a figure would not be appropriate at this time. According to us, a decline of even one passenger compared to last year is considered a failure. Our target is to achieve an increase in the number of arriving passengers. Therefore, our answer to the second part

of your question is that we may declare that we have weathered the storm, and that the effects of the pandemic were bypassed only when have reached our previous figures.

✈️ Aviation Turkey: Are there any incentive packages and conveniences offered to encourage new airlines to operate at your airport after flight restrictions have been lifted?

DV & BY: We are carefully following the requirements of our airlines during the relaunch of air traffic during the pandemic and fulfilling their demands through communicating with them daily. In 2019, our Airport served over 35 million passengers and we are Europe's 12th largest and Turkey's second largest Airport. However, every airline launching its operations at Antalya Airport as of June 2020 is considered to be an airline conducting its first flight to our airport and we support them in every aspect that we can as the Terminal Operator of Antalya Airport. Especially during the relaunch process of traffic, we have been starting off every route by sharing informing with our passengers on a daily basis via all our channels of communication.

Furthermore, within the scope of the support programs we have been

conducting for the last two years as Antalya Airport, we wish to continue to support all the long-haul flights and the flights to be conducted during the IATA winter season. Taking the great mass of travelers impatient for a journey and the relaunch of traffic in 2020 into consideration, we project that the summer season of 2020 will be extended. Therefore, we envisage that many flights that are expected to be conducted particularly in November will benefit from our winter incentives.

✈️ Aviation Turkey: Accompanied by a light show and theatrical smoke, DJ Burak Yeter recently gave a concert in front of a passenger airplane at Antalya Airport as part of the 'Stay with music in nature, Dream of Antalya' project. The images from this project and performance will be used in the introductory film on Antalya which will be broadcasted across the globe. As Fraport TAV, you have been taking part in various projects that contribute to the promotion of the city and our country. Could you inform us on your mission and your activities on the marketing of this city and our country in foreign countries?

DV & BY: Fraport TAV Antalya Airport is highly



pleased to support projects that promote Turkey and Antalya in particular. With DJ Burak Yeter and the Antalya Promotion Foundation, we were able to execute a very nice concert and video shooting at the apron of Antalya Airport in recent weeks within the scope of the 'Stay with music in nature, Dream of Antalya' project. As you also mentioned, this introductory film is will be used to show the whole world the beauties of Antalya, displaying the measures adopted and reassuring the globe that Antalya is a safe destination.

Other than that, we are the main sponsor of the Ironman 70.3 Turkey (a

triathlon race) that brings thousands of domestic and international racers to Antalya and the Runatolia Marathon also bringing thousands of racers to the city. We have been displaying visuals over various billboards, digital screens, our website and our social media accounts in order to support the year of Aspendos last year and the year of Patara this year.

In addition to sports events, we have been supporting many cultural events such as the International Antalya Film Festival, Antalya Piano Festival, International Aspendos Opera and Ballet Festival.

✈️ Aviation Turkey: Thank you



Air Cargo Becomes a Lifeline for Global Trade

by Muhammed Yilmaz

Under pre-pandemic circumstances, airline companies transported large volumes of freight in the cargo compartments of aircraft while conducting passenger flights. This was one of the easiest methods for airline companies to boost their bottom line, earning extra revenue. With the outbreak of the pandemic the aviation industry took a swift and deep slice to the jugular, immediately the impact was felt across the globe.

Air Cargo is an important part of the global supply chain and airlines all around the world suddenly cancelled their flights to a large extent

and grounded all the aircraft in their fleet. This meant a financial crisis for the airlines and it was like a nightmare for global trade and logistics networks in terms of sustainability. Grasping at a chance for survival airlines started to compete for cargo transportation with passenger aircraft to minimize the negative impact of the painful process, because cargo transportation suddenly turned out to be the only source of income for many airline companies. Unlike most traditional side income, it is completely independent of passenger demand, and the demand for cargo transportation has not been

affected by social distancing rules or other health-related restrictions that have drastically impacted demand for passenger transportation. Airlines that were generating almost no income due to the lack of passenger flights found a solution by carrying cargo with passenger aircraft to overcome the liquidity crisis.

However, another important point is Air Cargo's role in logistic activities carried out across the world and, accordingly, in ensuring the continuity of global trade. According to IATA reports While passenger aircraft in Asia constitute around 45% of air cargo

capacity, this rate can go up to 80% on transatlantic routes. Nearly half of the total air cargo capacity throughout the world, from electronic products to seafood, is carried in the freight compartments of passenger aircraft, right next to the passenger baggage compartment.

Who has managed to turn this crisis into an opportunity?

The halt of passenger flights due to the pandemic created an extraordinary capacity issue for cargo transportation and consequently affected



global trade severely. Therefore, air freight companies have taken their place amongst the few winners of this unprecedented pandemic. Compared to the pre-pandemic period, air cargo carriers increased transportation fees by an average of 30%, Brandon Fried (Executive Director of the Air Forwarders Association, who coordinates the shipment of goods on passenger jets) says the prices have even quadrupled in some cases.

However, the number of cargo aircraft was insufficient to ensure the continuity of global logistics activities. Airlines almost generating no income due to the lack of passenger flights found the solution to carry cargo with passenger aircraft in order to overcome the liquidity crisis.

The resulting picture creates a complete win-win situation. It leads to a slight improvement in the global

economy, global trade is not interrupted as much as it would have been otherwise, and it provides liquidity to the airlines so that they can heave a small sigh of relief during the crisis.

If we take a look at the revenue breakdown of airlines under normal circumstances, the ratio of the revenue obtained from first class of total revenue is 4%, business class is 16% and the revenue from cargo carried on passenger flights is 12% according to Air Carrier Traffic Statistics from US Civil Aeronautics Board.

Last year, airline revenue throughout the world from belly cargo was recorded at US\$ 2.8 billion. However, Shawn Cole (Delta Vice President of Cargo) announced in April that 55% of Delta's total revenue was derived from cargo transportation. This is a clear indication of why airlines became so enthusiastic about taking

advantage of providing cargo transportation.

According to the IATA Cargo Reports all North American airlines combined, only 3% to 5% of the total revenue came from cargo transportation in 2019, while it exceeded 10% for European airlines. For airlines in the Middle East, it varies between 15% and 25% and for Asian carriers it is over 20%.

During the pandemic, while some airlines chose to place cargo on the seats in the passenger cabin and hence increase the cargo capacity, some others preferred to remove the seats in order to use the cabin much more efficiently. Some companies have launched various solutions with innovative products and projects, which allow for the transformation of passenger cabins into cargo cabins to increase the cargo transportation capacity. In other words, the crisis and difficulties encountered have become an opportunity for some, as always, and have created new business areas and projects.

Why is it difficult to transport cargo with passenger aircraft?

One of the main differences between passenger aircraft and cargo jets is that passenger aircraft do not have large door that are specifically designed to facilitate cargo loading and unloading. In this respect, it is a huge challenge for airlines carrying cargo in passenger cabins to take in large-size cargoes from the narrow passenger door.

Another key difference between passenger and cargo jets is that they do not have the same type of fire detection systems. For this reason, airlines carrying cargo in the passenger cabin are required to have a crew in the cabin in order to respond in case of fire or other unexpected problems early.

Air cargo transport in figures during the pandemic

Commercial flights decreased by 74% globally in April 2020, compared to April 2019. 16 thousand aircraft, corresponding to 55% of total commercial passenger aircraft worldwide were grounded. This resulted in a 45% decline in global cargo capacity compared to April 2019.

AIR CARGO

| CARGO* (metric tonnes) | | | | | |
|------------------------|-------------------------|------------|-----------|-----------|----------|
| | Airport | 2019 total | Q1 2020 | Q1 2019 | % change |
| 1 | HONG KONG, HK (HKG) | 4 809 485 | 988 000 | 1 108 833 | -10.9 |
| 2 | MEMPHIS TN, US (MEM) | 4 322 740 | 1 030 854 | 1 106 420 | -6.8 |
| 3 | SHANGHAI, CN (PVG) | 3 634 230 | 743 923 | 804 917 | -7.6 |
| 4 | LOUISVILLE KY, US (SDF) | 2 790 109 | 628 942 | 615 411 | 2.2 |
| 5 | INCHEON, KR (ICN) | 2 764 369 | 664 889 | 648 956 | 2.5 |
| TOP 5 | | 18 320 933 | 4 056 608 | 4 284 537 | -5.3 |

| PASSENGER* TRAFFIC | | | | | |
|--------------------|--------------------------|-------------|------------|-------------|----------|
| | Airport | 2019 total | Q1 2020 | Q1 2019 | % change |
| 1 | ATLANTA GA, US (ATL) | 110 531 300 | 20 713 627 | 25 323 100 | -18.2 |
| 2 | BEIJING, CN (PEK) | 100 011 438 | 9 327 109 | 24 919 145 | -62.6 |
| 3 | LOS ANGELES CA, US (LAX) | 88 068 013 | 15 787 322 | 20 166 875 | -21.7 |
| 4 | DUBAI, AE (DXB) | 86 396 757 | 17 823 446 | 22 239 367 | -19.9 |
| 5 | TOKYO, JP (HND) | 85 505 054 | 15 064 577 | 21 081 248 | -28.5 |
| TOP 5 | | 470 512 562 | 78 716 081 | 113 729 735 | -30.8 |

As of January 2020, Airports Council International (ACI), which is an organization serving 1,979 airports in 176 countries, issued a report and compared the passenger traffic, cargo volume and aircraft movement figures of 2019 with those in the first quarter of 2020. The dramatic impact of COVID-19 on airports is clearly revealed.

ACI World estimates a reduction of more than 4.6 billion passengers and a loss of more than US\$97 billion in revenue for 2020.

Comparing 2019 and 2020 data illustrates the dramatic decline in air travel in the first quarter of 2020. In the top five, Beijing Airport notably experienced a 62.6% decline in passenger traffic, but large decreases were also recorded across the other top 20 airports in the Asia-Pacific region as the COVID-19 outbreak began to take hold in that region.

As for cargo, against a global economic backdrop that has remained quite challenging, air cargo volume experienced a decline of 3.9% at the world's top 20 airports as they handled a combined 48 million metric tons of cargo. Hong Kong Airport remains the largest air cargo hub, handling 4.8 million metric tons of cargo in 2019, but it experienced a decline in volume of 6.1% compared to 2018. Memphis Airport came in second place on the list and Shanghai Airport came in third.

All three experienced considerable declines in the first quarter of 2020 while Louisville Airport and

Incheon recorded growth in cargo during the first stages of the COVID-19 outbreak.

Air cargo is a trade facilitator that contributes to global economic development and creates millions of jobs. Air cargo transports over US\$6 trillion worth of goods, accounting for approximately 35% of world trade by value.

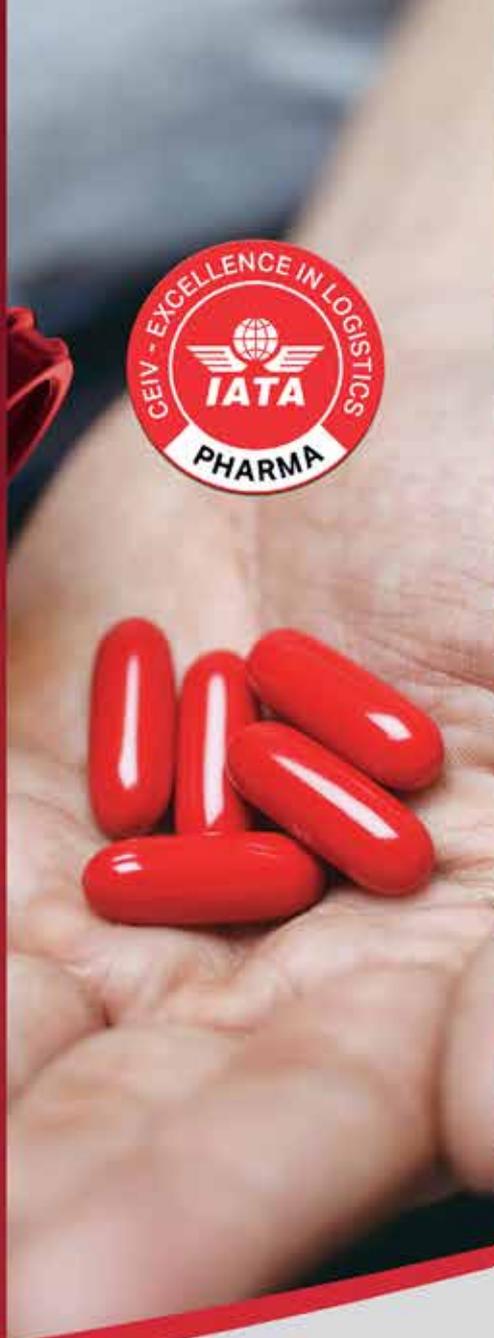
The activities performed in the field of air cargo transport have also accelerated in Turkey recently.

Ranking 8th in the International Air Transport Association's (IATA) Freight Ton Kilometers (FTK)

program in 2019, Turkish Cargo rose to 5th place in February, when the global air cargo industry shrank by 2.6%, and its global FTK market share reached 4.4%. Having the 6th largest air cargo carrying capacity in the world, Turkish Cargo became the first air cargo airline to concurrently achieve all three CEIV Pharma, CEIV Fresh and CEIV Live Animals certifications, under the IATA CEIV (Center of Excellence for Independent Validators) program.

Cargo transportation activities at Istanbul Airport have continued uninterrupted during the pandemic. The capacity of Istanbul Airport Cargo City, the construction of which is still ongoing, is 1.5 million tons. This capacity will reach 5.5 million tons in the coming years. If the decision makers define air cargo transport as a strategic priority, it seems that the economic added value created by forming a critical flexible framework for airlines and airports in the foreseeable future will reach much higher levels 🌐





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Collins Aerospace Targets Restoring Traveler Confidence

Jay Little, Vice President Customer & Account Management, Turkey, Middle East and Africa, Collins Aerospace discusses how the company is partnering with airlines, airports, and regulatory authorities to turn ideas into reality, to regain customer confidence in airline travel once again. Following the Successful Collins Aerospace integration, with better than anticipated cost and revenue synergies, and new offerings that harness capabilities across the whole organization, being part of Raytheon Technologies presents exciting opportunities for Collins Aerospace and their customers. With combined talent, complementary technologies, and financial and

operational strength, the company is actively engaged in innovation and providing best-in-class products and support.

✈️ Aviation Turkey: How would you best describe Collins Aerospace, a unit of Raytheon Technologies Corp. today? Could you please provide some key facts about the company for our readers?

Jay Little: Collins Aerospace, a unit of Raytheon Technologies Corp., is a leader in technologically advanced and intelligent solutions for the global aerospace and defense industry. Created in 2018 by bringing together UTC Aerospace Systems and Rockwell Collins, Collins Aerospace has the capabilities, comprehensive portfolio and expertise to solve customers' toughest

challenges and to meet the demands of a rapidly evolving global market.

Today, we hold key positions – avionics to landing gear, nacelles to cabin seating, fuel systems to connectivity and much more – on nearly every aircraft flying today and substantial content on various UAVs, satellites and ground and maritime vehicles. About 60 million messages travel across our secure global air and ground network every day, enhancing communication, efficiency and safety for airlines, pilots, flight crew and more. Our communications systems transmit nearly 70 percent of U.S. and allied military airborne communication. And our pioneering innovations – from space suits to GPS, Wi-fi to synthetic vision, propellers to propulsion – have helped define our industry

and the greater world for generations.

Collins employs more than 78,000 people in nearly 300 locations worldwide and generates annual sales of ~\$26 billion (2019 pro-forma).

Our portfolio of product and services includes aerostructures, mechanical systems, interior systems, avionics, mission systems and power and controls systems, as well as aftermarket services.

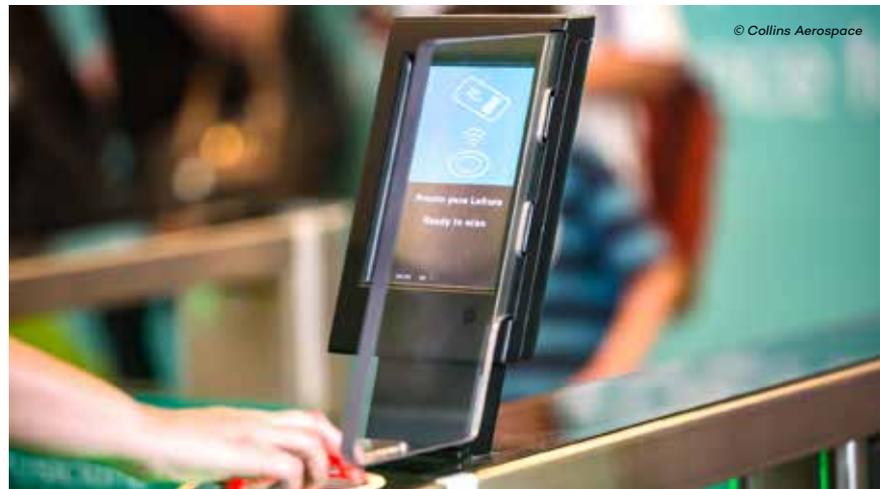
✈️ Aviation Turkey: On April 3, 2020 Raytheon Technologies Corporation announced the successful completion of the all-stock merger of equal transactions between Raytheon Company and United Technologies Corporation. After this merger Collins Aerospace Systems, which specializes in aerostructures, avionics,

interiors, mechanical systems, mission systems and power controls that serve customers across the commercial, regional, business aviation and military sectors, has become one of Raytheon Technologies Corp.'s four market-leading segments focused on high-priority areas for customers. Can you elaborate on the effects/impacts and benefits of this merger from Collins Aerospace's point of view?

Jay Little: Raytheon Company and United Technologies Corporation's aerospace businesses have combined to form Raytheon Technologies, a global aerospace and defense company that provides advanced systems and services for commercial, military and government customers worldwide.

Raytheon Technologies comprises four industry-leading businesses – Collins Aerospace Systems, Pratt & Whitney, Raytheon Intelligence & Space, and Raytheon Missiles & Defense. Its 195,000 employees around the world enable the company to deliver advanced solutions that meet the ever-changing demands of air travel, global safety and security, and preparedness.

Being part of Raytheon Technologies presents exciting opportunities for Collins Aerospace and our customers. Our combined



talent, complementary technologies, and financial and operational strength as one company further enables us to innovate and provide best-in-class products and support.

✈️ Aviation Turkey: Could you give us an overview of Collins Aerospace's 2019 results and could you elaborate on your targets for 2020?

Jay Little: 2019 was a tremendous success for the Collins Aerospace integration, with better than anticipated cost and revenue synergies, and new offerings that harness capabilities across the whole organization. Our broad product portfolio knowledge and expanded capabilities enables us to think differently when we develop solutions for our customers. Our focus was to design and integrate new solutions that bring operational efficiencies and reduced costs to the airlines.

We were proudly redefining aerospace. But it was before the COVID-19 crisis...

Now looking ahead, we have a new mission with one bold objective: restoring customer confidence in flying.

Collins is prepared to lead the way when it comes to revolutionizing the entire passenger experience – from the moment a passenger arrives at the airport – to when they land and pick up their bags. We're pulling together the capabilities and innovative work we do across Collins to make this happen. And we're partnering with airlines, airports and regulatory authorities to turn our ideas into reality and to do it quickly.

We'll continue to build on all our capabilities. We have the right people, the right solutions and the right mindset to meet these challenges head-on to earn the trust of our customers.

✈️ Aviation Turkey: The COVID-19 pandemic has caused radical changes in business as well as in our daily lives. Could you inform our readers on the measures you have adopted to minimize the effects of the COVID-19 pandemic on your business activities and what are implementations and activities are ongoing at the time?

Jay Little: The Aerospace industry is indeed facing unprecedented business conditions due to the impact of COVID-19. As a global company, we are actively monitoring the progression of the Covid-19 virus. The health and wellbeing of our employees, and their families, remains our top priority. We have aggressively instituted numerous precautionary health and safety measures for our workforce. This includes travel restrictions, self-quarantine procedures,



employee social distancing, remote and flexible work schedules, enhanced paid leave, and continuous and comprehensive deep cleaning and disinfecting of our manufacturing facilities and offices.

Current business conditions require also Collins Aerospace to review its business plans and implement measures to control costs.

✈️ Aviation Turkey: Collins Aerospace has a strong global presence, with operations at over 300 sites worldwide. Have there been any setbacks or delays in the projects and activities that are executed at your companies and offices

abroad due to the COVID-19 outbreak?

Jay Little: Early on, our biggest concern was—and still is—addressing the impact to our employees, especially when it comes to their health and well-being. Half of our employees are working in our sites around the world and we're committed to ensuring they are working in a safe environment. Additionally, almost half of our workforce is working from home, which we enabled by increasing network bandwidth and giving our teams the resources, they need to stay connected in a remote environment.

Right now, our focus is understanding what to expect in terms of recovery. We have teams across our organization focused on this right now. We know the aviation industry is going to look very different when this health crisis is contained—and we will continue to stay in constant contact with our customers to make sure we are providing them with the solutions and guidance they need in order to get our industry back on its feet.

✈️ Aviation Turkey: Are there any changes in Collins Aerospace's operational plans for 2020 due to

this unprecedented pandemic? Considering that potential markets/customers are also affected by the COVID-19 outbreak, will the Company be updating turnover and export targets/figures set for 2020?

Jay Little: The short answer is 'yes.' Approximately 75% of our business is tied to commercial aviation, which as we all know has been severely impacted. Going into 2020, I don't think anyone envisioned the challenges we're experiencing right now, so we've had to quickly adapt. This means realigning our business with the level of business we're seeing from our customers, as well as



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looking at what we can do as a company to help restore confidence in air travel so we can help get the economy going again.

✈️ Aviation Turkey: What are the major programs, both domestic and international, that Collins Aerospace is currently involved in civil/commercial aviation?

Jay Little: Our main focus after this unprecedented crisis is to restore customer confidence in flying. We've established a cross-functional task force within Collins Aerospace to look at what we can do to get people more confident about returning to flight. We're spending a



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lot of time talking to our customers and industry partners about what it's going to take to make this happen. We're looking at ideas on the aircraft such as air handling, touchless lavatories and sanitizing. But first, one of the areas where we can make an immediate impact – is actually off the aircraft. It's creating a truly touchless airport experience.

✈️ Aviation Turkey: The COVID-19 pandemic caused worldwide travel restrictions and flight bans, which are likely to continue for some time, and led to catastrophic losses in commercial aviation. According to research by the end of April 2020, commercial flights worldwide had decreased around 75% compared with the same period the previous year. Can you elaborate on Collins Aerospace's role that you can or are already playing in the battle against the COVID-19 pandemic in the field of commercial aviation?

Jay Little: The airport and airline industries have never dealt with a situation quite like the one we are

seeing today. Not only are people currently not encouraged to travel, but it's estimated that many people will choose not to travel once things are reopened for fear of getting sick.

With once normal actions – such as shaking hands, having another person handle your documents, or touching items in high traffic areas – now deemed as “risky,” passengers will be looking at companies to provide options for a “contactless” airport experience.

Today, we work closely with airports and airlines to develop cost-effective, and time-saving technologies that facilitate nearly every aspect of the customer journey through the airport.

In a post-COVID 19 world, where social distancing and increased sanitation measures are crucial, Collins Aerospace is working with customers to implement near and long-term solutions that will keep passengers, airline and airport personnel well and help the industry recover while maintaining an efficient and secure passenger processing flow.

✈️ Aviation Turkey: Starting from June domestic flights and some of international flights have resumed however passengers are reluctant to use airplanes in their travel. It is clear that passenger confidence needs to be restored before we'll see an increase the use of airplanes in travel, this is essential in accelerating the recovery of the commercial aviation sector. Creating a contactless journey is a key factor. Can you elaborate Collins Aerospace's solutions and existing technology that assure a contactless journey in civil/commercial flights?

Jay Little: Across the entire Collins organization, we already have many systems in place that help enable social distancing, aircraft and airport environments and reduce interaction through touch like self service solutions for check-in, baggage processing and baggage drops, security checkpoints, lounge access, self-boarding gates 🗳️



How COVID-19 has Changed Air Travel?

by Muhammed Yilmaz

The Aviation industry is among the sectors most affected by social problems and major crises. These types of incidents have always paved the way for the change and for the implementation of these rules and regulations in the sector. The detailed X-Ray checks and the higher level of security were included in standard implementations that became compulsory in aviation in the wake of 9/11 attacks. The background of many procedures that are presently considered 'normal' during our travel experience is based on a variety of real life, and life changing experiences.

The COVID-19 pandemic has affected the humans on a global scale, and it was

also expected to radically change all processes throughout the course of air travel, and everyone anticipated that nothing would be the same on flights post- pandemic. This thesis started to justify itself especially after signs of revival in the sector that emerged during the second half of May.

The innovation that welcomes us from the very moment we step into the airport covers all processes involved in our journey from the point of our arrival to the moment that we leave the airport at our destination. While some of these new processes that have been implemented at airports and on flights will be temporary, some will be

permanent and will remain within the new norms of aviation.

New implementations starting at the gate of the airport

At your first flight, you will have to say goodbye to your families and friends coming to send you off at the terminal gate. From now on, only the passengers and airport staff will be occupied at the airport terminals. If you plan to make a domestic line travel in Turkey, you will also have to personally submit your 'Life at Home' (HES) code even before you enter the terminal gate.

You most probably wear a mask if you use public transportation to get to the airport. But if you come to the airport with your own car or exclusive airport transfer, then be prepared to wear your mask from the moment you step into the terminal. Wearing a mask is enforced at all stages of travel until you arrive at your destination and leave the airport. In order to hinder the virus from entering into the airport, passengers must now walk over a "mat with special disinfectant" which cleanses the shoe soles of anyone entering the airport. It is located at the entrance of terminals at many airports all over the world. You are then allowed to enter the terminal following



security control by X-Ray devices with increased level of accuracy. The aim here is to enable the security guards to have less contact with the passengers. Except in extraordinary cases, the pat-down search that was applied by security staff to passengers apparently has ended for the most part, with the pandemic. Utmost importance is placed on the implementation of the social distancing rule in security checkpoint lines. When passing through the x-ray devices, the boxes that we put our personal items in are now disinfected prior to the utilization of the next customer, either manually by the staff or automatically by ultraviolet systems.

Terminals becoming more technologized

During the pandemic, the requirement to drop-off our luggage and take our boarding pass from the counters will be minimized as much as possible. Many airports have implemented automated processes to prevent physical contact between staff and passengers. The printing of a hardcopy boarding pass has been eliminated at many airports or reduced to the maximum extent. A brand-new process (a paperless process) has been initiated, where the passengers will scan their boarding pass with their smart phones or devices

and drop-off their luggage mostly by themselves to automatic drop-off points. A transparent/plexiglass shield and separator has been placed between passengers and staff for special cases where transactions need to be conducted directly with the counter staff. Personal protective gears such as masks, gloves, plexiglass transparent face shields, hair restraints and aprons are being used by all staff including the security guards that are in direct contact with passengers. It is possible to announce the start of a new process where all screens touched by passengers are sterilized at airports via workers wiping it where transactions are conducted through automatic devices.

Passengers are now expected to arrive at the airport even earlier as the new safety and security processes take longer to get through than before the pandemic. For the upcoming days where air traffic is expected to become denser, experts advise passengers to arrive at the airport 2 hours earlier than their domestic flights and 4 hours prior to their international flights.

Warning signs and notices are placed at airports to expand passenger awareness of the need to constantly adhere to social distancing rules and floors are marked to show passengers where they should be standing while they wait in lines. Loudspeaker

announcements are made at regular intervals to remind passengers of these points. A portion of the seats in airports and passenger waiting areas have been marked to warn passengers not to sit on them. Passengers ignoring such marks or rules at certain airports are warned by the related staff, as these areas are being constantly monitored by cameras. Body temperatures of passengers are screened by thermal cameras located at multiple points of the terminal until the passengers reach their airplanes to prevent passengers with a high fever from boarding the airplane. The thermal camera implementation at the Istanbul Airport is slightly different. With advances in new high-tech systems, body temperatures are measured by thermal cameras installed over a specialized protective helmet. The body temperatures of passengers are being measured with these thermal cameras installed over the helmets of staff that are stationed at the entrance of the terminal.

Sterilization tunnels are planned to be launched at certain developed airports, to sterilize the clothes of passengers as they pass through the tunnel. Baggage also goes through a similar sterilization tunnel and then is embarked on the plane. At these types of airports, tags are being used to show that the baggage has been sterilized.

TRAVEL

New arrangements based on social distancing have been launched in airport food and beverage areas as well. Products are being sold in disposable packages and menus have been digitalized. The digital devices are disinfected following every order.

One of the biggest concerns of passengers regarding air travel now is the quality of the air in the aircraft and whether the ventilation and air condition systems prevent the spread of the virus. At many airports, Istanbul Airport in particular, one hundred percent fresh air is being pumped into the terminal, since day one. Moreover, the maintenance process of air-conditioners inside the terminals has been changed. The fresh air-cycle has been increased to maximum levels, supporting an improved environment with plants and improved hygiene standards.

New implementations for boarding and de-boarding

With the pandemic, passport checks, the boarding process and many other practices have become increasingly technological with the assistance of biometrical systems. The number of passenger transactions that can be completed



with the use of facial and iris recognition systems increases each day.

Passengers are constantly being reminded of the social distancing rules and long queues at the gates are being prevented. New rules have been launched to minimize contact that passengers may have with each other during the boarding. A vast number of airlines have started to boarding from the back seats first so that the chances for passenger contact are minimized. De-boarding follows suit and is starts from the front seats towards the back seats to minimize physical contact of passengers.

During the boarding and de-boarding, passenger contact with the cabin crew is being minimized as well. Flight attendants and pilots have to wear masks and gloves in flight just like the passengers. We come across certain practices where the flight attendants of some airlines wear face

shields and protective gear. Mobility inside the airplane is minimized. The utilization of the lavatory may be restricted if required. The lavatories are sterilized in pursuit of each usage. In-depth cleaning and sterilization of airplanes is conducted more frequently now than the period before the pandemic.

One of the most critical new practices to be conducted is the completion of passenger information forms at international flights. These forms are filled out by all passengers and submitted to the pursers onboard. These forms are handed over to the health officers after the flight so that effective inspection of passengers can be conducted.

No more carry-ons and limited catering services

Many airlines announced that they would be

completely discontinuing catering services particularly during short flights and the catering services on long-haul flights have been simplified to enable quick consumption. All snacks offered are wrapped and being offered in closed packages. Turkish Airlines also took a similar step and the company has only been offering water during all domestic flights and international flights that are shorter than 2 hours. Moreover, Turkish Airlines ended their "Flying Chef" services as well. The company launched the practice to assign one of the flight attendants as the 'hygiene expert' on each flight. Many airline companies, including Turkish Airlines, are distributing hygiene sets to all passengers prior to the flight and numerous airline companies have included masks and disinfectant liquids in the amenity kits distributed during long flights.

Carry-on baggage

allowance is facing significant restrictions compared to the period before the outbreak of the pandemic. For instance, male passengers are allowed to carry laptop cases and briefcases, female passengers are allowed to bring small-sized personal handbags and passengers with children will be able to take bags containing the basic requirements of the child. As part of this new implementation launched for preventing the spread of the virus and for minimizing the contact, all things except for the aforementioned items are treated as hold baggage.

Reserving the seats in the last 3 rows at the far end of the cabin for passengers that COVID-19-like symptoms has been a topic on the agenda for a long time. The executives of Pegasus Airlines announced that they have adopted measures for such cases by not selling the seats in the back rows. Another point that had been under discussion for quite a long while was the practice of leaving the middle seats empty. However, claiming that it would not effectively contribute to the social distancing rule and would increase costs, this suggestion was rejected. If the number of passengers is few, the seats are distributed in consideration of social



distancing, but it is understood that as seat occupancy rates increase, all passengers will have to sit next to each other and adhere to guidelines regarding individual safety measures to protect themselves against infection.

Upon arrival at your destination, you will see that many airports worldwide have adopted the use of smart technology as well. The body temperatures of passengers are being measured by thermal cameras, and some airports are even administering on-site rapid COVID-19 tests to passengers. There are discussions on the

identification of the persons to be tested, how the testing cost would be collected and what the passengers would do, and where they would physically wait for the test results to come in. In line with the decree adopted by Turkey's Directorate General of Civil Aviation, passengers with symptoms, after a basic examination and measurement of body temperature, will be subject to COVID-19 tests at all airports in Turkey. Passengers with positive test results will not be deported, instead they will be treated. There is an expectation that in the future, passengers may be forced to carry a COVID-19 card similar to

vaccination cards. These cards will be controlled if deemed necessary and passengers will be asked at the arrival airport to declare the addresses they will be going to, such as the location of their accommodations. A process will be enabled for the rapid quarantine of people who have been in contact with an infected passenger. Furthermore, there are also plans on the table being discussed for passengers to provide proof of compulsory travel insurance prior to the flight.

We will be able to unite with our loved ones and those waiting to welcome us, outside the terminal building at the airport 🌐





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Passenger Rights During the COVID-19 Pandemic: Passengers Suffer from Flight Cancellations / Delays!

The World Health Organization's official announcement of the global COVID-19 Pandemic on March 11, 2020 has created major fluctuations in economic and commercial activities and in all aspects of life in general. The air transport sector was on the top of the list of sectors most severely affected by the pandemic. Rapid spread of the outbreak across the world and the fact that countries closed their air and land borders to try to protect their citizens caused cancellations in almost all domestic and international flights and plunged the aviation industry into an unprecedented crisis. Hundreds of aircraft were grounded, left in stationary positions while the vast airline networks that were built with great effort quickly collapsed, resulting in the loss of millions of US dollars. The spread of the virus across the globe prompted widespread flight cancellations, unpaid leave and layoffs in the civil air transport industry. Concepts established after much effort and lengthy processes such as passenger rights started to become invalidated one by one.

During normal times, around 11 million people and 140,000 tons of cargo traveled by air every day. The

skies above Europe's largest airport hubs have not been so clear and empty since 9/11 and the volcanic ash cloud in April 2010 from the eruptions of Eyjafjallajökull, Iceland. Aircraft have all but vanished from the sky as one third of humanity is now under lockdown.

Business trips and weekend getaways are already distant memories now that our homes are our prisons. The 1-meter social distancing rule has made high density cabin configurations and cramped economy seats inconceivable. Visa free travel and last-minute deals have been replaced by closed borders, travel bans and massive repatriation operations by States.

Aviation is now living through its darkest hours fighting against an invisible enemy. Maybe people will be afraid to fly until a vaccine or cure is found. Maybe we will see a pandemic of airline bankruptcies. Maybe the coronavirus will speed up the consolidation of the European aviation market. We do not know yet, time will tell.

The storm will eventually pass, and the air transport sector will emerge into a different world. One thing is certain, aviation will forever remain the business of freedom and will be vital to reconnecting businesses, people and cultures across continents.

Upon the decrease in the impacts of the pandemic and the lifting of travel bans as part of the process of returning to the new normal, aviation businesses and states announced that flights will be executed in accordance with various algorithms and specific flight plans. Still, the new type coronavirus spreads quite rapidly through respiration, and numerous passengers are often close to each other at airports and travel next to each other inside the aircraft. All these aforementioned factors lie in the way of solving the problem, and despite all the measures adopted, the framework of passenger rights in cases of potential contamination during air travel will create additional problems. Civil aviation authorities of countries and airline companies as well as airport operators continue to publicly share a series of measures that are adopted for the protection of passengers and flight crews. Then again, the extent of the effectiveness of these measures is still a huge mystery.

Even though the issue has many aspects that need to be examined, the first and most critical dimension are Passenger Rights. Article 6 of the "Regulation on Air Passenger Rights" (SHY-Yolcu) promulgated by the Directorate General of Civil Aviation regulates flight cancellations. According to

this regulation, passengers shall have the right for compensation in the event that the passengers are not informed of the cancellation by the air transport operator at least two weeks before the planned departure time. Also, the burden of proof regarding whether passengers are informed of the cancellation and when they are informed shall be on the part of the airline company conducting the flight. On the other hand, the airline company shall have no liability in the event that passenger contact information is not provided or provided incorrectly to the operator despite the request of the operator. If the airline company conducting the flight takes all the possible precautions and in cases where it can prove that force majeure causes the cancellation, it shall not be liable to pay any compensation. These rules were applicable in normal conditions and it was based on Regulation (EU) 261/2004.

The cancellation of flights and relevant decisions that followed due to the epidemic categorized as a pandemic by the World Health Organization (WHO) as part of the measures adopted for preventing the spread of the virus created a brand-new rule. In the event of impossibility of performance due to force majeure, the parties shall not be able to ask for any compensation.

If the cancellation of a flight was due to force majeure, the obligation of notification within the periods stipulated by the regulation would not be applicable and the airline company would only have to return the ticket price to the passenger. In such cases, when it does not make any sense to complete the undone part or parts of the travel and the travel planned by the passenger, paying all of the ticket price over the price on which the ticket is purchased in cash, via electronic remittance, bank payment orders or banker checks or with the passenger's written consent, refunding via travel vouchers for the undone part or parts of the travel within maximum seven days; moreover, providing a free return flight which would allow the passenger to return to the first point of origin at the earliest opportunity is essential.

The aforementioned information on the passengers' rights to compensation and in cases where airline companies are forced to cancel their flights due to force majeure, are applicable under normal circumstances. However, measures specific to the coronavirus pandemic had to be adopted while new relevant regulations needed to be issued. A provisional clause was included in the Regulation on Air Passenger Rights with Turkey's Grand National Assembly's Regulation No 31709 that became effective on March 25, 2020. As per this clause, in the event of flight cancellations, the airline companies shall be exempt

from any compensation obligations and passengers' demands related to their rights of choice until 2 months after the lift of the flight bans. For instance, if the flight on 12.03.2020 was cancelled and the flight ban was lifted on 12.06.2020, the airline companies would be exempt from their liabilities until 06.08.2020.

Turkey started to refund the tickets without applying any penalty deductions to passengers within two months upon the launch of domestic and international flights. Though this two-month period approach was not implemented by the US, Canada and EU countries, these countries issued vouchers to passengers without their consent, and thus created unjust treatment.

EU citizens brought this implementation to trial and were relieved with the court decisions determining that passengers should not be forced to accept vouchers instead of refunds.

How can a balance be reached between protecting passenger rights and preventing hecatomb of the airline industry?

Five Canadian airlines have been hit with a proposed class action lawsuit seeking refunds on behalf of passengers who can no longer use the airline tickets they purchased due to COVID-19 travel advisories imposed by the Canadian government.

The representative plaintiff brings this action on her own behalf and on behalf of all persons residing anywhere in the world, who before

March 11, 2020 entered into a Contract of Carriage with any of the defendant air carriers for travel on a flight operated by a defendant on a trip that was scheduled to commence between 13 March 2020 until the date the Government of Canada withdraws travel advisories for COVID-19, and have not received a refund in the original form of payment.

Last week, the Canadian Transportation Agency stated that it is appropriate for airlines to provide affected passengers with vouchers or credits for future travel. However, the determinations of the CTA are not legally binding.

The class action has yet to be certified by a court but represents a great danger for airlines as it carries the risk of bringing all Canadian carriers to their knees. Regulation (EU) 2020/696 amending Regulation (EC) No 1008/2008 on common rules for the operation of air services in the Community in view of the COVID-19 pandemic was published today.

The regulation amends the air carrier licensing rules in the event of financial problems caused by the COVID-19 pandemic in order to avoid unnecessary administrative burdens. It also introduces derogation to the procedures used by member states to impose traffic rights restrictions to deal with emergencies resulting from unforeseeable and unavoidable circumstances.

The derogation clarifies that a member state may temporarily keep a

justified and proportionate emergency measure in place for a period longer than 14 days, but the measure may only remain in force for as long as there are public health risks clearly linked to the coronavirus pandemic.

New temporary rules will help airports to continue operating in the event of a ground-handling company going bankrupt by introducing a direct procedure for the selection of service providers. They will also help airports avoid complex tenders by allowing for the extension of contracts up to 2022.

The point that needs to be examined and discussed here is the fact that airline companies create unjust passenger treatment by launching flights on their systems before the flight permits between the countries are clarified. The fact that the flights are on the system assumes that they will indeed take place and tickets are sold accordingly. The action of cancelling the flights in the aftermath because of permit issues is considered unjust passenger treatment.

The flights between the countries are being conducted in accordance with the bilateral civil aviation agreements between the countries where the flights will be taking place, while each country's right to control its own air space is based on the basic sovereign rights envisaged by the Chicago Convention on International Civil Aviation [✈](#)

A portrait of Aslıhan Aydemir, a woman with long dark hair, wearing a black blazer over a white top. She is standing with her arms crossed, looking directly at the camera with a slight smile. The background is a plain, light-colored wall.

Carving a Path for Female Entrepreneurs in Aviation

Having worked in various departments in the aviation sector, climbing the stairs one step at a time, in a male dominated business, Aslıhan Aydemir became one of the most recognized female entrepreneurs in Turkish Aviation. Aslıhan Aydemir is the founder of AP&S AVIATION which conducts the sales of aircraft components with a foreign partner and is a member of the Advisory Board of Aviation Turkey magazine. Aslıhan Aydemir is conducting a series of interviews that shine a spotlight on successful women in the Turkish Aviation industry. In this interview we hear from Vennas Akyol Haznedar, a female entrepreneur who's story started in Samsun, headed to Istanbul and eventually reached across the entire country and beyond. This is another story of determination, from inspiring women who do not give up...

Enjoy the interview!

✈️ Aslıhan Aydemir:
Could you please introduce yourself?

Vennas Akyol Haznedar:
I was born in 1965 in Samsun. I married young and have a daughter. I was divorced when I was 30, and then the role that would have been assigned to me by default was an all-too-common one; I was supposed to live off my parents' money and raise my child. But I had to stand on my own feet and try walking on my own path without leaving my future in the hands of anyone else. Therefore, I started searching for what I could do to move forward instead of desperately waiting for

something to happen. By coincidence, I had heard that the businesses at Samsun Airport were going to go out for a tender and inquired about the dates and places and immediately took action to prepare a proposal.

Still, there was an obstacle that I faced. I had to own a company to be able to bid. Instead of giving up at the emergence of this first obstacle, I visited a family friend who happened to be an accountant. I told him that I had no money and asked for his advice on what to do. He helped me to establish the company and promised me that he would not mention anything about this to

my family. I was going to pay back the money that I borrowed from him right after I started the business, just as soon as I won the tender.

We prepared proposals for all the tenders. We were rejected as we did not own a five-star hotel business for the restaurant and cafe of the airport. I needed a customs certificate to qualify to join the free shop tender and of course, I did not have that either. So, I participated in the kiosk tender, the requirements of which were applicable to my company. The application I made for this kiosk tender jumpstarted my business life. Even though a small

one, I had become an operator of a kiosk in the airport.

For instance, when I won my first tender, a giant uncertainty confronted me: I didn't have any money and I did not know how I was supposed to equip the kiosk without the support of my family and now I was challenged with the task of decorating the kiosk. Above all, I needed to obtain a letter of guaranty from a bank. My dear friend from childhood Recep Hun came to my rescue at that moment. Upon his advice, we visited a friend of ours who was the Black Sea distributor of the company Ülker and as a result I



maintained an income by having 'Ülker Shop' written over the kiosk and had the decoration done with this money. With the help of Recep Hun, I was able to include off-license products in the kiosk and I was also able to deal with the letter of guaranty issue with the money that I borrowed from him.

In 2001, when the criteria of owning a five-star hotel was excluded from the specifications stipulated for the cafe business at Samsun Airport, I won the tender for this business and started to operate the airport's cafe. This was followed by the car-park business in 2002. Monitoring my regular payments, the Directorate General especially asked me to participate in the tender. Winning this tender seemed to be a reward for my honest execution of business. From then on, I

was able to proceed with firm steps. I learned to make up a balance sheet and got my first check book. I was progressing confidently in my business life with the assurance of Garanti Bank.

Aslihan Aydemir: Could you tell us about your enterprise?

Vennas Akyol Haznedar: Well, have I ever suffered from inexperience throughout this process? Of course, I have...

For instance, I could never forget the first tender negotiation that I attended. My inexperience was certainly apparent during the negotiation. As we entered the tender process, a friend of mine advised me, "No matter what they say, offer them half of the amount they put forth." When the tender committee announced the opening

price as €440 for the kiosk, I rushed in and said "€220." The members of the committee looked at each other and laughed. When they asked me, "Is this your first time attending a tender process?" They figured out that I was not very experienced as I faltered and failed to even answer properly. They ordered a coffee for me and calmed me down. I was so scared that, I hope his ears are burning now, our then Department Head Naci Işık said, "My dear, you always offer a higher amount at the tender process, not a lower one." I was welcomed with hearty laughter as I went on ashamed telling them that "My friend had told me to offer half of the price." At that moment, I once again understood that being sincere and kind would always help one win in life.

Aslihan Aydemir: Could you tell us about how you became involved in the aviation industry?

Vennas Akyol Haznedar: 2006 is the year that I was rewarded for my patience and perseverance in my business life; it is the year that I reached the point where my aspirations had lead me since the first day I stepped into this business, obtaining an aircraft catering certificate and serving in that area had always been on my mind. Though women were active in many lines of business, no female entrepreneur had dared to provide services in this comprehensive business area. Therefore, on the day I received the aircraft catering certificate, I was as excited as the day I won the tender - the first tender I won - for that kiosk and I was

INTERVIEW

walking on air. I needed new equipment and devices to start aircraft catering and I needed a substantial amount of money for this investment. At that point, Garanti Bank provided me with the lending requirements that I needed to get my new area of business off the ground. With the loan they granted, I was able to cover the requirements, develop my business and launched the aircraft catering services that I had always dreamed of.

Presently, I am the founder and owner of “Venn” brand which is among the three companies running aircraft catering across our country. It is truly a source of pride for me to be the only female entrepreneur in charge of catering services not only in Turkey but also in airports across the world. Another achievement that I am proud of is that all the staff from the administration of our catering company to kitchen personnel and even the accountant of our company is composed of women. Altogether, we provide catering for all the airports in the Black Sea and Central Anatolia and fulfill the stationary requirements. In addition to the airplanes of THY, Pegasus, Atlasjet, Onur Air and charter flights, our company uninterruptedly and proudly serves the aircraft fleet of the



Presidency, including our President’s aircraft TC-ANA.

Moreover, our brand owns an elegant restaurant within ISO 22000 Food Safety standards, a restaurant where taste and hygiene are served as one in an understanding of VIP services at Samsun Airport. We managed to create an area of service that raises the bar, it is well above quality standards, providing a business venue where our entrepreneurs arriving in Samsun can conduct meetings and presentations, and where foreign guests can be accommodated. We opened Samsun’s first boutique hotel in Atakum, located in an area which is one of the most exclusive neighborhoods in our city. This hotel was granted a certificate of investment from the Ministry of Tourism and as we launched services in tourism, we then started to serve our guests with the restaurant inside the hotel. Promoting the employment of women has been a subject that

is particularly close to my heart.

Today, when I look back, I can see that providing employment opportunities to hundreds of women, touching their lives and the lives of their families, contributing to the success of inexperienced young people early in their careers and being a role model to my daughter are my actual achievements.

Aslihan Aydemir: What are the difficulties of being a female entrepreneur and what are some of your secret tips to overcome them?

Vennas Akyol Haznedar: Being a woman in any job entails difficulties and I have gone through many challenges as a woman, but I never gave up. The expressions claiming that success would be hard to achieve for a woman in any line of business have never put me off. Besides, I have always been one of the believers that there is nothing a woman cannot achieve in the case she is afforded equal opportunity. Elimination of

all forms of discrimination against women and girls is a basic human right and at this point the utmost importance should be placed on education. The acknowledgement of and the support of female leadership will benefit all of society and its contribution to economic growth and development in all areas should not be ignored.

Aslihan Aydemir: What are your comments on efforts exerted toward developing gender balance in aviation and entrepreneurship?

Vennas Akyol Haznedar: The world has been changing; and we see it now as we are going through times that we sense that nothing will be the same as the old days. Altogether we witness women playing active roles in politics, in non-governmental organizations, trade, arts, sports and in almost all aspects of society.

Aslihan Aydemir: Thank you for your time for this pleasant chat 🌟



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Does Air Travel During the COVID-19 Pandemic Pose Health Risks?

by Muhammed Yilmaz

Now that many airlines have relaunched flight operations, many of us are eager to fly again, but many of us also remain apprehensive about airborne disease transmission and we are not quite sure about what measures have been put into place to prevent infection in flight.

In order to relieve some passenger worries and concerns, airline companies have been making statements and sharing information through social media about their constant disinfection of aircraft and that the HEPA filters within the HVAC systems prevent 99.97% of all bacteria

and viruses. Therefore, by repeating that the risk of disease transmission on an aircraft is lower than in any given indoor environment, airlines have been trying to convince their passengers that the air within an aircraft is as clean as the air inside a surgery room.

Scientists believe that the biggest problem in the spread of the virus is the density of the population in the aircraft as it essentially is a large number of passengers contained inside a relatively small area. At this point, more clean air support is required to maintain the air quality of the cabin. Experts agree that swift and frequent

air cycles inside the cabin are essential. Experts also advise passengers not to switch off the individual air outlets called “gaspers” that are located on the overhead panel; while claiming that though it may not be the exact solution, it is one of the most effective alternatives available to prevent the spread of the disease.

IATA, Boeing and Airbus taking assertive action in communication

“Guidance for Flight Operations During and Post Pandemic” published on June 12, 2020 by the IATA informs passengers

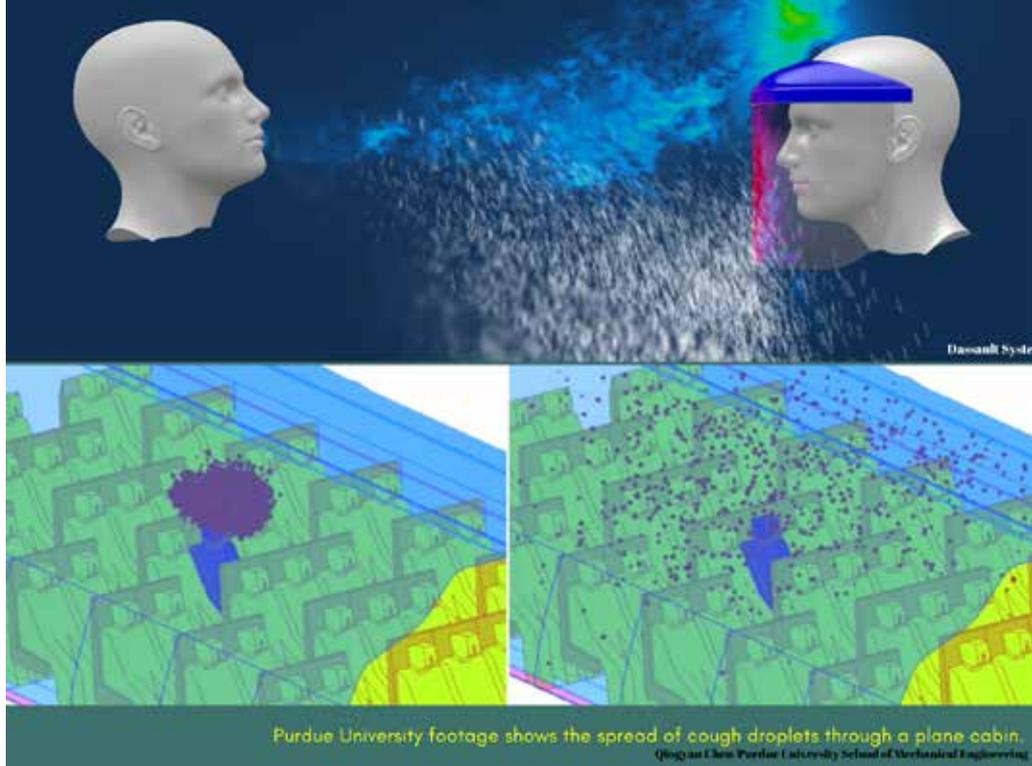
on HEPA filters while it restores trust and reassures travelers.

“HEPA filters have demonstrated good performance with particles of the size of the SARS-Cov-2 virus. Operators using the recirculation of cabin air are recommended to install and use HEPA filters, according to the manufacturer’s specifications. When HEPA filters are installed, recirculation fans should not be stopped during normal operations. The airflow induced by the cabin recirculation fans is designed to assist in maintaining the correct cabin airflow pattern.”



The IATA also prepared and published the “Biosecurity for Air Transport” document on May 19, 2020, with the theme “A Roadmap to Restarting Aviation” also underlines that the analyses conducted have proved that the risk of catching COVID-19 from another passenger in an aircraft is quite low.

“Possible reasons are that customers sit facing forward and not toward each other, seat backs provide a barrier, the use of HEPA filters and the direction of the air flow on board (from ceiling to floor), and the limited movement onboard aircraft once seated add to the onboard protection.”



The U.S Manufacturer Boeing shares the view that they provide extremely purified air with the help of HEPA filters that have similar structures with the ones used in hospitals and industrial clean rooms. These filters are capable of filtering particles with over 99.97% efficiency and thus passengers could travel by Boeing aircraft without any hesitation.

Moreover, by continuing its research studies on new technologies such as ultraviolet based disinfection systems and antimicrobial coating for

frequently touched surfaces in the aircraft, Boeing has been seeking ways to minimize potential of infection transmission in the aircraft. The company has been working on activities towards increasing passenger awareness as well.

Mike Delaney, working for Boeing for 31 years and now serving as the Vice President of Digital Transformation at Boeing Commercial Airplanes, has been appointed to lead the Confident Travel Initiative established to conduct all such activities.

Airbus Engineering Head Jean-Brice Dumont also made statements, like the IATA and Boeing, assuring that passengers travelling by airplane are not exposed to any risks, and continued: “The air we breathe at any modern office is circulated nearly four times every hour, while in a modern aircraft the air is refreshed 20-30 times an hour. This, in the simplest terms, is the indicator of the importance we attach to the well-being of our passengers in flight, in addition to our commitment to their safety.”

What are HEPA filters?

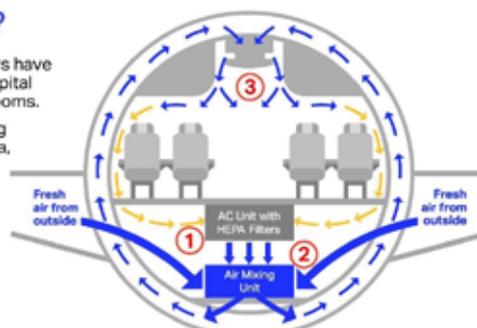
HEPA, high efficiency particulate air, filters have similar performance to those used in hospital operating theatres and industrial clean rooms.

These filters are very effective at trapping microscopic particles as small as bacteria, viruses and fungi.

The risk inflight is probably lower than other environments because modern airplanes have cabin air filtration systems with HEPA filters.

How do HEPA filters fit into the cabin air system?

- ① Air from the cabin is cleaned in the AC Unit and its HEPA Filters.
- ② This clean recycled air is then mixed with fresh air from outside in the Mixing Unit.
- ③ The pure, clean air is then passed into the cabin and circulates downwards to repeat the process.



Inside the system

See how the plane sucks in outside air, cleans it and then uses it throughout the cabin

Air circulates the cabin

The air leaves the mixing manifold and enters the cabin, where it's supplied via overhead outlets.

Air conditioning unit

When the hot, compressed air reaches the plane's air conditioning units it is cooled dramatically.

Air enters

As air enters through the aircraft's jet engines, it becomes incredibly hot as it is pressurised.

Constant fresh air

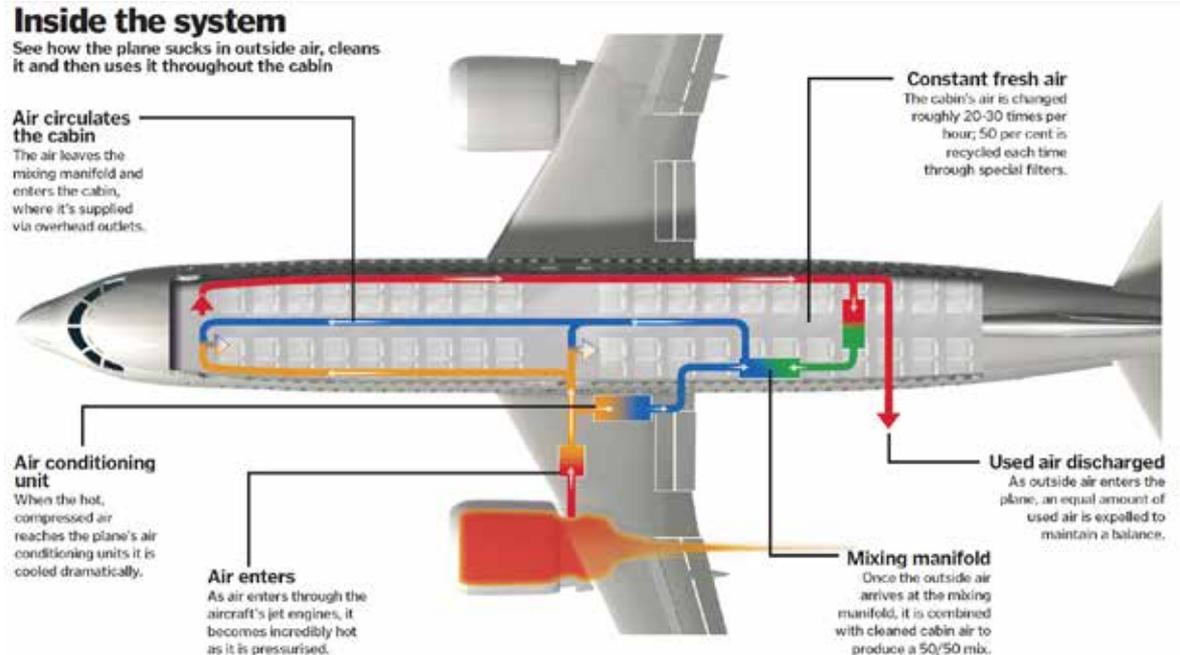
The cabin's air is changed roughly 20-30 times per hour; 50 per cent is recycled each time through special filters.

Used air discharged

As outside air enters the plane, an equal amount of used air is expelled to maintain a balance.

Mixing manifold

Once the outside air arrives at the mixing manifold, it is combined with cleaned cabin air to produce a 50/50 mix.



Both Airbus and Boeing say cabin air flows downwards not lengthways through the fuselage, reducing risks of infection. This vertical movement of air forms a protective barrier between rows, making it highly unlikely that the virus could pass between passengers seated in front or behind each other.

However, the actual case is not as simple as it may seem. The humidity of the air we breathe is very important and inside the cabin humidity is only 10% which leads to dry mucus in the throat and nose, and having this moist environment is part of the natural defense system of our body. Dry mucus in the throat and nose weakens our immune defense in a sense and creates an ideal environment for microorganisms to attack and spread infection.

Boeing has another statement on this issue: "HEPA filters are not equipped to filter gaseous molecules. By increasing the humidity and adding new filtration technologies, studies show that the number of passengers experiencing the symptoms associated with dryness can be reduced, says a backgrounder on Boeing 787 Dreamliner."

How do HEPA filters work in an aircraft?

We have been hearing a lot about HEPA filters recently. Let's take a closer look now at HEPA filters, which claim to be quite effective in avoiding the transfer of viruses between passengers in an aircraft.

HEPA filters are composed of tightly knitted fibers used for the filtration of not only bacteria, viruses

or harmful microorganisms but also many other types of contaminants such as dust, pollen or mold that may affect our health.

The word HEPA stands for 'High Efficiency Particulate Air' and HEPA filters are capable of removing all airborne particles of 0.3 microns in diameter and greater.

HEPA filters started to be utilized in aircraft the 1980s and are presently available in all active aircraft of all airlines, since these companies have to build a certain level of air quality within the cabin due to international regulations. Thus, they endeavor to maintain this standard with HEPA filters.

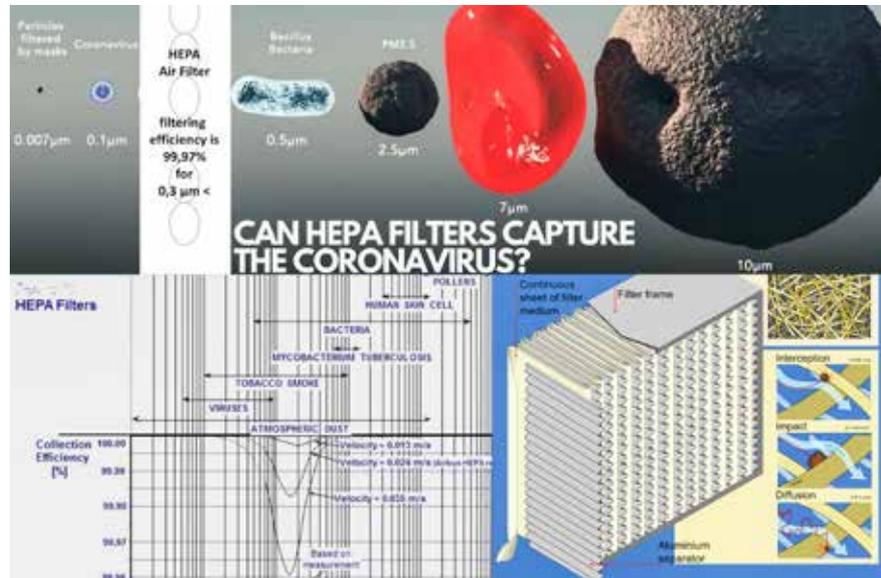
The operation principle of the HEPA filter is as follows: There is a constant flow of air into the cabins during the cruise both for air conditioning

and pressurization. The air outside is the main source of the air in the cabin with the required level of temperature and humidity. As a result of the conditions during the cruise of the aircraft, the extremely cold and low pressured air is mixed with air heated and pressured when passing through the compressors of the aircraft's engines. Then, leaving the air mixing unit, the air starts to circulate within the cabin after being filtered through the HEPA filters. The average duration of the circulation is 3 minutes and part of the air in circulation is exhausted with the help of the outflow valves at the rear of the aircraft. The air remaining inside the cabin flows back to the air mixing unit. Here, the fresh, cold and low-pressure air is once again mixed with hot and high-pressure air that recently passed from the engines and it is circulated inside

the cabin again. This same cycle is repeated every three minutes in flight.

Therefore, a portion of the air breathed in the cabin by passengers is left in the atmosphere and a major part of it is recirculated through the cabin as it is mixed with new, fresh airstreams. Scientists warn that the air breathed by passengers at any moment during the flight is always a mixed product. Then again, they also agree that as this circulation is frequently repeated, the air will become less harmful for the passenger as the former air can be diluted more rapidly.

The mixed air is purified through HEPA filters before it is circulated in the cabin again. We have already underlined that HEPA filters onboard airplanes are capable of filtering all particles that are 0.3 microns and greater in diameter. There have been discussions recently about a critical detail, it is a scientific question of whether or not the size of the diameter of the COVID-19 virus is smaller than 0.3 microns. The COVID-19 virus has been cited to be 0.12 microns. In this scenario, HEPA filters would fail to filter particles smaller than 0.3 microns, passengers would have to constantly breathe air contaminated by micro particles (virus or other contaminants) during the flight and this would cause a major risk. Surely, the discussions are still ongoing



and there are no clear and generally agreed upon scientific publications in this area yet. The statements of esteemed organizations such as the IATA on one hand and the statements of aircraft manufacturers on the other have failed to fully eliminate passenger concerns in this respect. Objective, ethical, and scientific studies need to be conducted and published in this particular area in order to eliminate uncertainty and concern. However, it seems that we will have to wait for a while longer.

If we examine the existing process, we see that there are a just a few manufacturers of HEPA filters that are utilized in aircraft. Though each filter has its own rules of maintenance, all HEPA filters are replaced with new ones according to the maintenance lifecycle to ensure efficiency.

Even though airlines are deterring the spread of COVID-19 by using HEPA filters in their aircraft, we still should not overlook a certain fact. Some people might be

under the impression that can only catch the virus through the air they breathe in, but we should not forget that the disease can also be spread by the surfaces we touch, potentially containing thousands of viruses or germs.

In conclusion, there are two main analyses on whether air travel constitute any risks to passenger well-being during COVID-19. The first one is whether air travel is safe for passengers or not. As I mentioned previously, the answer to this can be clarified with the help of conclusive scientific studies. The latter is slightly more complicated: Do passengers believe that air travel is safe? In order to remove this concern, airline companies and aircraft manufacturers may have to increase the amount they allocate toward this issue in their marketing budgets and thus ease the worries of their passengers





by Saffet Uyanik

Restart and Recovery! CART's Support & Economic Recovery Guidelines

The aviation ecosystem has faced ever-growing challenges from the onset of the COVID-19 crisis.

The International Civil Aviation Organization (ICAO), through the Council Aviation Recovery Task Force (CART), has resolved to partner with its Member States, international and regional organizations, and industry to address these challenges and to provide global guidance for a safe, secure and sustainable restart and recovery of the aviation sector.

Since its beginning on December 31, 2019, COVID-19 has posed unprecedented challenges to the world, including the international air transport sector. According to the International Civil Aviation Organization, airports have seen a 28.4% decline in global passenger traffic volumes for the first quarter of 2020, which is equivalent to a reduction of 612 million passengers in absolute terms. These volumes (domestic and international traffic) are expected to decrease by 50.4% for 2020 as compared to 2019 figures. The ICAO estimates that by the end of 2020, the COVID-19 impact on scheduled international passenger traffic could reach reductions of up to 71% of seat

capacity and up to 1.5 billion passengers globally. Airlines and airports face a potential revenue loss of up to US\$314 billion and US\$100 billion, respectively, for 2020.

In response to the severe impact felt across the global civil aviation sector as a result of COVID-19, and the need for wide-ranging government and industry coordination to help reconnect the world, the International Civil Aviation Organization (ICAO) established the Council Aviation Recovery Task Force (CART) in April 2020 to identify and recommend strategic priorities and policies for States and industry operators. Since diseases such as COVID-19 pose a risk to the traveling public because they can be transmitted between humans, the task force aims to leverage all available government and industry data to provide solutions for sector-wide challenges and to address priorities to reboot the network for a post-COVID world.

In this context, in order to be more resilient and responsive for airlines and other aviation partners during the process, the International Civil Aviation Organization (ICAO) Council adopted a new COVID-19 report in June 2020 which aims to provide high-level guidance for governments and what certain industries need in order to begin restarting the international air transport system while recovering safely



CREW

CREW MEMBERS

All operations covered under Annex 6 – Operation of Aircraft, Part 1 – International Commercial Air Transport – Aeroplanes, Civil Aviation Authorities and public health agencies

Provide harmonized health protection and sanitation considerations applicable to crew members that can be implemented globally.

FLIGHT CREW

CABIN CREW

Provide harmonized health protection and sanitation considerations applicable to Flight Crew which can be implemented globally

Provide harmonized health protection and sanitation considerations applicable to Cabin Crew which can be implemented globally.

LAYOVER

Ensure that all crew that need to layover or transit at an outstation are aware of the measures necessary to reduce the risk of transmission of COVID-19. Reference should be made to the ICAO Electronic Bulletin EB 2020/30 or as amended for the most up to date guidance.

from COVID-19. The report is accompanied by 'Take-Off' Guidance for Air Travel through the COVID-19 Public Health Crisis, which proposes a phased approach to restarting aviation in the post-COVID-19 period and identifies a set of generally applicable risk-based measures. The new report and guidelines were produced by the Council's Aviation Recovery Task Force (CART) and were developed through broad-based consultations by the ICAO with countries and regional organizations as well as with valuable advice from the World Health Organization and key aviation industry groups including the International Air Transport Association (IATA), Airports Council International (ACI World), the Civil Air Navigation Services Organization (CANSO), and the International Coordinating Council of Aerospace Industries Associations (ICCAIA).

Public health risk mitigation measures

The documents provide a framework for addressing the impact of the current COVID-19 pandemic on the global aviation transportation system. It includes mitigations needed to reduce the public health risk to air passengers and aviation workers while strengthening confidence among the traveling public, the global supply chain, and governments, thus assisting in accelerating demand for essential and non-essential air travel.

With help and guidance from

the civil aviation community, the ICAO recommends a phased approach to enable the safe return to high-volume domestic and international air travel for passengers and cargo. The ICAO has introduced a core set of measures to form a baseline aviation health safety protocol to protect air passengers and aviation workers from COVID-19. The organization believes that these measures will enable the growth of global aviation as it recovers from the current pandemic.

However, the ICAO also warns that it is essential to recognize that each stage of the recovery phase will need a recalibration of these measures in support of the common objective, which is to safely enable air travel, to incorporate new public health measures into the aviation system, as well as to support economic recovery and growth. Through the COVID-19 report and Take-Off guidelines, the ICAO emphasizes that all the actors of global aviation should recognize the need to reduce public health risks while being sensitive to what is operationally feasible for airlines, airports, and other aviation interests which are all essential in the facilitation of a successful recovery in the forthcoming period.

The guidance outlines layers of measures to mitigate the risk of virus transmission during air travel and the risk of importation of COVID-19 via air travel. The suggested measures include physical distancing to the extent feasible, wearing of facemasks by



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| <p style="text-align: center;">AIRCRAFT</p> <p style="text-align: center;">TARGET AUDIENCE</p> <p style="text-align: center;"><i>Operators covered under Annex 6 - Operation of Aircraft, Part 1 - International Commercial Air Transport - Aeroplanes</i></p> | <p style="text-align: center;">PASSENGER & CREW GENERAL</p> <p style="text-align: center;">BRIEF DESCRIPTION (OBJECTIVE)</p> <p style="text-align: center;"><i>Provide a safe, sanitary operating environment for passengers and crew.</i></p> |
| <p style="text-align: center;">DISINFECTION FLIGHT DECK</p> <p style="text-align: center;">BRIEF DESCRIPTION (OBJECTIVE)</p> <p style="text-align: center;"><i>Provide a safe, sanitary operating environment for crew and ground staff.</i></p> | <p style="text-align: center;">DISINFECTION CARGO COMPARTMENT</p> <p style="text-align: center;">BRIEF DESCRIPTION (OBJECTIVE)</p> <p style="text-align: center;"><i>Provide a safe, sanitary operating environment for crew and ground staff.</i></p> |
| <p style="text-align: center;">DISINFECTION MAINTENANCE</p> <p style="text-align: center;">BRIEF DESCRIPTION (OBJECTIVE)</p> <p style="text-align: center;"><i>Provide a safe, sanitary operating environment for passengers, crew, and ground staff.</i></p> | <p style="text-align: center;">AIR SYSTEM OPERATIONS</p> <p style="text-align: center;"><small>Aircraft manufacturers recommend maximizing total cabin airflow and care should be taken to avoid blocking air vents (particularly along the floor). These are general recommendations for cabin air considerations and there may be exceptions for specific aircraft models. It is strongly recommended that operators consult with the aircraft OEM for questions specific to an aircraft type.</small></p> |

ARTICLE

passengers and crew, routine sanitation and disinfection of all areas where people might gather, health screening which could include pre- and post-flight self-declarations, contact tracing for all passengers and employees and potential testing when reliable systems become available.

Guidance for air travel through the COVID-19 public health crisis

In line with recommendations and guidance from public health authorities, CART Take-Off guidance includes a section on Public Health Risk Mitigation Measures that will reduce the risk of transmission of the COVID-19 virus during the travel process as well as four operational modules.

The guidelines are mostly centered on trying to maintain distance between people, making sure hand sanitizers, and that PPE is available and used when necessary, cleaning of equipment such as forklifts after use, educating staff on personal hygiene, document signing carried out with people's own pens, and using digital documentation as much as possible. The guidelines also include advice for the cargo flight crew, stating that they should apply the same health and

safety considerations as passenger flight crews.

The cargo guidelines which aim to get passenger operations back in the air are part of a more comprehensive program. While air cargo consignments don't come into contact with the traveling public, the cargo acceptance and hand over process include interaction with non-airport employees. The Cargo Module addresses aviation public health, including physical distancing, personal sanitation, protective barriers, transfer to the ramp, loading and unloading, and other mitigation procedures. The cargo module covers road feeders to freight reception and pick-up, within the cargo facility, cargo facility to ramp, and aircraft loading.

The airport module contains specific guidance elements addressing airport terminal building cleaning, disinfecting, and hygiene; physical distancing, staff protection; access, check-in area, security screening, airside areas, gate installations, passenger transfer, disembarking, baggage claim and arrivals areas.

The aircraft module explains boarding processes, seat assignment processes, baggage, interaction on board, environmental control systems, food and beverage service, lavatory access, crew protection, management



CARGO

Airline, freight forwarder, trucker, ground handler (cargo terminal operator)

ROAD FEEDER TO FREIGHT RECEPTION & FREIGHT PICK UP

Protect cargo handling staff and truckers during the handover points for physical freight (in warehouse) and documentation (often office).

CARGO FACILITY (ORIGIN / DESTINATION / TRANSIT)

Protect Cargo facility (warehouse) staff during business operations such as build-up, breakdown, repositioning, and documentation handling.

CARGO FACILITY TO RAMP (ORIGIN/ TRANSIT/DESTINATION)

Protect staff during the Cargo facility handover to/from ramp crews in preparation for aircraft loading and unloading.

AIRCRAFT LOADING / UNLOADING

Protect ramp handling staff during the loading and unloading of the aircraft, which is usually performed by multiple crews of 3 to 4 persons depending on the operation. Ensure enhanced public health safety when the number of close contact personnel rises during manual loading of the passenger cabin.

of sick passengers or crew members, and cleaning and disinfection of the flight deck, cabin, and cargo compartment.

The crew module contains recommendations addressing a crew member's contact with a suspected or positive COVID-19 case, reporting for duty, dedicated end-to-end crew layover best practices, crew members experiencing COVID-19 symptoms during a layover, and positioning of the crew. The module includes guidance about the implementations of health screening methods and the mitigatory actions to ensure that all crew members required to layover or transit at an outstation are aware of the measures necessary to reduce the risk of transmission of COVID-19. According to the module, to promote safe and sustainable international air travel, a carefully coordinated global approach to the treatment of aircrews, consistent with recognized public health standards, is essential to alleviate burdens on critical transportation workers. These include screening, quarantine requirements, and immigration restrictions that apply to other travelers.

Conclusion

The CART's report contains a detailed situational analysis and critical principles supported by a series of recommendations

focused around objectives for public health, aviation safety and security, and aviation economic recovery. According to CART, the recommendations and guidelines will be continuously reviewed and updated based on the latest medical and operational advice and are intended to harmonize with, not replace, the COVID-19 recovery roadmaps currently established by States, Regions, or industry groups. In the aftermath of the COVID-19 outbreak, States, including government regulators, airports, airlines, aircraft manufacturers, and other stakeholders of the aviation ecosystem, developed a set of measures aimed at reducing health risks to air travelers, aviation workers, and the general public. These measures are designed to enable a consistent and predictable travel experience. They will also contribute to the efficient, safe, secure, and sustainable transport by air of an increasing number of passengers and cargo and minimize the risk of COVID-19 transmission. The success of aviation's recovery is best achieved with collective effort among stakeholders across regions and sectors. The implementation of these measures will facilitate and strengthen global recovery from the COVID-19 pandemic 🌐



AIRPORTS MODULE

TERMINAL BUILDING

AIRPORTS

TARGET AUDIENCE

Airport operators, authorities, governments, airport staff.

Guidance for the operation of terminal buildings needs to consider all aspects of operations, including who has access to the building, the upkeep of cleanliness and disinfection procedures in place within the terminal building, as well as health measures, the provision of first-aid/medical attention guidance, and the protocols for passengers and staff.

GENERAL CHECK-IN AREA

SECURITY SCREENING

The general check-in area of an airport is usually an area that sees high passenger traffic. To limit queues and crowds, passengers should complete as much of the check-in process as possible before arriving at the airport (i.e. passenger should be ready to fly). Self-service options should be made available and utilized as much as possible to limit contact at passenger touchpoints.

During the initial stages of the pandemic response, we can expect the need for physical distancing measures to be maintained at security screening checkpoints, including during the screening process. Measures to control access to the security screening checkpoint may need to be considered, as well as possible modifications to standard screening, to comply with new COVID-19 sanitary guidelines. Security screening staff should normally be exempt from carrying out health and safety related screening to ensure they remain focused on security screening and related processes.

TERMINAL AIRSIDE AREA

AIRCRAFT TERMINAL GATE EQUIPMENT

The post-security terminal airside area is an area of high passenger traffic, with few physical barriers and usually wide-open space. Consideration needs to be given to the temporary need for physical distancing, while also providing passengers with access to the retail, duty-free concessions and food and beverage offerings. Gate areas, VIP lounges and other services in this area also see a high passenger volume. Various flow-accelerating needs, physical modifications, floor markings and adjacent way finding need to be evaluated and deployed. Enhanced cleaning and hygiene measures may need to be scheduled and deployed to contribute to the limiting of the virus spread.

DISSEMBARKING AND ARRIVALS

Border control and customs processes may need to be temporarily revised to increase physical distancing. Where equipment already exists, the use of automated border control (ABC) equipment, digital passenger identification (biometrics) as well as technology (thermal screening) could serve as an additional health screening measure and could speed up the immigration process with the objective of reducing queuing and to minimize contacts between border officials and passengers. Furthermore, during initial stages, some governments are exploring the idea of a health declaration to be completed by passengers before departure or on arrival as an initial assessment measure, which could be used to identify passengers for secondary assessment.

BAGGAGE CLAIM AREA

The baggage claim area of an airport is susceptible to high passenger footfall and physical contact with luggage carts, baggage, wheelchairs, and other facilities. Disinfection measures and increased frequency of cleaning should be implemented.

EXIT THE LANDSIDE AREA

Protocols and precautions need to be in place for arriving passengers who are exiting the landside area. Consideration should be given to the greater's area, as well as the terminal's exit area. During initial restart phases, measures could include establishing a perimeter around the greater's area or limiting access to the terminal building.



Assist. Prof. Dr. Tamer Sarayakupoğlu
Mechanical Engineer

The Manufacturing Techniques of Micro-Hole Filters and Protection Against Viruses

A commercial aircraft consists of 3-4 Million parts depending on its type. It is noteworthy that freighter conversions would have significantly fewer parts than the full passenger versions. Components and systems are made up of parts. Assemblies are made up of components. The aircraft, itself is the top assembly which consists of parts, Commercial Off-the-Shelf (COTS), loose-items, standard parts such as fasteners and consumables. The systems such as hydraulic, pneumatic, wire-harness, Environmental Control System (ECS), and others are crucial members of the aircraft. These systems have many interfaces in the cockpit, cabin, or cargo bay. For example, the passenger overhead panel is one of them that is an outlet of the ECS for conditioned airflow and wire-harness for illuminating. As shown in **Figure 1** below there are some buttons on this panel which is an interface between complicated systems and passengers.

When we get deep into the ECS system, we see that this system is responsible for performing a great number of tasks, including

pressurizing and ventilating the cabin, controlling the pressure, and temperature on board. Overall, it can be stated that the ECS mainly provides air to the anti-ice system and Passenger Air Conditioner (PACK) and regulates cabin temperature, pressure (T, P), and humidity. It is worth emphasizing that the ECS is a vital system not only for aircraft but also for submarines and spacecraft. The ECS basically concentrates on the inside of the aircraft, whereas the outer side environmental control is usually called the Environmental Protection System (EPS). As depicted in **Figure 2**, the ECS includes components consisting of filters, air pumps, humidifiers, driers, valves etc.



Figure 1. Passenger Overhead Panel

Generally the ECS air conditioning also includes;

- *Window defogging,*
- *Fire protection,*
- *Water and sanitation,*
- *Fuel tank inertization,*
- *Cabin furniture ergonomics,*
- *Cabin entertainment systems,*
- *Lighting etc.*

Another issue is pressurization control.

The air inside the cabin is compressed by the air pumps. The whole aircraft is pressurized by bleed air with 250 kPa from the engine compressor, upstream of the combustion chambers. This air is supplied to the conditioning packs at approximately 180 °C through a Pre-Cooler. Cabin pressure is controlled by outflow valves to maintain the cabin pressure above

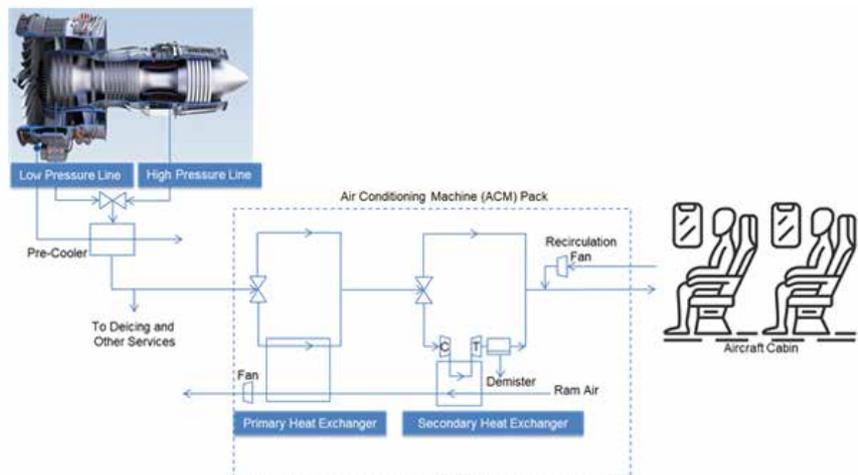


Figure 2. Aircraft Environmental Control System (ECS) (Isidoro, 2011)

75 kPa which simulates that the aircraft flies at 7,800 feet. This level is accepted as the comfort level for passengers and crew. The pressurization control system is equipped with highly reliable pneumatic members. Any sudden change requires an emergency procedural activity.

On the other hand, the EPS is used against high temperatures, high wind and turbulence, water and ice deposition, radiation, electrical shock and biological attacks, ranging from micro-organisms to birds.

The aircraft, itself is a closed container and the cabin air conditioning should provide comfort conditions such as $22 \pm 2^\circ\text{C}$, 90 ± 10 kPa, 60 ± 10 % Relative Humidity (RH). During flight and taxi, these values are directly in relation to the outside conditions such as, $-60/+50^\circ\text{C}$, $10:100$ kPa, $0:100$ %RH, ozone, etc. The ECS should provide ventilation, pressurization, cooling, heating, humidification, dehumidification, demisting, and disinfection. As shown in **Figure 3**, the conditioned air enters the cabin and cockpit from distribution manifolds via wall-floor, ceiling grills, and directional outlets in the overhead panel and goes out through the collection ducts under the seats.

For example, a Boeing 747-400 approximately has

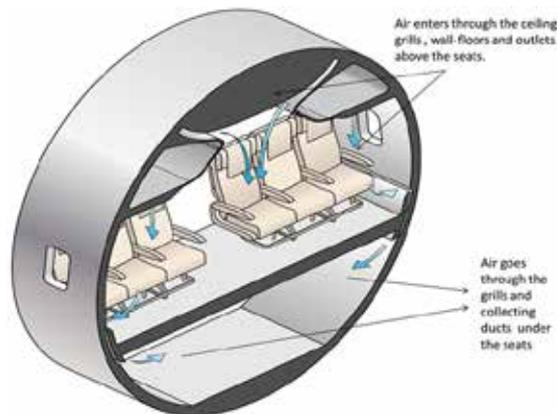


Figure 3. The Conditioned Air Movement inside the Cabin

Vair=886 m³ of air. The air in the Boeing

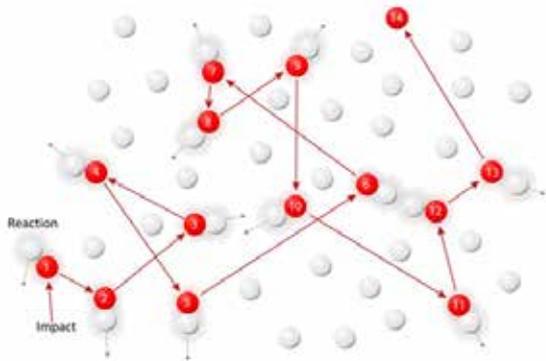
747-400 is circulated roughly every 350 seconds. About half of this amount is exhausted from the aircraft through an outflow valve located under seats and the other half is drawn by fans through special High-Efficiency Particulate Arresting (HEPA) filters to filter microscopic particles. Most of the micro-organisms and particles do not pass through the HEPA filter. However, the aerosol particles around 0.3 μm (300 nanometers) in size cannot be completely removed by the filter because the HEPA filter limitation is about that size. As the "removal efficiency" of filters gradually decreases during operation, the filters no longer meet the requirements of the HEPA filter, and they need to be replaced. To protect the workers, the public, and the environment at reasonable costs and with acceptable waste generated, it is important

to evaluate the removal efficiency of aerosols and determine the frequencies of replacement (Min-Ho Lee, 2019). For this reason, with some maintenance intervals, the filters are changed dependent upon flight hour (FH) and flight cycle (FC) parameters. Protecting the soldiers from warfare aerosols was an essential issue for both operational headquarters and field troops. The only solution was the gas masks which was not practical for all. The US Army Chemical Corps then developed a combination of a purifier unit and a mechanical blower that is called as "collective protector". Since comparatively large airflows were required, the filter, incorporating the same cellulose-asbestos paper used in the service gas mask, was fabricated into a deeply-pleated form with spacers between the pleats to keep them apart and serve as air passages (First, 1998). It was the predecessor of the HEPA

filters which are widely used at present in many places such as commercial aircraft, hospital intensive care units, operating rooms, and industrial clean rooms. HEPA filters are designed to control the particles that enter a clean area by filtration. These filters were created and developed during World War II as part of atomic bomb research for containment of radioactive aerosols.

HEPA filters function through a combination of three important aspects. First, there are one or more outer filters that work like "sieves" to stop the larger particles of dirt, dust, pollens, and other droppings from creatures, such as dander or hair. Inside these filters, there is a concertina, which is a mat of very dense fibers, that traps smaller particles. These pre-filters are designed to stop 90% of particles from the incoming air. The inner part of the filter uses three different methods to catch particles as they pass through with the moving airstream. At high airspeeds, some particles are caught and trapped as they smash directly into the fibers, while others are caught by the fibers as the air moves past. A particle that enters into the flow field that is surrounding the fiber must follow the curved path of the streamlines if it is to pass around the fiber. When a particle possesses sufficient inertia, because

TECHNOLOGY INSIGHT



Random Motions of Particles in Accordance with the Brownian Motion Pattern

Figure 4. The Illustration of Brownian Motion Pattern

of its higher momentum relative to that of the conveying gas molecules, it resists for following the curvature of the air stream and gets in contact with the fiber. The effect becomes greater as aerodynamic equivalent diameter extends and as the speed of the air approaching the fiber increases. However, when the suspended particles are very small, it is observed that they tend to follow the curved streamlines closely. In this scenario, the particles have little inertia however they are strong in Brownian motion. As it is shown in **Figure 4**, Brownian motion pattern is used for describing the random motion of particles suspended in a fluid that can be a liquid or a gas resulting from their collision with the fast-moving molecules in the fluid. This pattern of motion typically consists of random fluctuations in a particle's position inside the tank fulfilled with gas or other liquids. A few examples of the countless diffusion

processes that are studied in terms of Brownian motion include transport processes that are affected by larger currents, the diffusion of pollutants through the atmosphere, and the diffusion of calcium through bone tissue in living organisms. Examples also include the motion of pollen grains on still water. Movement of dust motes in a room although largely affected by air currents.

At high airspeeds, some particles are caught and

trapped as they smash directly into the fibers, while others are caught by the fibers as the air moves past. At lower airspeeds, particles tend to wander about more randomly through the filter (via Brownian motion) and may stick to the fibers as they do so. Together, these three mechanisms allow HEPA filters to catch particles, which are both larger and smaller than a certain target size. There are different grades of HEPA filters, based on their 'efficiency ratings'. One of the most commonly used HEPA filters is the H14 filter, which is designed to remove almost 99.997% of particles from the air (Sandle, 2013).

In **Figure 5** illustrates that particles around $0.3\ \mu\text{m}$ can be filtered by HEPA filters.

Ultra-Low Particulate Air (ULPA) is also a filter which has finer holes than HEPA. As provided in Table 1, an ULPA filter can remove from

the air at least 99.999% of dust, pollen, mold, bacteria and any airborne particles with a minimum particle penetration size of $0.1\ \mu\text{m}$ (100 nanometers).

There are some standards for categorizing the filters such as EN 1822, ASHRAE 52.1, etc. shown in Table 1 the classification of HEPA and ULPA is given in accordance with EN 1822:1998 standards.

It is noteworthy to mention that these filtering values reflect the number of the particles not the size of the particles.

In **Figure 6** shown below, the fibers in the HEPA filters are denote as the orange bars, trapping dust and dirt particles in three ways. Some particles crash into filter fibers and are absorbed by the impact. Some are caught as they flow along in the moving airstream and when they get too close

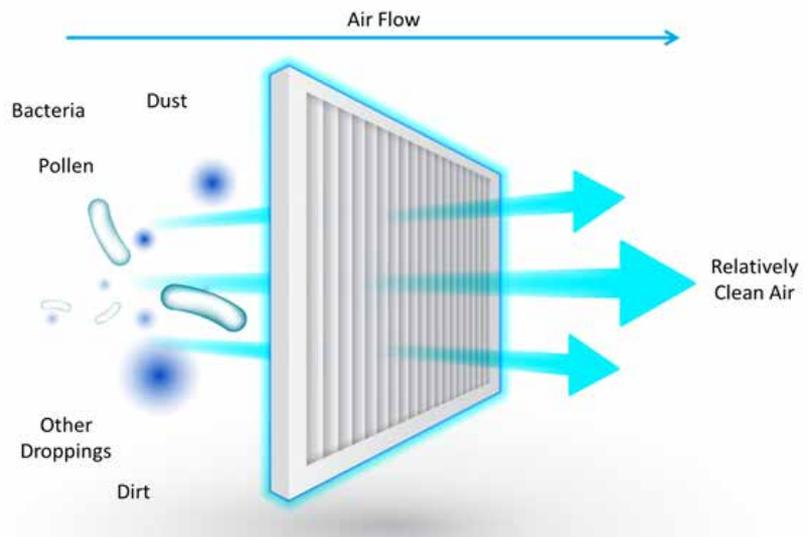


Figure 5. The Mechanism of HEPA and ULPA Filters

to the filter fibers they are trapped by interception. At lower airspeeds, some are trapped by diffusion. The interception occurs when randomly moving dust and air particles crash into one another and some are pushed into the filter fibers.

The biological aerosols such as fungi, bacteria, and viruses are called bio-aerosols. The bio-aerosols could cause unwanted health impacts such as infectious, toxigenic, and allergic situations. At present, in many laboratories, many researchers are focused on the bio-aerosols. By the mentioned researchers, many papers have been published regarding the prevention and treatment of respiratory infection outbreaks originated from lethal viruses such as swine-origin influenza A (H1N1), Middle East Respiratory Syndrome (MERS), severe acute respiratory syndrome coronavirus and finally novel coronavirus (2019-nCoV). It is not difficult to claim that especially the filters are the mainly focused laboratory studies (Park, Joe, Piri, An, & Hwang, 2020). Although, many studies with a wider scope are still being performed to increase the performance of the filters, the processability and producibility still have some constraints in terms of manufacturing techniques. So far HEPA filters have been manufactured with legacy technologies

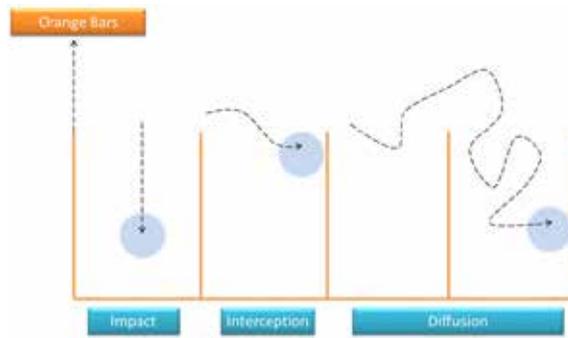


Figure 6. The HEPA Filters Mechanism

such as plastic injection, fiber manufacturing technologies, etc. Many of the designs made possible through additive manufacturing are "impossible or too difficult" using traditional manufacturing technologies. With legacy production, the more geometrically complex a part or component becomes the more expensive it is to manufacture, and at a particular level, it becomes impossible to manufacture. Additive Manufacturing works in the opposite way, the more geometrically complex the part is, the

more convenient it is for additive manufacturing (Olaf Diegel, 2019). Additive manufacturing has some limitations such as hole diameter. In some cases, the hole diameter can be as small as

80 μm (Solakoğlu, 2016). The Ti6Al4V is the most common alloy used in the aviation and medical industry (Shunyu Liu, 2018). As a lightweight and yet strong alloy, Ti6Al4V saves weight and is hence extremely suitable for jet engines, gas turbines, and many airframe components. This

alloy's biocompatibility also attracts many experts in the medical field for prosthesis applications (Cen Chen, 2019). It is possible to produce membranes that have 0.1 μm or smaller holes thanks to the Saracyakupoglu Manufacturing Technique © which depends on the philosophy of overlapping the additively manufactured smallest holes. This technique uses an approach of layer-by-layer manufacturing with calculated non-axial holes. Because of the complexity of this system, it would be impossible to handle these small-sized holes with the usage of legacy manufacturing technologies. As future work, it will be possible to manufacture anti-viral filters with the help of novel technologies. For sure, those filters will have a deep capability of banning the angstrom-sized particles, bacteria, and viruses ☺

Table 1. Classes of HEPA and ULPA Type Filters Defined by EN 1822:1998

| Classes of HEPA and ULPA Type Filters Defined by EN 1822:1998 | | | | |
|---|---------------------------------|-----------------|-------------------------------------|-----------------|
| Filter Class | Overall Value for Entire Filter | | Local Value at any Position Scanned | |
| | Efficiency (%) | Penetration (%) | Efficiency (%) | Penetration (%) |
| H 10 | 85 | 15 | -- | -- |
| H 11 | 95 | 5 | -- | -- |
| H 12 | 99.5 | 0.5 | -- | -- |
| H 13 | 99.95 | 0.05 | 99.75 | 0.25 |
| H 14 | 99.995 | 0.005 | 99.975 | 0.025 |
| U 15 | 99.9995 | 0.0005 | 99.9975 | 0.0025 |
| U 16 | 99.99995 | 0.00005 | 99.99975 | 0.00025 |
| U 17 | 99.999995 | 0.000005 | 99.9999 | 0.0001 |

Ensuring Safe Air Travel

David Ziegler, Vice President, Aerospace & Defense, Dassault Systemes

As the world looks beyond the COVID-19 pandemic, the aerospace industry will be vital to its economic recovery. There is a lot to do: the International Air Transport Association (IATA) predicts that full-year passenger demand will be 48% lower than in 2019. Meanwhile **40% of recent travelers told an IATA survey that they plan to wait at least six months after the virus is contained before they will fly again.** Building those passengers' confidence will be crucial. But this industry has strong experience of preventing the spread of illness – which is why airlines, airports and aircraft original equipment manufacturers (OEMs) already have robust safety protocols in place.

Optimizing air quality

Airports, airlines and aircraft OEMs pay close attention to air quality, not only for the comfort of passengers but also to prevent the spread of toxic substances and microbes. In the cabins of Airbus aircraft, for instance, air flow, pressure, temperature, and quality are continuously monitored, and all the air is renewed every three minutes. High-efficiency particulate air (HEPA) filters are used to

ensure the air meets the standards set for hospital operating theaters, removing 99.99% of particles down to the size of microscopic bacteria and viruses.

Preventing the spread of disease

Air travel is a focal point for prevention whenever a pandemic threat emerges. As a result, agencies including IATA, the International Civil Aviation Organization and the World Health Organization have collaborated to produce regulations and best practices for workers across the industry to prevent the spread of disease. Disinfecting aircraft cabins, for example, is part of the routine cleaning regime, and additional layers of sanitization are being added to minimize

any risks. Airports are deploying whole teams of extra staff dedicated to cleaning touchscreens, handrails, and other common-use surfaces. Many airports are also screening passengers to make sure nobody with a temperature or symptoms boards the plane.

Modeling measures for safe operation

Digital simulations of air flow can be used in virtual “what if” scenarios to help airlines and airports gauge the effectiveness of measures like social distancing, wearing face masks or altering passenger flow in combating virus transmission. These technologies were recently used, with China's Central-South Architectural Design Institute, to simulate airflow and virus



dispersal to combat the spread of Covid-19 at Wuhan Hospital.

Airlines and airports can use a similar approach to ensure the safety of staff and passengers as they resume operation. Airlines can efficiently simulate airflow and virus diffusion patterns in the aircraft cabin and work with a virtual model to redesign and test safety procedures. By creating high-rendering videos to show how their procedures work, they can communicate effectively with all stakeholders and increase passenger confidence.



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At the Mercy of Misunderstanding: the Devastating Impact of Inadequate Aviation English Language Proficiency



by Gökhan Demirdöken,
Researcher & English
Language Instructor

There have been many cornerstones in the history of civil aviation leading to major changes and new regulations. These include the first balloon flight in 1783, the Wright Brothers' first successful flight in 1903, the first intercity flight by Henry Farman in 1908, the first non-stop passenger flight from London to Paris in 1911, the first solo transatlantic flight in 1927, the first supersonic flight in 1947, and so on. Yet, none of them has been more important than safety and the latter has always been the game changer in aviation.

To set an example, in 1972, Eastern Air Lines flight 401 from New York to Miami with 163 passengers, 10 flight attendants, and a flight crew of 3 pilots crashed into the Florida Everglades causing the death of 101 people. The final report of the NTSB (National Transportation Safety Board) revealed that the

cause of Lockheed Tristar's crash was due to pilot error in failing to "monitor the flight instruments during the final four minutes of flight, and to detect an unexpected descent soon enough to prevent impact with the ground" and one of the first changes to regulations in the aftermath of this accident was that many airlines started to implement crew resource management (CRM) training to enable their pilots to find more efficient ways of problem solving in the cockpit.

This was, of course, not the first and last accident that necessitated the implementation of new regulations either for aviation professionals or other components of this ever-growing industry. In another instance in 1978, a Boeing commercial airliner 727 of Pacific Southwest Airlines collided with a private Cessna 172. This mid-air collision over San

Diego was reported by the NTSB to have probably resulted from PSA crew's loss of visuals with the Cessna and it resulted in two immediate new regulations by the FAA: implementation of TRSA (Terminal Radar Service Area) and the implementation of Class B Airspace for the safe separation of aircraft.

Last but not least, in 1983, an electrical fire on an Air Canada flight from Dallas Fort Worth to Montreal caused toxic smoke in the fuselage caused the death of 23 passengers which resulted in the installation of smoke detectors in lavatories and lighting on the floor level to lead onboard passengers to the nearest exit in case of emergency. Although these accidents are only some examples of more than 11,000 thousand accidents in total that have been recorded since 1970, it clearly shows how significant they are in the

history of civil aviation and the evolution of safety management.

All in all, it can be said that two historic events have challenged the safety measures and resulted in more significant regulations to be implemented for safer airspace: The Zagreb mid-air collision and the so-called Tenerife disaster in two consecutive years. What differentiates these two accidents from the others is that non-standard and even no use of phraseology and communication problems resulting from a lack of English language proficiency were reported to be contributing factors to these accidents. For this very reason pilots' and air traffic controllers' (ATCOs) English language proficiency has started to be taken into consideration much more seriously than before. Yet, it took more than a decade for the ICAO to implement new regulations regarding this



matter. For this reason, it is of great importance for the aviation industry to get a better understanding of a series of events that ended up in miscommunication so that more can be done, if necessary, to ensure safety in the air and on the ground.

Background of the disaster

Famous American poet Robert Frost said, “Two roads diverged in a wood / and I— I took the one less traveled by / And that has made all the difference”. On March 27, 1977, two different routes were supposed to diverge in the second most populous island of the Canary Islands. However, both the KLM flight and the Pan Am flight took the less traveled by route and that made all the difference as it resulted in 583 fatalities and 61 injuries.

What started as joyful air travel from Amsterdam Schiphol Airport to Gran Canaria Airport for 234

passengers of KLM flight 4805 was about to turn into the deadliest disaster in aviation history at around 13:15 local time in the Canary Islands when a bomb exploded in the Gran Canaria International Airport and the airport was closed for air traffic operations. That’s why KLM flight 4805 had to divert to Los Rodeos International Airport in Tenerife. Similarly, the Pan Am flight 1736 operating from Los Angeles to Canary Islands with a stopover in New York was told by the ATC to divert to Los Rodeos although the Clipper 1736 (Pan Am) had enough fuel to circle in a holding pattern for 2 more hours. After landing, both 747s were parked on the only taxiway parallel to runway 12-30 as there was not enough space to accommodate both super jumbos at the same time on the apron. When Gran Canaria Airport was reopened for air traffic operations, both KLM and Pan Am were ready to take-off from runway 30 for their original destination. However, the only way to get to the take-off position on the foggy runway 30 was to taxi all the way down and to backtrack at the end of runway 12. What’s more the Pan Am pilots realized that it was not possible to maneuver due to a lack of safe clearance between them and KLM’s super jumbo which was refueling at that time. After all, there

existed only one option for the air traffic controller to safely guide these two super jumbos to the take-off position on runway 30. First, the KLM plane would taxi down to the end of runway 12, backtrack, and then hold at take-off position; then the Clipper would taxi on runway 12 and take the third exit to clear the runway for KLM. However, nobody could have imagined how all these plans would lead to a chain of misunderstandings and end up in the deadliest air traffic accident in history. English language proficiency was what really mattered throughout this series of events and it is most certainly worth further analysis here once again.

The misunderstandings

Two non-native speakers of English, Spanish Air Traffic Controller and Dutch pilot, communicate over radio for the clearance (Cockpit Voice Recorder):

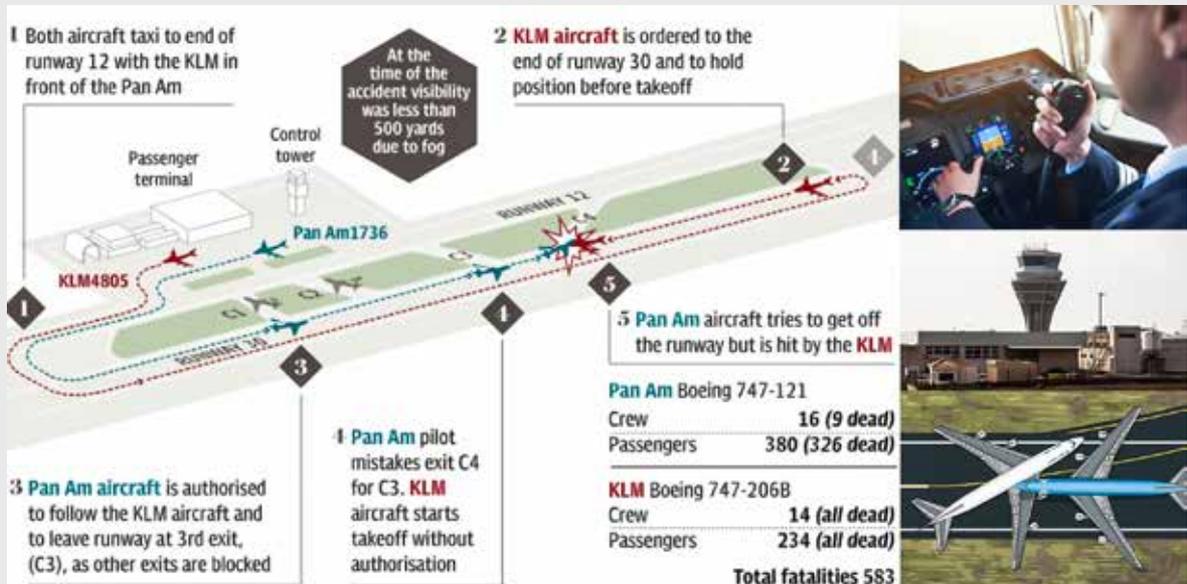
KLM 4805: The K.L.M. four eight zero five is now ready for take-off and we are waiting for our ATC clearance. (17:05)

Tenerife APP: K.L.M. eight seven zero five you are cleared to the Papa Beacon, climb and maintain flight level nine zero, right turn after take-off, proceed with heading four zero until intercepting the three two five radial from Las Palmas VOR. (17:05)

KLM 4805: Ah – Roger Sir, we are cleared to the Papa Beacon, flight level nine-zero until intercepting the three two five. We are now at take-off. (17:06)

Tenerife APP: O.K. Stand by for take-off, I will call you. (17:06)

For many people, this exchange of messages seemed routine at first. However, there was a slight difference which caused the disaster. First, at the time the clearance was requested by the KLM crew, the super jumbo had already completed its taxi down to the end of runway 12 and had backtracked. It resulted in the very first misunderstanding between air traffic controller and the KLM crew because when the controller gives the KLM clearance, the crew misunderstood the clearance as a further leave to take off. That’s why, the KLM crew ended the readback with the following statement: “We are now at take-off”. Furthermore, the controller responded, “O.K. Stand by for take-off, I will call you”, which made the whole communication even more complicated. Such misunderstandings occurring between two non-native speakers of English or between a native speaker and non-native speaker are quite common. In one attempt to identify these issues, the US Federal Aviation



Administration found out that “non-native English-speaking pilots are at a disadvantage flying into countries where their primary or native language is not spoken”. Similarly, it is as challenging for native English-speaking pilots to communicate with air traffic controllers whose mother-tongue is not English. The main problem with the Tenerife disaster was closely related to this issue. Although the KLM captain Jacob Louis Veidhuyzen van Zanten with 11,700 flight hours and the first officer Klass Meurs with 9,200 flight hours were quite experienced in their profession, it was clear in this disaster that they were not competent enough in terms of English language proficiency to clear everything up with the controller. Having a non-native English-

speaking background, the statement “We are at take-off” was clear enough for the KLM crew to mean that they were, in actuality, rolling on the runway. Yet, the same statement meant something totally different to the other person, the air traffic controller. Oxford Learners’ Dictionary states that the preposition “at” is “used to say where something/somewhere is or where something happens”. So, what the air traffic controller, as a non-native speaker of English, comprehended from the KLM crew’s statement was that the KLM super jumbo was physically located on runway 30 and not on the go yet. Having a heavier workload than that of a usual workday and giving air traffic control service under low visibility on the day of the disaster, there was no chance for the

controller to verify the KLM aircraft visually. The lack of English language proficiency to fully comprehend the intended message was clearly unfolded in this disaster and it was also reported by the Dutch investigators as the number 1 factor contributing to the accident: “Inadequate language”.

Ambiguous words

Another interesting fact regarding the contributory role of English language proficiency in Tenerife Disaster was the ambiguous words. The use of standardized phraseology is a must in all air traffic operations to avoid ambiguity and the standard phraseology is well-established in several documents such as ICAO Annex 10 Volume II Chapter 5, ICAO Doc

4444 Chapter 12 and in ICAO Doc 9432 - Manual of Radiotelephony. Furthermore, many national civil aviation authorities publish manuals on radiotelephony for same purpose. Although, majority of these publications date back to the aftermath of the disaster, it was known that Spanish air traffic controllers and the Dutch pilots were not unfamiliar with the phraseology.

The underlying factor causing ambiguity also resulted from the nature of radiotelephony communication between pilots and air traffic controllers. The investigation of the Air Line Pilots Association (ALPA) pointed out this issue. The utterances of the KLM crew were not only out of standard phraseology but also

ambiguous. The report of ALPA stated that the radio message “We are now at take-off” were analyzed by experts and there was no common ground to meet on. While some of the experts comprehended the message as “We are now at take-off”, the others claimed that it could have also been comprehended as “We are now uh taking off”. Taking the unusual situation in Tenerife on that day and the pressure on the KLM first officer after the diversion because of the terrorist attacks on Canary Island into account, it was possible to conclude for the investigators that his pronunciation of certain words was undoubtedly hurried and his voice was tremulous. Yet, the ambiguity was also identified on the other end of the line.

The official report of ALPA clearly showed that “air traffic control was provided by a ground controller and an approach controller” and that “the tower controller was not manned because of a lack of personnel”. Also, “the tower control frequency (118.7 MHz) was used by both the approach controller and ground controller”. As a result, the Pan Am was cleared onto the taxiway by the ground controller whereas the same clearance for KLM was provided by the approach controller.



This, in fact, made a huge impact on the series of events that took place later on. Due to unclear accent of the ground controller who cleared Pan Am onto the runway 12, there was an ambiguity for the Pan Am crew regarding their taxi clearance, which was as follows:

Tenerife GRD: Seven one two stand by. Break, Clipper one seven three six leave the runway (dah) three one (dah) on to (our) left. (17:01)

Pan Am 1736: I am sorry, say again please. (17:01)

Tenerife GRD: Leave the runway the third one (your) left. (17:01)

Pan Am 1736: Okay, ah, taxi down the runway at the first intersection on the left, is that correct? (17:01)

Tenerife GRD: Negative the third one, the third one and change on one nine point seven (17:01)

Pan Am 1736: Okay, the first one and one nineteen seven changing. (17:01)

The conversation between the ground controller and Pan Am crew started with ambiguous words by the controller which resulted from his unclear English accent influenced by Spanish. So, the Pan Am crew cannot make sure whether the intended message was “our” left or “your” left and whether the “first” or “third” left. Even when the Pan Am crew changed the frequency, there was still no clear comprehension of the taxi instruction. The following conversation was recorded between the Pan Am pilot and Spanish approach controller:

Pan Am 1736: Tenerife, the Clipper one seven three six. (17:02)

Tenerife APP: Clipper one seven three six, Tenerife. (17:02)

Pan Am 1736: Ah- We are instructed to contact you and, also taxi down the runway, is that correct? (17:02)

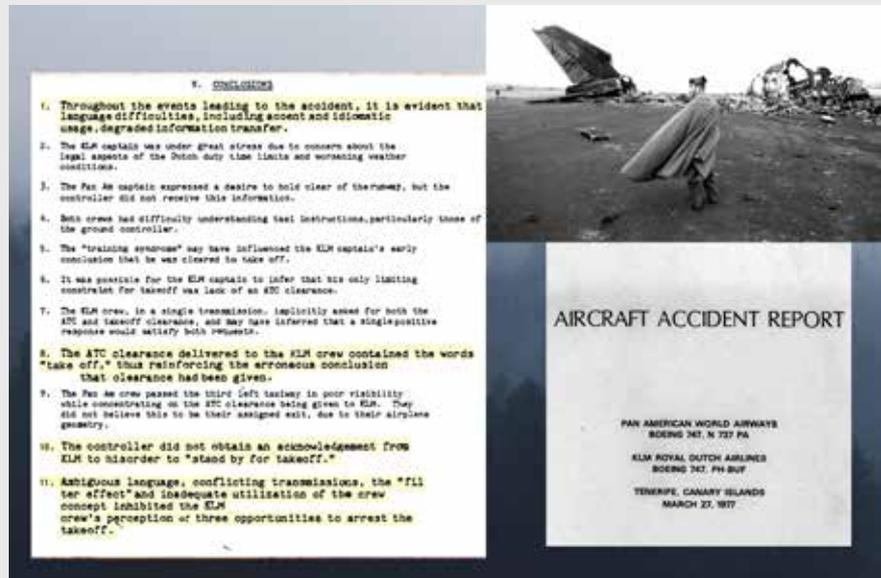
Tenerife APP: Affirmative, taxi into the runway and -ah- leave the runway third, third to your left. (17:02)

Once again, English language proficiency and the variation in the accents of the pilot and air traffic controller were reported to be contributory factors in official reports of the Tenerife disaster. Apart from other causes of the accident, things could have been different if both sides had been clear

enough on (1) whether they were on the go or not, and (2) whether the requested exit on the runway was the first or third exit. In that case, the two super jumbos might have not been on Runway 30 at 17:06 GMT in Tenerife, Spain. The deadliest air traffic accident in history was just about to happen after the final words of the KLM crew were heard on the radio, "We are at take-off". While the readback was being read at 17:06 GMT by the KLM crew, the super jumbo also started its take-off roll. Unfortunately, the other super-jumbo Clipper 1736 had already passed the "third" exit and was trying to clear the runway for KLM. In just five seconds after the V1 callout, KLM's super jumbo collided with Clipper 1736 causing 583 fatalities, which was later officially reported to have primarily resulted from language difficulties including accent and idiomatic usage.

Implications for aviation professionals

The passion of flying has always been an indispensable part of our lives as aviation professionals and enthusiasts. No matter what motivated us, we have always worked hard to be a part of this never-ending passion. While doing so, the first



and foremost principle we were taught was safety first, both on the ground and in the air. What's more, the very well-known expression "Flying is not dangerous; crashing is dangerous" was heard over and over on various occasions. It is very probable that the justification for putting such great emphasis on safety is based on two facts: first, the human factor is always a part of all flights and air traffic operations no matter how "smart" the latest aircraft instruments are. Second, globalization has required aviation professionals to be more effective communicators as there are more non-native speakers of English as lingua franca than native speakers. Hence, the role of pilots, air traffic controllers, aircraft mechanics, ground

handling staff, and others has evolved over time. Moreover, it has gone beyond the borders of being a passive receiver of a message or instruction. It is time for us to be the facilitator in these exchanges of messages firstly by recognizing the differences of English-speaking aviation professionals and then by making use of the full mental capacity to maintain effective communication. What the ICAO has implemented so far to ensure that pilots and air traffic controllers have the required English language competency for safer operations is to be considered within this context. Yet, this seems to be quite a challenge for the ICAO as there are many other factors affecting the radiotelephony communication between pilots and air traffic

controllers. It means that a proficient (Level 6) English-speaking pilot may even end up badly when things really got out of hand in cases like Tenerife Disaster. For this reason, insisting on the use of standard phraseology, avoiding the use of local languages, asking for clarification, making your pronunciation as free from the influence of the mother tongue as possible, these are all must-have aviation communication skills in the 21st century. Consequently, communication breakdowns happen in our daily lives all the time, you could say they're a dime a dozen, we might not even realize them most of the time but there is no chance for error or cutting corners in official aviation communication where safety unequivocally comes first 🛩️



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German Parliament's Session on Aircraft Manufacturer Junkers' Investment in Turkey

Proceedings of the Session of the First Luther Cabinet of the Weimar Republic dated July 14, 1925

In line with the treaties signed, Germany and Turkey had to suspend their relations with their former allies after World War I and nearly five years passed before relations were launched and German diplomats began coming to Turkey¹. The treaty of amity signed in March 1924, which became effective in May 1925, launched a new era in terms of diplomacy and the economy.² Within this scope, TOMTAŞ factory in Kayseri³ opened on October 6, 1926

according to the contract signed by the Republic of Turkey with Germany's Junkers Flugzeugwerke AG company on August 15, 1925 and it is regarded as one of the milestones in Turkish aviation. The records of the period inform us that Junkers Company sent 3 aircraft to Istanbul and Ankara for marketing purposes in the same the year that the contract was awarded.⁴ In addition to the publications of the existing sources in Turkey in this area, the flow of events from the perspective of German politics will be reviewed in this article and the English translation of the corresponding document

that was found within the meeting minutes of this period will be introduced under this headline.

The document numbered 122⁵ in the study⁶ of Karl Dietrich Erdmann, Hans Booms and Walter Vogel (published in 1977) on behalf of the History Commission at the Bavarian Academy of Sciences and Humanities and the Archives of the Federal Republic of Germany reveal the sound recordings of the Weimar Republic's Council of Ministers' session dated July 14, 1925 held at 19:00.

The participants in the session, held upon the decision of German aircraft



manufacturer Junkers to invest in Turkey, are as follows⁷:

Hans Luther - Prime Minister & Chancellor,

Gustav Stresemann - Minister of Foreign Affairs,

Albert Neuhaus - Minister of Economy,

Otto Geßler - Minister of Interior,

Franz Kempner, David Fischer, Carl von Schubert - Secretaries of State,

Otto Kiep - Government Spokesman,

Friedrich Wilhelm Gutbrod

¹Jäschke, G., *Der Wiederaufbau der deutschen Arbeit in der Türkei seit dem Weltkriege*, In: *Der Auslandsdeutsche: Mitteilungen des Deutschen Ausland-Instituts*, 1932, Vol. 15, Stuttgart, pp. 508-511

²Pekesen, B., *Zwischen Sympathie und Eigennutz: NS-Propoganda und die türkische Presse im Zweiten Weltkrieg*, *Studien zur Zeitgeschichte des Nahen Ostens und Nordafrikas*, Band: 18, Lit Verlag, 2014, Berlin, p. 52

³Yalçın, O., *Türk Hava Harp Sanayi Tarihi, Türkiye İş Bankası Kültür Yayınları*, 2013, İstanbul, p. 120

⁴Öngüner, E., *İngiliz Arşivlerinde Cumhuriyet Dönemi Türk Havacılığı, Düşünce ve Tarih Dergisi*, Year: 4, Edition: 47, August 2018, Ankara, pp.46-52

⁵*Akten der Reichskanzlei, Weimarer Republik - Die Kabinette Luther I/II / Band 1 / Dokumente / Nr. 122, Ministerbesprechung im Reichstagsgebäude, 14. Juli 1925, 19 Uhr / TOP Angelegenheit Junkers-Werke*, pp. 429-430.

⁶Erdmann, K. D., (Hrsg.), *Bayerische Akademie der Wissenschaften (München) / Historische Kommission; Die Kabinette Luther I und II: 15 Januar 1925 bis 20. Januar 1926; 20 Januar 1926 bis 17. Mai 1926*, bearb. von Karl-Heinz Minuth, Band I: *Januar 1925 bis Oktober 1925: Dokumente Nr. 1 bis 170*, Harald Boldt Verlag, 1977, Boppard am Rhein

⁷The titles in translation may be different than their actual meanings due to the differences between bureaucratic titles in German and Turkish.

- Department Head at the Ministry of Transport,

Walter Grävell - Chief Advisor to State,

Max von Stockhausen - Private Advisor of the Prime Minister,

Erwin Planck - Advisor at the Ministry of Defense,

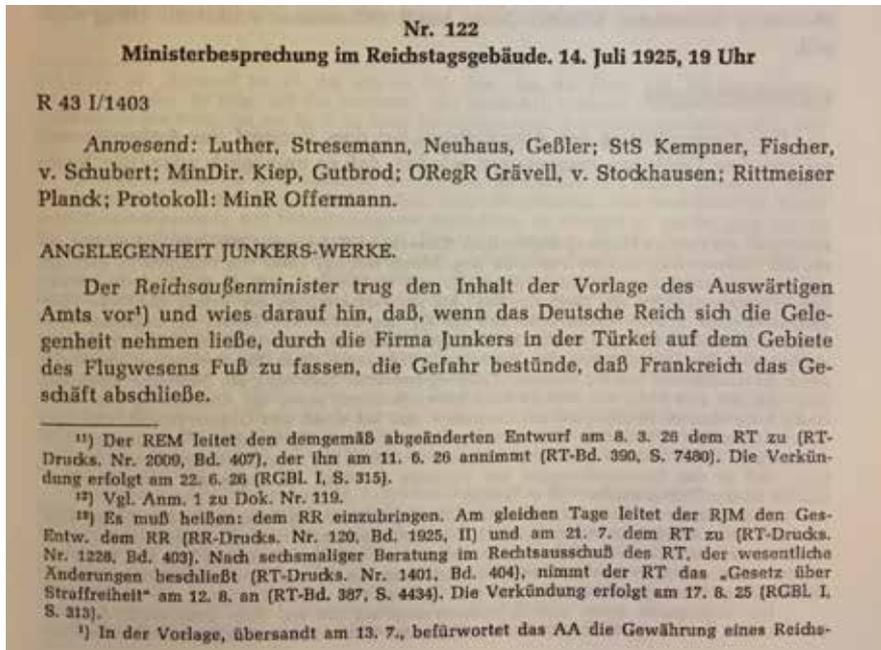
Karl-Eugen Offermann - Undersecretary of the Ministry, in charge of the proceedings.

There is no information on the duration of the session titled "Junkers Factory Issues" then again, the proceedings of the meeting are nearly one-page long including the footnotes:

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The minister presenting the content of the Ministry of Foreign Affairs' draft underlined the risk that France might reach an agreement with Turkey in the case that the Junkers Company of Imperial Germany welcomed the opportunity to enter Turkey's aviation sector. (Footnote No 1)

State secretary Fischer overlooked the acceptance of aircraft orders. In light of the previous experiences, the Ministry of Economy needs to act more cautiously. 4 million Marks cannot be availed as of this moment as the parliament will have to launch an open ballot in this regard and it is certain that such a proposal will not be approved. The government cannot act in



Document 1a) Minutes of the session dated July 14, 1925, p.429

this area unless the Ministry of Foreign Affairs fails to cover this amount from its own black budget.

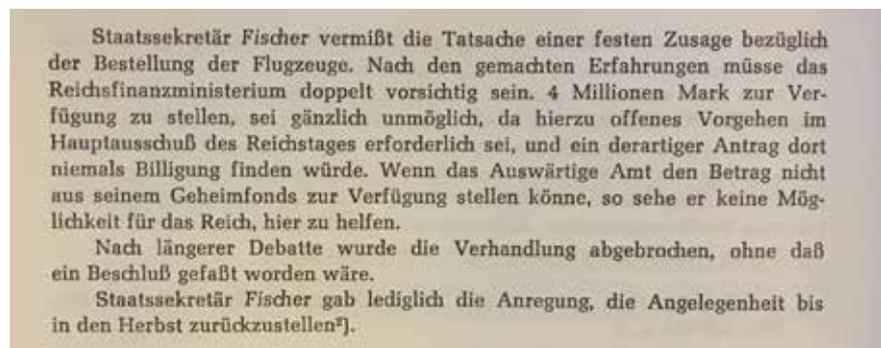
The session was terminated after long discussions without reaching a final decision.

State secretary Fischer noted that the issue was postponed until fall. (Footnote No 2)

Footnote No 1: The Ministry of Foreign Affairs envisaged that 4 million Marks should

be granted to Dessau based Junkers Flugzeugwerke AG Company as a loan in its draft submitted on July 13 and included the following note: Junkers factory and the Turkish government projected the establishment of a Turkish Aircraft and Engine Factory in Turkey and reached an agreement on an exemplary draft contract. According to the agreement, the Turkish government committed to procure all aircraft

equipment from Germany until the construction of the factory is completed and to utilize the raw materials that have reserves in Turkey such as aluminum and iron with the Junkers Company throughout the production in the factory. The enforcement of the agreement does not only imply the acquisition of Turkey's market for the German aircraft industry; it also indicates the Turkish government's trust in Germany in terms of



Document 1b) Minutes of the session dated July 14, 1925, cont. p.430

kredits an die Junkers-Flugzeug-Werke A.G. (Dessau) in Höhe von 4 Mio RM und erklärt dazu: Die Junkerswerke und die Türkische Reg. hätten sich auf einen Vertragsentwurf geeinigt, der die Errichtung einer türkischen Flugzeug- und Motorenbau A.G. in der Türkei vorsieht. Der Vertrag verpflichtete die Türkische Reg., bis zur Fertigstellung der Fabrik sämtliche Flugzeugmaterialien in Dtlid. einzukaufen und die für den Bedarf der Fabrik notwendigen Rohstoffe (Aluminium, Eisen), soweit diese in der Türkei vorkommen, gemeinsam mit Junkers abzubauen. „Die Durchführung des Vertrages würde nicht allein die Gewinnung des türkischen Absatzgebietes für die deutsche Flugzeug-Industrie bedeuten; die Türkische Regierung trägt sich mit dem Plan, den Aufbau ihrer Schwerindustrie sowie die Ausbeutung ihrer Rohstoffe hauptsächlich Deutschland anzuvertrauen und hat durch den Oberst Tewfik, den Vertrauensmann des Türkischen Staatspräsidenten, bereits entsprechende Verbindungen hier angeknüpft. Der Türkische Ministerpräsident seinerseits hat dem Deutschen Botschafter erklärt, daß er das Zustandekommen des Vertrags geradezu als Probe des deutschen Vertrauens zu der Türkei ansähe.“ (R 43 II/698).

²⁾ Nicht wieder im Kabinett behandelt. Unterlagen über den Fortgang in den Akten nicht ermittelt. Dort lediglich in einem Vermerk Wachsmanns vom 2. 5. 26 (?; Tagesdatum fast unleserlich) der Hinweis: Vom Reiche seien bei Junkers insgesamt etwa 30 Mio RM investiert worden. „Diese stecken zum größten Teil, abgesehen von Dessau, in den russischen und türkischen Unternehmungen und sind so gut wie verloren.“ (R 43 II/699).

Document 1c) Minutes of the session dated July 14, 1925, footnotes p. 430

the utilization of the raw materials required for the establishment of heavy industry in line with this plan and the required network was maintained through the President's representative Colonel Tefvik. The Turkish Prime Minister conveyed to the German Ambassador that the realization of this agreement was regarded as Germany's test of trust in Turkey. (R43 II/698)

Footnote No 2: The issue was not discussed once more by the cabinet. The documents of the following processes were not included in the file. The file contains the following information in Wachsmann's note dated May 2, 1926 (the date is unreadable): The Empire invested approximately 30 million Marks in Junkers. Aside from the factory in Dessau, the investments made in Junkers factories in Russia and Turkey largely went to waste. (R43 II/699)

In parallel with these developments, even though we had wished to analyze this issue from the perspective of a senior level German diplomat in Turkey, we were able to examine the memoirs of Rudolf Nadolny, who was Germany's then Ambassador to the Republic of Turkey. Unfortunately, there was not sufficient information in this study⁸ as Nadolny did not write extensively on this topic, he only mentioned the Junkers factory in a few lines in his memoir. Without inserting any dates, he stated that he contacted Prof. Hugo Junkers who was the owner of Junkers Company, that an aircraft factory would be established in Kayseri,

Junkers' representative went to Ankara to negotiate with the Presidency of General Staff and that the construction of the factory was launched thereafter.

The aforementioned document dated July 14, 1925 clearly indicates that the German government did not place much emphasis on the establishment of the TOMTAŞ factory which played a critical role in the history of Turkey's industry and the partnership built with Germany. The reason behind the unwilling stance of the government to grant the loan was the critical financial situation of the Junkers Company in 1925. The company announced

a 12-million-Marks debt in the fall of 1925⁹. The main reason for the financial crisis was due to the foreign investment that Junkers had made in the village of Fili, Moscow in the Soviet Union before Turkey¹⁰. Additionally, as also expressed in the cabinet meeting, the Turkish government's negotiations with France was in question as well and the fact that the Turkish government was indecisive about accepting the offer from the company titled Compagnie Internationale de Navigation Aérienne¹¹.

Given all these circumstances, in addition to the German government's unwilling approach toward the new foreign investment, it should be underlined that the thought of preventing France from seizing the opportunity to utilize such potential was also in question. The most interesting detail in the document is Turkish Prime Minister İnönü's definition of the issue as a "test of trust" and Germany's plan to create an advantage for its own economy through the utilization of the raw materials in Turkey via the TOMTAŞ factory. As can be seen, Turkey's local resources had also been used as the main argument in the establishment of such a critical partnership nearly 100 years ago 🇹🇷



Junkers A20 - Eberhard Kranz Personal Archives

⁸Wollstein, G. (Hrsg.), *Rudolf Nadolny: Mein Beitrag - Erinnerungen eines Botschafters des Deutschen Reiches*, dme-Verlag, 1985, Köln, p. 201

⁹Blunck, R., *Hugo Junkers - Der Mensch und das Werk*, Wilhelm Limpert-Verlag, 1942, Berlin, p. 179

¹⁰Gröhler, O., Erfurth, H., *Hugo Junkers - Ein politisches Essay*, Militärverlag der Deutschen Demokratischen Republik, 1989, Berlin, pp. 28-39

¹¹Blunck, R., *ibid*, p. 172

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Aviation Emergency Medical Services Certification & Operation

by Aeros Team

Utilization of air vehicles as ambulances (EMS—Emergency Medical Service) started in World War I and they were intensely used during the Korean War and the Vietnam War. The first registered aeromedical evacuation was the transfer of a British soldier with an ankle injury from Magdhaba to a gathering point near Al-Arish with the DH-4 airplane.

This first registered EMS operation was remembered in history as it shortened the transfer that would have taken 3 days by land to just 45 minutes by air transfer. The importance of EMS was later more appreciated particularly on the battlefield and nowadays its usage has become quite popular in a wide range of services. The first aviation EMS in the civil area was registered under the title “Royal Flying Doctor Service” in 1928, in Australia. The first certified EMS modification to an aircraft by the FAA was realized in 1947.

Presently, air ambulance transportation is used both for military and civilian purposes, and only in just the U.S. alone nearly half a million EMS operations are conducted



A 1920 ambulance version designated the DH-4AMB-2

every year. The utilization of air vehicles modified with EMS equipment enables the execution of first aid, transfer of the patient to hospitals and tracking of the patient's condition throughout the transfer process especially in emergency cases and in regions with unfavorable road transport conditions.

For the accomplishment of EMS, air vehicles must be equipped with special

devices/equipment. Similar to ambulances, air vehicles with EMS also contain special medical equipment and the utilization of such systems should be enabled under flight conditions which makes EMS operation much more difficult. EMS modifications can be made to both fixed wing and rotary-wing air vehicles so that they are able to function as flying

ambulances.

The design and integration steps to be applied for EMS modification have similar processes that are applicable for other aircraft modifications and both design and integration activities are subject to airworthiness and certification rules.

The air vehicles to be modified for EMS are identified according to the geographic properties and flight conditions in which they will operate while performing ambulance services. Firstly, the operational purpose should be identified. The level of medical response and the required parts and equipment should be clearly defined. The system requirements should be identified in accordance with this operational purpose. The



The well-equipped medevac helicopters that transported injured troops and civilians in Vietnam War with the scope of the Military Assistance to Safety and Traffic program (MAST program)

development of the EMS system and the related equipment that will be integrated to the air vehicle shall be realized according to the system requirements.

Except for the cockpit, the internal units of the air vehicle are completely removed, and all unnecessary equipment and systems are taken out from the aircraft equipment list. Then the air vehicle is modified for medical personnel, patient systems and medical devices.

For the integration of the equipment and systems to the air vehicle, aircraft structure modification and electrical system modifications must be done.

Identification of the systems to be removed from the existing platform, structural modifications for the placement of the medical personnel, patient and medical equipment (cockpit/cabin unit and avionic compartments), layout of the EMS equipment with infrastructure and reinforcement activities required for all systems are carried out as part of the structural modifications. The structural modification activities to be conducted are fulfilled in a way to assure the flight safety of the air vehicle, staff and the patient under special conditions such



H145 from Norwegian Air Ambulance Foundation

as crash landing or hard landing. These special situations are defined in FAR 27.561 and the design activities should be conducted in a way to validate these criteria for the EMS equipment within the modification of the air vehicle.

The systems to be installed on the air vehicle will be powered by the electrical systems of the air vehicle and necessary data sharing is required with

other avionic systems, so the specifications of the electrical buses, circuit breakers, required control panels and data communication requirements with other equipment should be identified. Modification of the lighting system is also essential so that medical personnel are able to perform the required medical response in the cabin during night or low-light conditions.

To ensure the necessary connections for power, lighting and data requirements, the wiring within the air vehicle should also be modified. Similar to the structural modification, the identification of the wiring to be removed and new wiring requirements should be made and the integrated wiring design should be made in accordance with these requirements.

In addition to the medical systems, the internal and external communication systems are modified in order to fulfill the communication requirements of the medical personnel in the air vehicle and with the medical units (hospitals) on the ground. As part of the ICS (Internal Communication System), required modifications should be made so that internal communication can be conducted between the medical staff and the flight crew. The integration



ARTICLE

of an additional radio to enable the communication of the medical personnel with the medical units on the ground about the condition of the patient is also possible.

Following the completion of modifications on the air vehicle, all systems should be verified after the modified layout and structural design, wiring installations and the integration of new equipment. Ground and flight tests are conducted for verification activities. In addition to proving the functionality of the EMS systems, these tests are executed to demonstrate that the air vehicle's existing systems function without any performance loss following modification.

Equipment installations should neither create any negative impact over the performance of the medical equipment nor cause any changes over the functionality and performance of the existing systems of the air vehicle and the air vehicle itself.

Since EMS systems are powered by the electrical power generation sources of the air vehicle, the electrical load analysis (ELA) regarding the modification should be performed. ELA should demonstrate that the power consumption of the EMS equipment integrated to the air vehicle as part of the modification, in addition to the existing systems operating with the

power of the air vehicle, does not exceed the electrical power generated in the air vehicle during all phases of flight. Moreover, a special method that would enable the pilot to cut the electrical power supplied to the EMS systems should be provided to be used during emergencies.

All modification activities over the aircraft should be conducted with consideration of total weight of the platform. Furthermore, the installation of new systems should be made in a way to allow the platform's center of gravity to remain within the flight limits. All analyses to be conducted should be carried out by considering the number of medical personnel and patients within the air vehicle and their layout. Design activities should be executed to allow all potential operational conditions to be safe under all flight limits and durations.

It is important to demonstrate that the structural integration of

all equipment installed on the air vehicle as well as the system layout within the scope of EMS are protected under challenging conditions, such as hard landings.

Ground tests which are identified for requirements as MoC-5 (Means of Compliance) are conducted after the integration of the equipment and modification of air vehicle as part of the STC (Supplemental Type Certificate) activities. The electrical power system, when all systems are functioning, is tested to verify the amount of power consumption is within limits. Additionally, operational tests regarding the scenarios for patient's embarkation and evacuation and verification of the functionality of the EMS equipment are conducted. During flight tests, the requirements which are identified as MoC-6 are checked during the critical points of the flight to verify that the systems are preserving their

structural integrity, are functioning under variety of flight conditions and the integrated operation with other air vehicle systems is functioning properly without any performance loss.

The modifications made on the air vehicle should not be dealt with irrespective of the airworthiness and flight safety concepts. Therefore, the EMS modifications are also subject to international regulations. For instance, the FAA's regulation no AC 135-15 is applicable to EMS modifications.

Regulations of the EASA are defined under the "Annex V-Part-SPA Subpart J HEMS". This regulation stipulates the criteria for EMS modification of the civil air vehicle. Similar to other air vehicle modification activities, those related to various engineering disciplines should be conducted as part of EMS modification activities.

The medical response is defined at two different levels in the AC135-15 regulation. These are namely the BLS (Basic Life Support) and ALS (Advanced Life Support). BLS capability contains the basic first aid and oxygen support required for the transfer of the patient, aspiration, and lighting and temperature control for the response of the medical personnel. Direct communication should be



The image of internal medical equipment of Bombardier Challenger 850

available for the medical personnel in the air vehicle and ground units for the transfer operation of the patient.

In addition to the aforementioned BLS capabilities, it is recommended that ALS should include systems/equipment that enable the medical response and support processes such as defibrillation and establishment of vascular access and equipment required for tracheal intubation, cardiac resuscitation, cardiac rhythm monitoring.

In addition to the basic first aid supplies, EMS platforms contain an oxy-acetylene welding kit, aspirator, stretcher, seating for medical personnel, electrical power supply for EMS systems, ECG device and defibrillator. Airworthy incubator systems for the transport of babies are also utilized when required. Following is the list of the equipment of a typical EMS system:

- Main Stretcher
- IV Poles
- Portable Suction Aspirator
- Portable Sphygmomanometer
- Neck Collar Set
- Resuscitation Unit
- Portable Oxygen Set
- Laryngoscope Set
- Intubation Tubes
- Airways
- Balloon Valve Mask
- Injection Set



The Air Ambulance Helicopter of Ministry of Health

- Magill Forceps
- Diagnostic Light Pen
- Roller Bandage
- Defibrillator
- Transport Ventilator System
- Transport Incubator System

The following aspects should be verified for all equipment integrated to the air vehicle as part of the EMS modification:

- Airworthiness
- No negative impact on the systems of the air vehicle
- Compatibility with the environmental conditions and EM/EMC conditions of the air vehicle
- No performance loss when the equipment is integrated to the air vehicle
- Compatibility with the operational scenarios

In addition to these points, the rules regulating the training of the medical personnel, maintenance services, flight guidelines and operations that need to be observed by the service provider operator are defined in AC 135-15.

All aforementioned design activities must be conducted by design

offices with Part-21 approvals that shows the organizational capability of air vehicle design which is obtained from authorities such as the FAA, EASA and DGCA (Directorate General for Civil Aviation). The STC (Supplemental Type Certificate) shall be issued for the specific type of the aircraft and defined EMS architecture. After the approval of the STC by the certification authority, certified maintenance organizations with Part-145 should implement the necessary changes to the aircraft within the defined STC data.

For today, in cases where road transport is restricted or risky, EMS operations are mostly executed for the swift and safe delivery of organs to hospitals for transplantation operations and the urgent transfer of patients/casualties depending on weather conditions. There is an increasing trend, especially during disaster and emergency cases, for the utilization of air ambulance operations

for the rapid transfer of casualties/organs even during secure conditions.

Currently, air ambulance services are included in the services provided by our Ministry of Health and EMS are employed effectively for the transport of casualties to modern hospitals from regions with challenging road transport conditions.

Our country is located in an active seismic region and has experienced quite massive earthquakes in the past and it is still under risk. EMS bears great importance as it is the sole method to be used for the transfer of casualties where ground transport is limited or impossible, particularly in natural disasters such as earthquakes. If companies and institutions that own private air vehicles apply modifications for the rapid transformation of their air vehicles to EMS, it will be quite useful both for their own purposes and also as a service to the Ministry of Health in emergency cases. The number and locations of the EMS platforms should be extended based on the analysis of the disaster scenarios. Also, with the rise of healthcare tourism in line with the targets of our country, and the importance of transferring patients via international flights, these factors will also influence in the need for more EMS platforms ➔



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University / Glider Pilot

The Effects of Avian Bio-Inspiration on Aerodynamic Design

There are 43 different bird orders and more than 10,000 bird species on planet earth but almost 5,000 of them are passerines (belonging to the bird order Passeriformes).

According to their flight styles, some of the orders are prominent. Soaring and thermal flight is identified with eagles and vultures while migration is identified with storks, cranes and other large birds, while falcons and hawks are known as high speed flyers. These birds are separated according to genetic science (phylogenetically) which changes their morphology and make each of them a master of their own flight styles.

The biological order of Accipitriformes includes eagles, old world vultures, buzzards, harriers and Cathartiformes includes new world vultures and condors. These birds perform outstanding circling performance in thermals (vertical increasing hot air columns) that ensures low-cost flights because energy conservation is vital during foraging. Staying in the hot air columns properly requires slow speed that provides narrower circling.



Figure-1 Comparison of a low aspect ratio pigeon wing and a high aspect ratio pointed falcon wing. The difference in wingtip vortices are clearly seen.

In this way these birds can fly over the strongest part of a thermal. However, low-speed flight is always difficult during non-flapping flight. For this reason, these birds adapted to low speed flight. They have a low aspect ratio with a large wing area that reduces wing loading, but this brings with it some disadvantages. Due to the wide wings, wingtips are large which increases the correlated wingtip vortices to induced drag in these birds. Other gliding and soaring birds such as seagulls, albatrosses and falcons have different wing morphology. A high aspect ratio and pointed wing tips which reduce vortices

can be seen in these birds (Figure-1).

Therefore, Accipitriformes developed a solution, known as winglets in aviation, to reduce wingtip vortices. The concept of winglets was originally developed in the late 1800s by British aerodynamicist F.W. Lancaster, who patented the idea that a vertical surface (end plate) at the wingtip would reduce drag by controlling wingtip vortices. After the cost of jet fuel increased rapidly with the 1973 oil crisis, airlines and manufacturers explored many ways to reduce fuel consumption by improving the operating efficiency of their aircraft.

R.T. Whitcomb, an engineer at NASA Langley Research Center, was inspired by an article in Science Magazine on the flight characteristics of soaring birds and their use of tip feathers (primer feathers, thumb feathers) to control flight. He continued on a quest to reduce cruise drag and to further improve aircraft performance and developed the concept of winglets in the late 1970s. The feathers of Harris's hawk (*Parabuteo unicinctus*) was clipped by V.A Tucker and the clipped and unclipped wings were tested in a wind tunnel to understand the effects on drag polar. A significant increase in drag can be seen in figure -2.

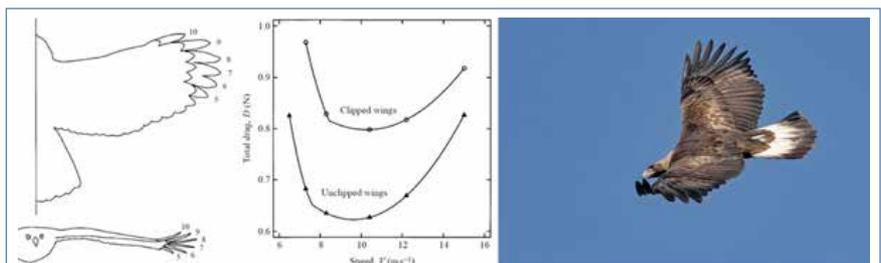


Figure -2. Experiments of Harris's Hawk and the soaring flight of a golden eagle (<https://www.naturespicsonline.com/galleries/37#15>).

Apart from the winglet, the alula of the bird provides many advantages allowing the bird to remain in steady flight at lower speeds. The alula is a small structure located at the joint between the hand-wing and arm-wing that is composed of a digit bone and two to six feathers. This structure can be easily seen in eagles, vultures, hawks, buzzards, falcons and pigeons. The common point among these birds is that they execute very short take-offs, have high manoeuvrability and are able to fly at lower speed. Also, falcon

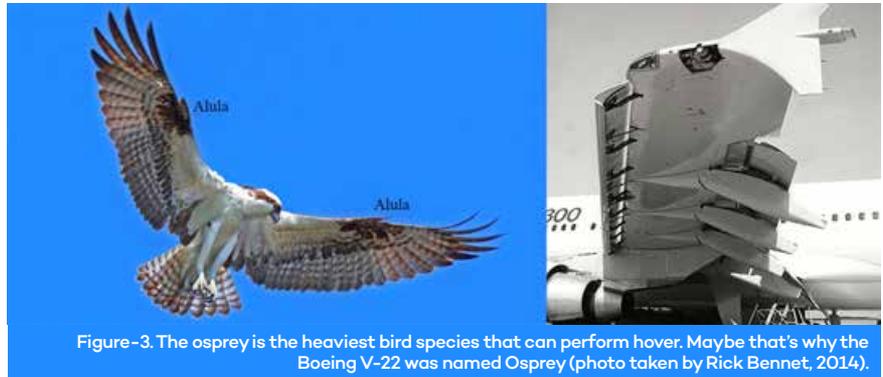


Figure-3. The osprey is the heaviest bird species that can perform hover. Maybe that's why the Boeing V-22 was named Osprey (photo taken by Rick Bennet, 2014).

flow separation. At the separation point, it comes to a complete stop. Then it moves back to the low-pressure region. So, the separation point also moves forward toward the leading

birds, perhaps the biggest goal for designers is to create morphing wings adapt to conditions seamlessly, as we see with the natural precision of birds in flight. Fowler type

be observed in birds of prey and this application has started experimentally in gliders (Figure-5).

With the combination of the natural design of these amazing creatures and technology, many intricate flight challenges have been solved. These days, we can see the inspired design of different types of winglets such as sharklets, spiroid winglets, and the tip turbine which all come from nature's precise design. Billions of years of evolution holds many secrets, iterations of exquisite adaptation, and humankind has taken different clues from nature. As technology advances and transforms the world around us, solutions in aeronautics will continue to unfold as we revere nature's aviators soaring high above us in the skies



Figure-4. A common kestrel controls flow separation during low speed foraging flight (photo taken by Ron Monroe). Stemme has been manufacturing high performance motor gliders since 1984.

species like common kestrel and ospreys use this structure for flapping and non-flapping hover. Its presence is universal in extant flying birds and can also be found in the fossils of several early ancestors of birds. The functions of the alula are similar to that of the extended leading-edge slat in an aircraft, this comparison has often been made as it increases the lift force at high angles of attack and delays the stall (Figure-3).

edge of the wing. As result, the lift breaks down. To prevent this situation, the solution of birds is a reflux bag. The reverse flow opens the reflux-bags just before separation happens, and that prevents stall. This solution was applied to Stemme motor gliders as eddy-flaps, which increased the angle of attack by 23%.

Despite these solutions that were inspired by observing

flaps are used to change the camber ratio and the wing area in large aircraft. Especially in sailplanes, this type morphing would increase the hybrid flight performance. A larger wing area develops circling performance in the thermal while a lower wing area (high aspect ratio) improves gliding performance. This type of morphological change can

By flying with slow speed an airplane or a bird must increase the angle of attack to produce enough lift. But this will lead to



Figure-5. Long-Legged Buzzard decreases wing area by 20% during gliding flight which optimizes gliding performance. This application can be seen in the LAK-17 Experimental Glider as mini flaps extend in the thermal.



by Sitka Atasoy
Spotter & Author of
Aviation Turkey

Dear Readers,

In my previous article, I touched on the shooting techniques we use in Aviation Photography, and I would like to remind everyone once again that it is wise to make budget-friendly choices in the selection of equipment. For this reason, I think it is useful to select or upgrade equipment by self-appraising your enthusiasm and by recognizing your individual dedication and skills in this hobby. It should not be forgotten that the photo is taken by an individual. As your number

Participation and Shooting Stages of Aviation Photography at Air Shows

of shots increase and as you compare the outcomes, you will be able to see your needs more clearly and make better choices.

In this article, as can be appreciated from our title, I will talk about the preparation stages of aviation photography, the information required during the practice, what to do after the event, the safety measures to be taken and the ethical rules to be followed.

Air Show Calendar Planning...

As an aviation photographer you should plan their schedule by

researching and following aviation events, air shows, fairs, aerobatic events during the year, and by plan the events you will be participating in. According to the calendar created, you will need to start preparations well ahead of the first event.

The first stage of preparation is to set a budget for the event. The budget will ensure your comfort from the start of the event to the end. For the best start to a seamless event, prepare a budget by researching transportation fees to/from the location of the aviation event, accommodations and food expenses, transportation fees between the event venue and the accommodation facility, entrance fees if any, and departure fees for foreign

events, passport and visa costs.

After the required research and budgeting, it is necessary to take relevant actions by reviewing prior information on the local time and meteorological conditions of the day of the aviation event, and find out whether or not there is any cancellation or postponement regarding the event. If possible, including the rehearsal days (important for many parameters such as testing techniques and rehearsal of angles, locating discovery and control of light conditions), taking necessary logistics measures and researching and examining the shots at the place where the event was held prior will provide convenience and efficiency in your activity.



It is important to determine if you will need accommodations for the aviation event, for example if it lasts more than one day, etc. Making necessary bookings in advance by contacting the accommodation facilities closest to the event venue saves your wallet from higher costs as many small towns and cities tend to overbook where the event is held. It is helpful to choose accommodations that are closest point to the event venue and to pay attention to the availability of internet service in making your selection.

Planning and making the necessary reservations should be made according to the means of transportation that you use for the arrival at the event venue (whether by your private car, or air transport, road transport or rail transport). The luggage plan for the equipment you will use will enable you to travel more comfortably and safely. For example, the standards of hand luggage in air transport can vary according to the airline company. In order to prevent your valuable and precision equipment from being carried as checked baggage, your carry-on baggage should be prepared in accordance with the passenger baggage rules of the airlines. It is also important to consider that due to COVID-19 some restrictive measures may be in place. It very important



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to proactively get the latest details directly from the airline to avoid unfortunate surprises on the day of travel.

In line with the expected weather conditions, you also need to adjust your equipment one day before starting your trip. After the physical check of your cameras, the sensor should be cleaned, and the lens and battery terminal caps should be cleaned and checked. Batteries should be charged. After the physical control of your lenses, the front lenses,

rear lenses and connecting points of the lenses should be cleaned properly. The memory cards should be emptied, if appropriate, they should be formatted. Your auxiliary accessories such as monopod, tripod, battery grid, hanger apparatus and external flash should be cleaned and the condition/charge of your batteries should be checked. Your equipment should be placed in relevant carrying bags and made ready for secure travel.

According to the weather conditions on the day of

the event, you need to prepare your raincoat, hat (to cover the neck and ears, if possible), sunscreen, a small stool, umbrella, noise-canceling headphones, water and coffee thermoses, protective shoes and clothes suitable for the environment.

In addition to these preparations, it is absolutely necessary to pay attention to the notes and warnings of aviation photographers participating in the previous events, to examine the communication sources of the event, and to address additional needs and measures specific to the event.

After you arrive at the location where the event will take place and check in the facility where you will stay, you should visit the venue prior to the event in order to plan out areas such as the location, light direction, flight directions in line with



© Sitki Atasoy

Spotter Alper Ateş

SPOTTER



Sitki Atasoy and Aktuğ Ateş are waiting for the best shot in winter time and the aircraft is seen before the landing on the background, Moscow.

the capabilities of your equipment. If necessary, you should take notes.

When the rehearsal/practice day of the aviation event begins, take the shots you have planned as per your previous study according to the capabilities your equipment and shooting techniques that I have discussed in my articles. If appropriate, record a video of the event simultaneously, or ask a colleague to record or obtain the related video from the communication channels of the organization, if available.

In a suitable environment at the facility where you will be staying, you can evaluate your rehearsal/practice shots with other aviation photographers if any, analyze them according to video recordings, analyze the location, angle, camera, lens, angle change, lens change, plan the time required for these changes and get ready for the air show day by taking notes, if possible.

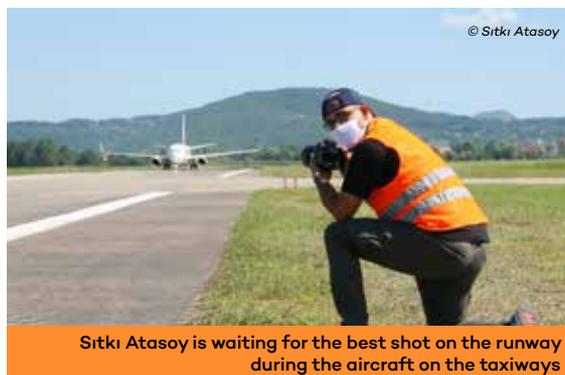
During the shooting on the day of the air show, if there is more than one aviation photographer around and if you stand in alignment, make sure not to enter the frame of another photographer and not to allow your camera to make contact with the photographer next to you in left and right movements when you are using a telephoto lens (basically, in your excitement to catch the shot do not hit anyone with your lens!) Be sure to pay attention to the warnings of the officers. When using a noise-canceling headset, be careful not to lose your eye contact with them as

much as possible, because you cannot hear the audible warnings. Be careful not to stand in the aircraft's direction of thrust. While waiting a long time for an aircraft that will conduct a demonstration flight, protect yourself and your environment by using the equipment you have prepared before. Since you will spend a lot of effort and energy during the shows that often span an entire day, select foods that energize you according to your health and metabolism. Generally sugary foods and drinks will energize you and will affect your performance positively (unless you're

diabetic and you will put yourself into a sugar-induced diabetic coma.)

After the completion of shooting, if the excitement you feel for your shots creates a nice smile on your face and if the images on your memory cards make you curious, these are true signs that you've achieved a pleasant and satisfying aviation photography activity. After you leave the event venue and return home safely, you should transfer the images on your memory cards to the digital environment where you will process, make the necessary adjustments, share the outcome and wait eagerly for feedback.

In this article, I aimed to touch upon the stages of shooting and participation in an air shows for aviation photography, but the stages I mentioned above express my personal experience and preferences. At this point, every aviation photographer can capture beautiful frames by blending their own creativity with their own photography knowhow and experience. After our images appear, we can analyze our photos, see the results of our parameters, make notes and critique our own performance and make the necessary changes. As our number of shots and experience increases, we also start to perform with more fluidity and capture optimum shots with increased confidence and control 🚀



Sitki Atasoy is waiting for the best shot on the runway during the aircraft on the taxiways

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From the Jetsons to Omniscient: Unmanned Air Vehicles and Digitalization

by Gizem Yardımcı- Aviation Expert, Lawyer

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Not long ago, in 2001, unmanned aerial vehicles (UAVs, also known as Drones) were being used in Afghanistan for military purposes. Today, UAVs are used in areas such as agriculture, healthcare, logistics, photography, and cartography. How did aviation technology “progress” this level and

how much “further” will it go? Now that UAVs have entered our daily lives, what measures should governments take in terms of national security and social welfare?

Perhaps you remember the cartoon, “The Jetsons.” This cartoon depicts a utopian design of the future, a promising period

full of terrific inventions that would facilitate the lives of people: Video chats, smart watches and smart televisions, robots assisting in housework, flying cars and products delivered by air. All these fantasies have now come true in our lifetime.

In 1849, at the moment when Austrian forces

attempted to float unmanned hot air balloons with time fuse bombs in Venice was the moment where an unmanned aerial vehicle was used for the first time. We consider the use of hot air balloons as the predecessor to UAVs. And in April and November of 1908, the landing of 10 German hot air balloons

carrying German aviators in France after passing the border paved the way for the organization of the Paris Conference in 1910. The Paris Conference was a significant factor leading to the discussion of aviation law on an international platform.

UAVs have played a critical role in the internationalization of aviation law. Since the use of hot air balloons, UAVs had been tested and tried for military purposes in the US. The first American unmanned aircraft was the radio-controlled "Sperry Aerial Torpedo" in 1917.

Digitalization of UAVs

Digitalization, that is, the process enabling computers to decode data composed of 0s and 1s, facilitated the launch of the "technology of the Jetsons" that we once thought was far from us. However, non-durable digital devices with greater operational capacity have already replaced analogue devices. This applies to aviation as well, with the exception of space technologies. In space technologies, analogue devices are regarded as more durable and reliable than digital devices and are still being utilized. Then again, today we see the digitalization of many devices all around us, ranging from phones, radios and to means of transport.

When air vehicles were first introduced, they were analogue. In fact, when they first came out, computers were analogue too. Since hot air balloons were the predecessor to UAVs, UAVs first emerged as analogue devices as well. Modern UAVs, however, can be remotely controlled. They are airborne and capable of simultaneously executing multiple operations in terms of both communication and working principles. Most importantly, UAVs are now equipped with several digital features. For instance, they are capable of recording images and sounds. Today, UAVs are fully digitalized.

Presently, we come across digitalization in almost all aspects of our daily lives. The origin of digitalization lies in the two-digit number system developed by G.W. Leibniz in his book "**Explanation of Binary Arithmetic**" published in 1703 and it paved the way to the emergence of a new paradigm of technology at the end of 1960s when the internet was first introduced. Ever since the 1990s, digital technologies and the Internet have penetrated our daily lives to the extent that now it is not possible to work out most of our daily chores without these technologies. The storage and utilization of data acquired through

UAVs is an issue that should be considered not only through the perspective of aviation but also in economic terms. Currently, we are capable of conducting all our communication and banking operations in a digital environment. We are able to work from home thanks to digital technologies and the Internet. Many processes ranging from supermarket shopping to booking a vacation could not be handled without the ease afforded by digital technologies. Modern bureaucracy, healthcare, and justice systems have also transformed into well-functioning systems with the help of digital technologies.

Digital technologies are often assessed in terms of their useful societal impacts (or "positive externalities," as referred to by economists.) However, digital technologies cause harmful consequences as well. For instance, surveillance and monitoring systems have entered our public lives as a consequence of digitalization and the Internet.

Today, UAVs mostly fly with high resolution cameras. The cameras do not only enable the flight and ground control of UAVs, in actuality the intended purpose of UAVs (especially in the civil

realm) is the collection of the highest number of images in the highest resolution possible.

"Smile, you're on Google Earth"

Mapping applications, also known as geographical information systems, were the subject of The Economist's supplement Technology Quarterly published in 2007. The headline was "Smile, You're on Google Earth." It seems exciting, doesn't it? Ultimately, all the images of yourself and the surrounding environment would be publically available to everyone via the internet. Moreover, these applications would be free of charge! This may seem quite simple to most of us, but in fact, it is slightly more complicated than it may appear.

Since the 1990s, many organizations and companies, particularly NASA and Microsoft, have been interested in geobrowsing. Mapping technologies started to develop quite rapidly with the launch of an American company in 2001 name Keyhole. This company was taken over by Google in 2004 (The Economist, September 8, 2007). Currently Keyhole is providing services such as social monitoring and hashtag tracing. Today, many of us are using applications such as Google Earth, Google



Medicine Delivery Drone

Maps, and Yandex Maps when heading towards a specific address or checking the location of an address.

How does geobrowsing work? The addresses, directions, and descriptions provided by mapping applications are composed of data already queried by thousands of people. This is called crowdsourced surveillance. Applications such as Google Maps and Yandex Maps do not suggest an original address description; they provide you with the former experiences of thousands of Internet users. Before you, Internet users found the same addresses useful so they tracked the route. The only thing these applications do is track the actions of thousands of people - including you - and actions are recorded, stored and processed and the data is made available to you and others.

You may have noticed that Google Maps and Yandex Maps sometimes direct you to a wrong address. They also present you a longer description. Most of us get frustrated with these applications when they generate such useless results. Though, these applications mostly direct you correctly after certain calculations on places everybody goes to. This is how it works. Above all, they even take the traffic density into consideration!

The services provided by Google Maps or similar applications are really amazing, aren't they? Well, what would you have thought if you had known that these apps constantly tracked thousands of people? Furthermore, you are being watched right now as you are using Google Maps. Doesn't it bother you?

Apps such as Google

Maps, Google Earth, and Yandex Maps track user actions, monitor how long they stop at traffic lights, and even register data regarding when they put on the brakes. This is at the core of how UAVs operate. Today, UAVs execute the delivery of products (such as medical equipment). They are utilized in agriculture and various other industries with the list expanding each day. During the COVID-19 pandemic, UAVs have been used to warn citizens and take the body temperature of people through thermal cameras. We need to take a moment here and ask the following questions: Will internet companies such as Google, Yandex, and Facebook keep growing as they continue to obtain and extract more data about our lives? Everything is tracked on a collective scale, where we are going, the

streets, houses and exact locations, through greater and more functional tools such as UAVs. What are some of the repercussions of mass surveillance and continuous collection of data? Will individual human willpower and personal expression be at risk of disintegration as a more connected and integrated world is formed? Will smart devices make decisions on our behalf?

What are UAVs capable of?

Agricultural irrigation and spraying, transportation, communication, photography, cartography and advertising are amongst the areas where UAVs are commonly used. In the US, companies such as Amazon use UAVs for the delivery of cargoes. In Turkey, the PTT (Postal and Telegraph Corporation) is exerting efforts toward the launch of such services. UAVs are also utilized for the transport of organs for organ transplantation and for the delivery of medicine.

So far, so good. The problem has nothing to do with the ways in which UAVs facilitate our lives; instead, the problem has a lot to do with the ways in which they collect data about us, our houses, and the neighborhood we live in while they operate. The issue is about the massive capacity of UAV

companies in collecting personal data about the people we are in contact with, the places we travel to, and the medicines we use. Above all, companies employing UAVs obtain detailed information about us on a regular basis. At this point, we are talking about very detailed personal data such as where we travel to, at which time of the year, what the weather will be like during our journey, with whom and how frequently we communicate, at which hour of the day we leave our homes, how frequently we purchase our medicine, and the list goes on. This information is often sensitive and it would enable the collection of other information as well. We do not know whether individuals and companies will use this information for commercial purposes or for intelligence purposes. Although many of us hesitate to share sensitive information with the government, we willingly and happily share it with major companies for online purchases for example. There is a major lack of non-liability in favor of UAV holding companies.

UAVs are capable of doing more than we can imagine. In the past, they were utilized merely for military purposes and were equipped with thermal cameras and facial recognition systems. Today they are used for taking temperatures, for facial recognition of the



persons with high body temperatures, and for preventing the spread of disease during the COVID-19 pandemic. How should we protect the personal data and private healthcare information of citizens in such an unregulated market? The laws and regulations are not sufficient at this point. We may have to underline the essence of the full implementation of the laws here (thus the enforcement of the law).

Recently introduced mobile phones are now capable of wide angle shots, capturing images in a clarity that human beings fail to see or perceive. Also, the images recorded by these mobile devices are capable of recording images in angles I fail to see, meaning that I may not be aware of it whatsoever. The issue

is not only that images could be captured without me being aware of it, but more importantly that the images are digitally stored at locations outside national borders. This also applies to UAVs as well.

Naturally, UAVs with thermal cameras and facial recognition features could be used for maintaining public health. However, are the images that UAVs capture and the data they record limited by the "terms and conditions"? Who is informed and liable for the limits of recording this type of data? To what extent are the companies accountable?

Another point related with the widespread utilization of UAVs is that this technology is not only restricted to acquiring the data. This technology violates public privacy. The work conducted

so far extensively discusses the right to privacy of the individual and the privacy of personal data. Then again, another equally critical problem is the invasion of public property and the privacy of data owned by the general public. This topic has not yet been sufficiently discussed and the implications are vast.

We are capable of virtually travelling to many cities across the globe with the help of the aforementioned mapping applications. We are able to observe monuments, buildings with high architectural value and approximately view all the streets of a given city - including the touristic and non-touristic sights. However, this situation at the same time causes a national security problem. Similar to the way we get disturbed when our photos are taken without our authorization, we should not be disturbed when enjoying the parks, streets, buildings, and even the interiors of these buildings that are subject to public property, when they are displayed publicly in 3D.

In the past, the data acquired via mapping used to be stored and protected digitally. Now, they are "protected" openly. However, we're also facing a risk when keeping geographical informational in the form of open data. Even though Google Earth and other applications seem to be



civilian companies, they may easily be used for military purposes and violate both the privacy of users and manufacturers.

We come across another interesting question here: Aside from the ownership of private property, who owns shared natural environments such as mountains, rivers, lakes, coastlines, flora, etc.? Without doubt, all is owned by the public. So, is it not a violation of public property when images are displayed and openly published without the consent of designated public authorities?

Responsibilities of public authorities

The integration of UAVs with digital technologies does not seem to be ending soon. Governments will once again be responsible for tackling the critical issues particularly in terms of the fundamental rights and freedoms created by this

process and of national security and social welfare.

In fact, these issues are not the ones to be solely resolved by law or engineering sciences. Netizens (citizens of the internet, so to speak) produce and share data, but big data companies process the data that the netizens generate to obtain further information and by so doing, they operate under high rates of profit. Big data means big money and data mining and analytics companies are raking in huge profits as well. It's impossible to ignore the economic aspects of this problem.

Well, what can, and should the governments do? Protection of public property is among the liabilities of governments. This being the case, governments will have to launch new policies for adopting measures against Google Earth and others, against the unauthorized storage and processing of personal data including the exploitation of geographical

information, something that has been going on for a long time and seems to be on an uninterrupted path unless intervention is made.

Moreover, the policies and measures in this area may have to be launched immediately because mobile phones will be equipped with the features of UAVs soon. They will then be able to spy on us wherever we go and turn into devices that will allow constant access to us. Will the moment we are continuously watched (24/7) be the moment we feel the safest, just like in the Netflix series *Omniscient*? To what extent will the generation, recording and processing of data where citizens equipped with many tracking devices living in smart cities be discussed? Governments will have to acknowledge the significance of the surveillance economy and take measures accordingly right away 🚀

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Corendon Airlines - Boeing 737-800 Touched Down for the first time at Zonguldak Airport

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by Sitki Atasoy

During the opening of this line with many firsts, a Boeing 737-800 landed at Zonguldak Airport for the first time, while Corendon Airlines made a charter flight to Zonguldak airport for the first time. Spotters were invited for the first time to participate in the opening and witnessed an important moment.

Taking off with 157 passengers from Cologne, Germany, Corendon Airlines Boeing 737-800 aircraft with registration TC-TJN landed at Zonguldak Airport the morning of 27th June at 10:25 am local time. This flight marks the first time a Boeing 737-800 aircraft landed at Zonguldak Airport. Until today, no

Boeing 737-800 aircraft had ever landed on the 1880-meter-long runway. This was an evacuation flight conducted by Erhan Bayram, a veteran chief pilot of Corendon Airlines, to bring Turkish expat citizens back home and it was also the first charter flight of Corendon airlines to Zonguldak Airport. The passengers had been staying in Germany due to flight restrictions as a result of the Pandemic. In the wake of the evacuation flight, the airline conducted the

return ferry flight from Zonguldak Airport at 11:30 am local time.

Zonguldak Airport is essential for regional tourism and is quickly becoming a favorite airport in the region, especially in the summer and high season due to the presence of Turkish expatriate citizens living in Germany that are from and around Zonguldak. The airport is expected to contribute to regional tourism in the coming period and gain

commercial and industrial value. The commercial seaport, which is still under construction in the Filyos region, will also create a critical junction that combines the sea and airline commercially.

The runway expansion work of the airport, which currently does not have a taxiway, are still ongoing. Everything is done manually at this airport, where there is not even a pushback vehicle. Another feature of the airport is that ZONHAV Civil Aviation, a local company, assumes full responsibility for aircraft refueling, firefighting, and ground handling services. Following the first line flight, an airplane from Münster, Germany, conducted a charter flight to Corendon Airport on 28th June.



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Russian Be-200ES Aircraft are Ready for Firefighting Action in Antalya, Izmir and Bodrum

Two Russian Be-200ES aircraft have arrived in Turkey and from June 16 will begin work on suppressing the spread of forest wildfires in the Republic of Turkey. The signing of the Forest fire-fighting service agreement and deployment of the aircraft were organized by the United Aircraft Corporation (PJSC UAC powered by Rostec State Corporation) with the assistance of the Ministry of Industry and Trade of the Russian Federation, the Ministry of Civil Defense, Emergencies and Disaster Relief of the Russian Federation and the active support of the State Corporation Rostec Representative Office in Ankara.

The request for help in controlling forest fires in the coming hot season came from the Republic of Turkey's Ministry of Agriculture and Forestry. Be-200 amphibious aircraft with Russian crews will be on duty ready to engage in

firefighting activities in the vicinity of Antalya, Izmir and Bodrum for a duration of 4 months.

The Be-200 amphibious aircraft was demonstrated during the MAKS-2019 air show, attended by Russian and Turkish leaders. In 2019 it took part in the flight program of Teknofest-2019 Aerospace and Technology Festival in Istanbul, and after the end of the forum, the Be-200 demonstrated its unique characteristics for real situations.

In 2019, the Turkish delegation led by the Minister of Agriculture and Forestry of the Republic of Turkey Bekir Pakdemirli and Ambassador Extraordinary and Plenipotentiary of the Republic of Turkey to the Russian Federation Mehmet Samsar visited PJSC "Beriev" (part of the UAC), checked out the manufacturing site where the Be-200 is assembled, a maintenance center and a flight simulator for pilot training.

«The Be-200 is ideal for regions with a hot climate, as well as for working in hard-to-reach areas. It advertised itself while fighting wildfires not only in Russia, but also in many countries around the world, including France, Portugal, Italy, Greece, Indonesia, and Israel. This year, we promptly gave a hand to our Turkish partners. Organizational issues were resolved as quickly as possible, thanks to the coordinated work of the Russian and local authorities, the representative office of the Rostec State Corporation in the Republic of Turkey.» noted Director for International Cooperation and Regional Policy of Rostec Victor Kladov.

The serially produced Be-200ES multipurpose amphibious jet is designed for firefighting, provides assistance in the case of emergency situations, implements search-and-rescue missions on water, and conducts cargo and

ambulance transportation, as well as ecological monitoring.

The Be-200ES is the only amphibious jet plane in the world that provides undeniable advantages in speed when fighting fires. The Be-200ES can hold up to 12 tons of water. The plane offers high fire-suppression capacity in terms of the number of water drops per hour. With an airfield-fire distance of 100 km and airfield-water body distance of 10 km, the airplane can drop up to 270 tons of water on the fire.

In 2003, the airplane was certified by the IAC Aviation Register in accordance with AP-25 airworthiness requirements. In 2007, an addition to the type certificate was received, allowing the Be-200ES to be used to transport 43 passengers on medium-haul routes based on both airfields and water. The European Type Certificate EASA for the airplane was issued in 2010.



Kürşad Koçak Appointed as COO of TAV Airports

TAV Airports, a member of Groupe ADP, announced Kürşad Kocak as its COO, on June 23, 2020. Kürşad Koçak who has been working as Havaş Ground Handling Co. General Manager, has been appointed as TAV Airports Holding Chief Operating Officer (COO), as of July 1st. He will be responsible for developing aviation operations of the 15 airports in TAV's portfolio.

Kürşad Koçak – COO, TAV Airports Holding, Graduated from Ankara University in 1990, Kürşad Koçak began his career in the sector in 1996. After he joined the Havaş family in 1997, Koçak worked in executive

positions at Istanbul, Dalaman, Trabzon and Antalya airports. Besides working as the General Manager of Cyprus Airport Services (CAS), Koçak was assigned as Deputy General Manager of Havaş in 2009. Koçak held the position of General Manager of Havaş since 2015, Koçak was then appointed as the Chief Operations Officer (COO) of TAV Airports Holding as from July 1st, 2020. Moreover, Koçak maintains an active role at the Union of Chambers and Commodity Exchanges of Turkey (TOBB), the Turkish Civil Aviation Assembly and the Turkish Private Aviation Enterprises Association (TOSHID).



Turkish Technic Hangars Successfully Completed Fire Inspections

Turkish Technic successfully completed fire inspections of their first base maintenance hangars in Istanbul and at Istanbul Airport. Upon completion of all phases Turkish Technic will be able to overhaul 26 narrow-body and 19 wide-body aircraft simultaneously at their MRO

complex located at Istanbul.

The main feature of the Turkish Technic maintenance hangars at Istanbul Airport is their safety systems. Inside the hangar, there are five 3,500gpm fire pumps, 1,938 cubic meters of firefighting water storage and 89 foam generators.



ONUR Engineering Systems Will be Used in Moroccan Airports

ONUR has signed a contract to deliver 5 VCS (OCS-NG4000) and VRS systems (ORS-IP2000) for ONDA (Moroccan Airports Authority). ONUR Celebrates its 40th year of stable growth with its successful customer-

centric approach in air traffic management, combining innovative and dynamic expertise in Voice Communication System and Voice Recording Systems manufacturers / designers worldwide.



These days with the COVID-19 pandemic sweeping across the world, an event for children was held by using the state-of-the-art technology. This event is unique in terms of its design and philosophy, its scope and timing, and the methods and processes used.

This year, "April 23rd National Sovereignty and Children's Day" had an extra special meaning! April 23, 2020 was the 100th anniversary of the foundation of the Grand National Assembly, which is the symbol and guarantee of "National Sovereignty" in the Republic of Turkey; however, this year our children who are the owners of this day were at home with their parents to fight against an invisible enemy, the COVID-19 pandemic.

During this challenging #stayathome process, a creative contest related to aviation was held for children who's "minds are in the sky." This contest was designed and launched by Can EREL, who is recognized with his assignments and unique projects in aviation. Elementary and secondary school students (born between 23 April 2007 - 22 April 2012) competed by submitting a Work Set composed of paintings and stories, working as part of a team with their family members under the theme of "Me in the Future of Aviation."

The contest in brief is as follows:

This philosophy that I intend to turn into a product of "CAN'CA Intellectual Projects" emerged as a project that was organized and

Sky Kid Painting and Story Contest

built with the support of those who believe in my philosophy and with their sincere cooperation, administrative and communicative processes, sharing resources and methods, the concept of "Sky Kid" was formed.

With the aim of contributing to the upbringing of our children who are indeed the guarantee of our future, to enable them to become individuals capable of dreaming, questioning, researching and cooperating and allow them to create free and unique art work with their family members, we organized a contest where they could compete with work sets composed of a paintings and relevant stories. With their team composed of a maximum of two family members (father-mother, siblings, grandparents, etc.), children born in

• 23 April 2010 - 22 April 2012 will compete in the Category for Children

• 23 April 2007 - 22 April 2010 will compete in the Category for Teenagers

The gifts awarded to the winners of this wonderful contest were



Can EREL
Aeronautical Engineer

provided by esteemed industry members and businesses and by my esteemed friends who have dedicated their lives to aviation.

Within the scope of the organization of the "Sky Kid - Painting and Story Contest"

• General Coordinator
Can EREL (Aeronautical Engineer)

• Secretariat General of the Project,

- Büşra GÖRMÜŞ
(Metallurgical and Materials Engineer) -
Group Coordinator

- Gülcan MANTAR
(Journalist, Ankara)

• The painting jury in charge of the preliminary evaluation and rating of the competing artwork was composed of,

- Hüseyin CİĞDEM
(Artist, Ankara) - Group Coordinator

- Aybüke HAYIRLIOĞLU
(Artist, Bursa)

- Yeşim LİVAOĞLU
(Artist, Ankara)

• The jury in charge of the preliminary evaluation and rating of the stories as part of the artwork was composed of,

- Hatice Nur GÜNDOĞDU (Pilot-Trainer, Bursa) - Group Coordinator

- Hakkı AKTAŞ (Aeronautical Engineer, Istanbul)

- Ayşenur YAZICI (Journalist, Istanbul)

Muhammed YILMAZ (Aeronautical Engineer, Istanbul)

• The Final Jury in charge of the final assessment and rating of the shortlisted competing artwork (paintings and stories) was composed of,

- Serdar ÇORA (Aeronautical Engineer, Ankara) - Group Coordinator

- Oya TORUM (Architect, Istanbul)

- Ali Taylan ÇULPAN (Aeronautical Engineer, Ankara)

- Tolga ÖZBEK (Pilot-Journalist, Istanbul)

After this intense and exciting process, the contestants who ranked in the top three grades and who were deemed worthy of special awards were announced on the "April 23rd National Sovereignty and Children's Day", thus we celebrated two events.

Children who's "minds are in the sky" and their family members prepared and submitted their works of art designed in line with their imagination soaring freely in the sky. 40 of these sets were accepted to the contest and as a result of the evaluation of the juries composed of members who are acknowledged experts in their fields, 14 contestants received 7 ranks and 8 special awards.



According to the evaluation of the artwork,

• Winner of the Contest - "Sky Kid 2020" Mira Kahvecioğlu

• Category of Children

- Winner Leyla Pera Erkman

- Second Runner Up Aybüke Genç

- Third Runner Up Kudret Akçalı

• Category of Teenagers

- Winner Ecrin Karabıyık

- Second Runner Up Yiğit Kürşad Aktaş

- Third Runner Up Sarp Peker

• Category of Children

- Special Award (Visual Arts) Aybüke Genç

- Special Award (Visual Arts) Sanem Özbey

- Special Award (Environmentalist) Enes Sarp Sanin

- Special Award (Flight) Sümeyye Zela Özkorkmaz

• Category of Teenagers

- Special Award (Visual Arts) Rengim Ateş

- Special Award (Verbal Art) Şaziye Yaren Aysu

- Special Award (Technical) Erdem Kaytan

- Special Award (Flight) Almıla İdil Özdemir

• Recipient of the CE Special Award (Corresponding Teacher) Sevda Oğuz, Director of Bat-man Sınav College

The International Civil Aviation Organization followed the contest and after the announcement of the results of the competition, sharing their comments on the contest and its results via the following message on its social media accounts:

"Flight has and will always inspire us all. As a timely reminder of that in these difficult times, here is a charming opportunity to look at #aviation again through fresh eyes".

Please find the details and up-to-date developments, including the chart displaying the distribution of the awards at the [website of the contest](#)



Airbus has Named Anand Stanley as President Airbus Asia-Pacific



Effective 1 July 2020, based in Singapore, Anand Stanley will lead the strategy and future positioning of Airbus and its divisions across the region. In this role he will have responsibility for commercial aircraft sales and customer affairs, group-wide government affairs, industrial and joint venture partnerships, as well as the local operations at Airbus sites across the region.

Anand Stanley reports to Christian Scherer, Airbus Chief Commercial Officer and Head of International, and will work closely with the Heads of Region for the Airbus Helicopters and Defence and Space divisions who are co-located at the company's Asia-Pacific headquarters in Singapore.

Anand Stanley joined Airbus in 2018 as President & Managing Director of Airbus India, where he has overseen the Airbus business development and advanced the company's position with key stakeholders, including customers, government agencies and industry partners.

Prior to joining Airbus, Anand Stanley held senior positions in the civil aerospace, defence and helicopter markets, as well as in strategic management and M&A planning, having worked with the Linde Group, UTC, Pratt & Whitney, Lockheed Martin and Sikorsky. Over his career he has worked extensively internationally, with more than two decades of involvement in Asia and the Pacific region.

"Anand has brought a wealth of experience to Airbus and managed the company's operations in India with very positive results," said Christian Scherer. "His proven track record makes him the right choice to lead Airbus in the key Asia-Pacific market. We know that we can count on Anand to focus on supporting our customers in these most challenging times, while developing further our position as the leading partner for the aerospace sector in the region."

Anand Stanley has an MBA from the University of Virginia-Darden in the US, a Bachelors of Engineering from Andhra University, as well as a postgraduate degree from IMI-Delhi.

The AW109 Trekker; New Helicopter to Support EMS Operations in Normandie

The AW109 Trekker light twin engine helicopter has been chosen as the new helicopter to support Emergency Medical Service (EMS) operations from Rouen Hospital in Normandie, France. One aircraft, with a specially customized EMS interior, is expected to be delivered by the end of 2020 from Leonardo's Vergiate final assembly line in Italy, and the rotorcraft will be operated by S.A.F. Hélicoptères.

The SAF Hélicoptères' AW109 Trekker-based offer was selected following a thorough and rigorous tender process outperforming competing types. The contract award marks the entrance of this Leonardo light twin helicopter model into the French civil helicopter market and follows the success of the AW109 Power and Grand for EMS tasks in the country. This achievement also expands the number of French commercial customers using Leonardo helicopters such as the AW109 series, AW169 and AW139 for a range of roles including EMS and VIP/corporate transport. The AW109 Trekker is the perfect fit to meet other EMS requirements in France in the future.





DHL Express Expands its MENA Aviation Fleet with Two Boeing 767-300ERs

DHL Express recently added two new Boeing 767-300ERs to its MENA air fleet, marking a further step in the Company's efforts to enhance its regional aviation network and improve its air capability to better support the region's logistical demands. The technologically-advanced, energy-efficient planes, which are based out of the Company's regional Aviation Headquarters in the Kingdom of Bahrain, will enable DHL greater operational efficiency and capacities to meet the surge in customer demands.

The new aircraft will increase DHL's overall load capacity by more than 25%, servicing existing high-demand lanes across the GCC, extended Middle East, Africa & Indian

Subcontinent which house some of DHL's key commercial partners.

"Investments in strengthening our MENA air network continue to form part of our wider strategy to enhance our capabilities in this region and better service high demand destinations with greater speed, reliability and efficiency, ultimately improving service excellence which lies at the heart of DHL's business model. In the past 6 years, in addition to almost doubling DHL's Aviation touch points and boosting international flights to over 175 per week, we have consistently increased load capacities to vital trade links such as Egypt, Saudi Arabia, UAE, Lebanon, Jordan, East Africa and on our Asian lanes amongst

others, to support the growing logistics needs of our clients for better cross-regional and global connectivity," commented Richard Gale, Head of DHL Aviation Middle East and Africa.

"eCommerce is a key business driver for us and keeping on top of the shifts in world trade and how we adapt is very important. We are continually analyzing our network and adding air capacity to capitalise on the increased activity between Asia, the Middle East and Africa which are vital trade hubs for our regional clients," continued Gale.

The two new Boeing aircraft will complement DHL's existing fleet of 767-200ERs operating in the region, bringing its total fleet size to 8 aircraft, while helping to

significantly improve fuel efficiency and decrease CO2 emissions.

"One of our main criteria when deciding to add new planes to our DHL fleet, is to reduce our environmental impact; this supports our global vision and GoGreen targets to become the first zero emissions logistics company by 2050, an ambitious journey that is already being implemented across key operational verticals through clean transport solutions and greener supply chains. We are continuously upgrading our fleet with larger more fuel and energy efficient planes and the new Boeings are considered amongst the most cost efficient aircraft available today in the regional freighter industry", further stated Gale.

Taxi-Out Times in Domestic Flights at Istanbul Airport to Decrease Nearly by 50%

The 3rd independent runway of Istanbul Airport was launched on June 14th with a ceremony attended by President Recep Tayyip Erdoğan.

In addition to the ceremony for the 3rd independent runway, which will increase the hourly aircraft landing and take-off capacity from 80 to 120 at Istanbul Airport, the opening ceremony of

the mosque and the state guest house was also held.

Istanbul Airport has become the first airport in Turkey and the second airport in Europe, after Amsterdam Airport Schiphol, to operate three runways in parallel.

With the commissioning of the third independent runway located east of the Istanbul Airport Terminal, there will be a

decrease of nearly 50% in the existing taxi-out times for domestic flights. According to simulations, the average landing time will decrease from 15 minutes to 11 minutes, and the average takeoff time will decrease from 22 minutes to 15 minutes. The second "End-Around Taxiway", which aims to reduce surface congestion at airports having busy air traffic, was also put

into service with the new runway. Thus, there will be no restrictions on the movement of aircraft on the ground at Istanbul Airport, where simultaneous landings and takeoffs are conducted.

Istanbul Airport now has 5 runways, 3 of which are independent runways and 2 are standby runways. Thanks to the new runway, the air traffic capacity will



increase from 80 take-offs per hour to the over 120, and the slot flexibility of the airlines will increase. With the new runway, a daily average capacity of more than 2 thousand 800 landings and takeoffs will be reached.

Taxiways belonging to the runway have a width of 23

m and a shoulder width of 10.5 m on both sides. The width of the taxiways in total is 44 m, including the shoulder. High-speed exit taxiways were used on the taxiways, 4 of which are for north-flow operations and 4 for south-flow operations. Others are parallel taxiways. There are 25 taxiways in total.

The third independent runway has been equipped with electrical and electronic navigation systems that allow landing and takeoff in the CAT-III weather minima. Two pavement types were used for the runways; cement-concrete pavement and asphalt pavement. There is a section with 36 runway heads that have been planned for heavy landings which been coated with 375 m concrete. The rest of the runway was built with asphalt of 2,685 m. The runway shoulders were also completely built with asphalt.

With an indoor area of 8,070 m², the mosque at the Istanbul Airport consists of 3 main sections: the dome, the gathering-place section and the courtyard.

The Istanbul Airport State Guest House consists of the VIP Hall, rest rooms, three different halls, foyer area, two conference halls, kitchen, offices, press waiting room, staff room, men-women masjid, ablution room and shelter.

The State Guest House is 3,825 m² and will host foreign country presidents.

Honeywell and MNG Jet Bring one of the Fastest Wi-Fi Networks in the Sky to Business Jet Passengers in Turkey



For the first time in Turkey, Honeywell has supported channel partner MNG Jet in installing Honeywell's JetWave satellite communications hardware on MNG Jet's Bombardier Challenger 605. This satellite communications installation enables high-speed cabin Wi-Fi, via Inmarsat's Jet ConneX service, for a better passenger connectivity experience. Additionally, it provides pilots with a better internet connection to support flight planning and management.

"MNG Jet is committed to delivering a high-quality and reliable service to its customers," said Can Şaşmaz, general manager, MNG Jet. "We understand that in-flight connectivity is of paramount importance to both passengers and operators. We selected Honeywell's JetWave to provide our customers with an exceptional connectivity – one that offers passengers consistent, high-speed wireless connectivity,

virtually anywhere in the world."

Honeywell's JetWave hardware enables a connection to the fastest broadband available in business aviation. Whether working in the air, staying close to family and friends on social media, or streaming their favourite video series, passengers will benefit from reliable connectivity at speeds like those found at home. This is enabled by the

CNX-900, one of the most advanced routing software application suites offered today.

"Honeywell is renowned for its superior connectivity solutions, such as our JetWave hardware," said Serdar Cetingul, leader for Turkey and Central Eastern Europe, Honeywell Aerospace. "Following this successful installation, we look forward to seeing more business jet operators in Turkey reaping the rewards

of high-speed, reliable in-flight connectivity. We have a long history working with MNG Jet as one of our channel partners, and its ability to provide similar future installations of JetWave in Turkey will reduce the need for aircraft operators to travel long distances to upgrade their aircraft."

As a Honeywell channel partner, MNG Jet can offer business jet operators in Turkey a local base to install JetWave, in addition to other Honeywell services to support operators in the market. MNG Jet offers operators line maintenance across select Honeywell auxiliary power units, engines and access to the latest retrofit, upgrades and modifications. To ensure local operators have the in-market support required, they can enroll in the Honeywell Maintenance Service Plan, an umbrella of services for business aviation.



Serdar Cetingul



© Universal Movement

Comfort and Protection in Economy Class

Safran Seats is offering the Interspace equipment which improves premium economy passengers comfort when travelling by utilizing two easily-deployable padded wings that fold out from the seat back with their partner Universal Movement. These padded wings allow passengers to rotate and lean on a cushioned surface and thereby provides greater lateral support. The system is retrofit-able, which allows

airlines to fit the Interspace technology onto a fleet without replacing existing seat units.

Safran Seats and Universal Movement are also working on an equipment adaptation called Interspace Lite, which gives airlines flexibility to easily reconfigure their economy cabins, by providing delineation and privacy between passengers by locking out either the central or outboard seats of a row.



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© Strata

Strata Completes Construction of its Joint Venture Facility with Solvay in Al Ain

Strata Manufacturing (Strata), the advanced composite aero structures manufacturing company wholly-owned by Mubadala Investment Company PJSC, has completed work on the Strata Solvay Advanced Materials (SSAM) high-tech facility in Al Ain, a joint venture with Solvay, Belgium's materials and chemicals company.

The completion of the SSAM facility heralds the beginning of Strata's diversification journey, with the Al Ain manufacturer now the Middle East and North Africa (MENA)'s first supplier of aerospace-grade pre-impregnated carbon fibers and the fourth globally. The completion of the facility also marks a new chapter in Abu Dhabi's drive towards a sustainable homegrown manufacturing sector.

The 8,500 square meter SSAM facility is currently being equipped with the latest technology and

machinery prior to the testing and qualifying of processes designed to supply carbon fiber prepreg materials for primary structure applications in Boeing's 777X program.

Key positions have already been assigned to UAE nationals. Khalid Al Nuaimi, a Strata engineer, will head the Strata Solvay project and manage communications between the two companies, as well as execute the business plan, budget and purchasing of equipment for the facility. Ghubaisha Al Ameri, currently a Quality Engineer at Strata, will also transition to the new team.

Strata works with leading aircraft manufacturers, including Airbus, Boeing, Leonardo, and Pilatus. Based at Nibras Al Ain Aerospace Park, Strata supports the development of a leading aerospace hub in Abu Dhabi as part of the Emirate's economic diversification initiatives.

EASA Certifies Electric Aircraft, First Type Certification for Fully Electric Plane World-Wide

The European Union Aviation Safety Agency announced the certification of an electric airplane, the Pipistrel Velis Electro, the first type certification world-wide of a fully electric aircraft and an important milestone in the quest for environmentally sustainable aviation.

“This is an exciting breakthrough,” said EASA Executive Director Patrick Ky. “This is the first electric aircraft EASA has certified but it will certainly not be the last, as the aviation industry pursues new technologies to reduce noise and emissions and to improve the sustainability of aviation.”

The Velis Electro is a two-seater aircraft intended primarily for pilot training. Slovenia-based Pipistrel is a leading small aircraft designer and manufacturer, specialized in energy-efficient and affordable high-performance aircraft. The Velis Electro (Model Virus SW 128) joins a product line-up of similar, but conventionally powered, aircraft.

The certification, completed in less than three years, was only possible in that time-frame due to close cooperation between Pipistrel and EASA, with the common goal of ensuring the aircraft met the high



© Velis Electro

standard of safety needed for certification. The project also brought important learnings that will support future certifications of electrically powered engines and aircraft.

The aircraft is powered by the first certified electrical engine, the E-811-268MVLC, certified by EASA for Pipistrel on May 18, 2020.

“The type certification of the Pipistrel Velis Electro is the first step towards the commercial use of electric aircraft, which is needed to make emission-free aviation feasible. It is considerably quieter than other aeroplanes and produces no combustion gases at all,” said Ivo Boscarol, founder and CEO of Pipistrel Aircraft. “It provides optimism, also to other electric aircraft designers, that the type certification of electric engines and aeroplanes is possible.”

The certification project developed in two streams, firstly the typical certification activities related to the aircraft and in parallel a coordinated flight test program using a fleet of (non-certified) Alpha-Electros under EASA permit to fly.

Having the ability to operate a similar aircraft meant the EASA team, which included members from the launch National Aviation Authorities (France’s DGAC FR and Switzerland’s FOCA), had access to operational data necessary for the certification activity, while highlighting the operational needs to enable electric aviation.

Dominique Roland, Head of the General Aviation Department at EASA said: “For the EASA, the type certification of this aircraft marks a significant dual milestone: on May 18, 2020 we type certified its engine as the first

electric engine – now we have followed up with the first type certification of a plane flying that engine. This was a truly groundbreaking project which has yielded many learnings for the future certification of electric engines and aircraft, undoubtedly a growth area in coming years in line with the aims of environmental protection.

During the course of these projects the EASA gained first-hand experience in electric flight, learning more about batteries and their management systems, as well as electrical engine power units. This information has been used to develop the E&HPS Special Condition to further enable electric flight.

• *Type Certificate EASA.A.573*

The Pipistrel Velis Electro is the world’s first fully electric aeroplane ever to receive type certification. The two-seater, intended primarily for pilot training, is a game-changing aircraft in terms of technological innovations and cost-efficiency. Its EASA certification paves the way for the future of environmentally sustainable, emission-free aviation.

AJDOVŠČINA, SLOVENIA – June 10, 2020: After years of intensive research and

several successful award-winning electric aircraft models developed since 2007, Pipistrel has today achieved a breakthrough feat in aviation history, having type certified the battery powered Velis Electro. Working in tight collaboration with the European Union Aviation Safety Agency, whose engagement was essential to reaching this unprecedented milestone, Pipistrel demonstrated that its new Velis Electro achieves the highest levels of safety.

The beginning of a new era

Conceived as a fundamental part of the 'Velis Training System', the Velis Electro was designed to be simple to operate and maintain, without compromising safety. Employing Pipistrel's type certified electric engine, the Velis Electro delivers power instantly and without hesitation – using a simplified user interface in a cockpit that maintains the same look-and-feel of its conventionally powered siblings. The reduced number of moving parts dramatically decreases maintenance costs and the risk of malfunctions is further minimized thanks to its built-in continuous health-monitoring system.

This enhanced reliability allows the Velis Electro to have more than double the lifespan of powertrain

elements in comparison to the previous generation of electric aeroplanes.

The revolutionary powertrain is entirely liquid-cooled, including the batteries, and demonstrated the ability to withstand faults, battery thermal runaway events, and crash loads as part of the certification process.

The overall result of all these breakthrough innovations is a drastic reduction in the operating costs, significantly contributing to the affordability of pilot training.

"The type certification of the Pipistrel Velis Electro is the first step towards the commercial use of electric aircraft, which is needed to make emission-free aviation feasible. It is considerably quieter than other aeroplanes and produces no combustion gases at all," said Mr Ivo Boscarol, founder and CEO of Pipistrel Aircraft. "It confirms and provides optimism, also to other electric aircraft designers, that the Type Certificate of electric engines and aeroplanes is possible. The engine, which Pipistrel type certified separately, is also available to other aircraft OEMs. For Pipistrel, this achievement injects additional motivation for the future eVTOL and multi seat hydrogen-powered projects. Pipistrel is especially thankful to all our customers for their

confidence in our products, which allows us to continue developing these innovative aircraft," he added.

Mr Dominique Roland, Head of the General Aviation Department at EASA, expressed: "For the EASA, the type certification of this aircraft marks a significant dual milestone: on 18th of May 2020 we type certified its engine as the first electric engine – now we have followed up with the first type certification of a plane flying that engine. This was a truly groundbreaking project which has yielded many learnings for the future certification of electric engines and aircraft, undoubtedly a growth area in coming years in line with the aims of environmental protection.

"It should also be noted that this innovative product was, despite the many challenging aspects, certified in less than 3 years, showing the excellent work performed by Pipistrel and the EASA teams. Finally, it is worth mentioning that the certification team was composed of EASA staff, but included experts from the Swiss and French authorities, in order to prepare and facilitate the entry into service of the Velis Electro in these two countries."

Mr Paolo Romagnoli, Head of Engineering at Pipistrel, highlighted the technical excellence: "The Velis Electro project

has been one of those engineering challenges we like at Pipistrel. EASA Type Certificate is an uncompromised affirmation of the safety of the design. Having achieved this with a relatively small team is proof that young, talented, and motivated professionals can bring innovation into reality. Completing the work nobody else has ever done before makes us all very proud of being members of this engineering team."

Ready to fly

Pipistrel will deliver the first 31 Velis Electro to customers in 7 different countries already in 2020. Mr. Marc B. Corpataux, the launch customer for the Velis Electro, commented: "AlpinAirPlanes GmbH is very proud to be given the great opportunity by Pipistrel to be part of this game-changing journey. With more than 400 flight hours and 25 pilots introduced to the predecessor Alpha Electro, we are convinced of the suitability of electric flight in the daily flight school environment. Initially, we will distribute 12 aircraft on 10 airfields over Switzerland. Each base will be equipped with 150 m² of photovoltaic panels, producing electricity for 12,000 flight hours per year on the Velis Electro. We are happy to offer the most environmental friendly training possible."



© Rolls-Royce

Rolls-Royce Playing a Leading Role in Net Zero Carbon Future

In order to lead the industry towards a net zero carbon future, Rolls-Royce took a bold step and joined the Race to Zero campaign at the 26th session of the United Nations Conference of the Parties (COP26).

By joining the “UN Business Ambition for 1.5°C” campaign, Rolls-Royce revealed its intention of achieving the net zero carbon target in its activities by 2030 and more importantly its plan to develop new products and technologies that will enable the sectors in which Rolls-Royce operates to attain the net-zero carbon target by 2050.

As part of this commitment, Rolls-Royce will:

- Harmonize its activities with the goals determined by the Paris

- Agreement in order to limit global warming to 1.5°C.

- Assume a leading role by using its technological capabilities in enabling the vital parts of economy including aviation, maritime, railway industry and power generation to reach the net-zero carbon target determined for 2050.

- Continue to proceed towards achieving carbon reduction targets and it will strive to accelerate its activities designed to this end.

- Carry on its research and development investments as part of its endeavors to develop novel solutions in achieving more effective products

- and in its fight against climate change.

- Publish a clear road map, including interim milestones, towards the realization of the net zero carbon emission target by the year 2050.

Rolls-Royce continues its search for clean, safe and competitive solutions to fulfilling society’s vital energy needs. This task is more critical than ever now, in a time where we are gradually coming out of the shadow of the pandemic. Rolls-Royce is aware of the fact that sustainable and net zero carbon energy is the most prominent factor in fulfilling the demands of a growing and more connected society. To meet this demand, Rolls-Royce aims to benefit from its position as a leading

technology company in reaching its target of net zero emissions by 2050.

Rolls-Royce will determine its road map later this year, outlining the technology pathways through which they can achieve net zero carbon emissions across their operations, and the products they proudly pioneer.

“The COVID-19 crisis created a rapid and obvious pressure over our sector; however, the long-term challenges that are faced by our world are still valid. The world will need the power we generate to accelerate economic recovery after the pandemic. I absolutely believe that the call for this power to be sustainable and net zero carbon will be stronger than ever. In fact, responding to this call is quite difficult. There are few

companies in the world that are capable of responding to this call. Rolls-Royce is one of those companies. We will use our capabilities to play a leading role in enabling the vital sectors in which we operate achieve net zero emissions by 2050. I believe this target will increase our competitive power towards the future”, said Warren East, CEO of Rolls-Royce.

Rolls-Royce will focus on the development of critical technologies and collaborating with the fuel industry to considerably increase the employability of alternative fuels with lower carbon. The company will also make gradual changes in engine efficiency. Moreover, Rolls-Royce will lead a consortium for the development of small modular nuclear power stations that are capable of providing competitive, clean and low-carbon energy and will focus on accelerating the development of new technologies and competencies for low-emission products of the future, including leading the electrification of flights. By continuing to improve the hybrid electrical systems it has developed in railway and maritime sectors, Rolls-Royce also intends to introduce these innovations to the aviation sector. With the ‘microgrid’ solutions it provides, Rolls-Royce aims to maintain supply security and back-up power, and therefore increase the benefits of renewable energy systems.

Lastly, Rolls-Royce plans to achieve net zero greenhouse gas emission targets in its activities and facilities by 2030 by using 100% renewable energy, promoting closed-loop manufacturing techniques on precious metals and deploying groundbreaking microgrids to help achieve success in this ambitious initiative.

Nigel Topping, UN High Level Climate Action Champion for COP26, commented on Rolls-Royce’s commitment: “With 2.6 billion people and over half of global GDP now covered by net zero goals, Rolls-Royce is positioning itself to meet huge growth in demand for net zero transport and power. As a company operating in some of the hardest to abate sectors, this commitment of Rolls-Royce is a big act of industrial technology leadership.”

Limiting global warming to 1.5°C requires systemic changes in sectors and countries. As an industrial technology leader, Rolls-Royce is in quite a distinct position in areas of the economy and in sectors where maintaining carbon reduction is a considerable challenge.

Rolls-Royce’s commitment to solving complex issues, to constantly invest in research and development would not only align its activities with a net zero carbon future but also it would empower their sustainability for a promising future.



Boeing to Start 737 Max Test Flights

According to an FAA spokesperson Boeing has received clearance to begin test flights of its 737 Max jet.

Boeing expected to have the 737 Max cleared for service by the middle of

2020, but the FAA has refused to give a date for when the grounding will be lifted.

Boeing has been working to get the 737 Max back in the air following two crashes that killed 346 people.

Bombardier Global 7500 Jet Receives Business Aviation’s First Environmental Product Declaration

Bombardier Aviation and the International EPD® System, an environmental declaration program based in Sweden, announced a first in business aviation with the publication of the Environmental Product Declaration (EPD) for Bombardier’s Global 7500 jet.

Bombardier designed the state-of-the-art Global 7500 business jet using best-in-class technologies. The Global 7500 aircraft is powered by the all-new GE Passport engine, incorporating advanced technologies and materials to improve durability, deliver a lower noise output and improved fuel consumption. Additionally, its new high-speed transonic wing cuts down on drag, reduces fuel

burn, and lowers emissions, offering a smooth ride, as well as excellent short-field and high-speed performance.

The International EPD® System is a program for voluntary and transparent communication of the life cycle environmental impact of goods and services. With more than 15 years of experience, and a library consisting of certified environmental product declarations from 31 countries, EPD serves as a credible choice for B2B and B2C communication based on ISO 14025 and other international standards. The program operator of the International EPD® System is EPD International AB, registered in Sweden.



Successful First Public Flight for INTEGRAL R! The New Generation, Twin-Seater French Aircraft

Designed and developed by AURA AERO, a young Toulouse-based company, the new

INTEGRAL R aircraft successfully performed its first public flight today, departing from

Toulouse-Francazal airport. The aircraft had already performed its maiden technical flight on

June 22. The aircraft, registered F-WJMK, took off at 15:30 local time, for a one hour long flight, during which test pilots Eric DELESALLE and Hervé POULIN explored the aircraft's flight envelope according to the plan and saluted its performances: « This aircraft is well born! As soon as the first flight, the flight commands prove to be remarkably balanced and the efforts are consistent, in both axes. Handling is excellent and this aircraft should satisfy the requirements of experienced aerobatic pilots! », said Eric DELESALLE.

The aircraft was accompanied by a chase plane for the observation of the various manoeuvres, while its progress was monitored by experts on the ground in real-time via a direct telemetry link.

Jérémy CAUSSADE, President and co-founder of AURA AERO, said: « this first flight marks the concrete start of the INTEGRAL adventure and we are very thrilled and proud to see our project finally and actually take to the air! AURA AERO addresses a constantly evolving market, with new needs requiring aircraft that can satisfy these new missions, and this is what we wish to offer with the

INTEGRAL family. Our first orders confirm that this aircraft has its place on the twin-seater market today.».

Tolerating high load factors, INTEGRAL R is a twin-seater with a tailwheel landing gear enabling intense aerobatic activity. Largely made of carbon-wood, INTEGRAL R combines light weight, resistance and easy implementation and repair.

The cockpit of INTEGRAL R is the largest in its category and the aircraft boasts a new generation control panel and ergonomic seats for maximized use of the aircraft, especially during training activities.

INTEGRAL R is part of a family of aircraft designed for aerobatics, training and leisure. Combining optimized operation costs, performance, safety, ergonomics and environmental concern, these aircraft offer unrivalled operational efficiency. The family also includes INTEGRAL S, a version with a tricycle landing gear. The two aircraft offer complementary features depending on the operator's needs.

This first public flight marks the beginning of the flight test campaign, which will last several months and will lead to EASA CS23 certification of INTEGRAL.

Series production is currently under preparation at two French sites and the final assembly line will be located in the south-west of France.





The H160 Receives EASA Type Certification Approval

Airbus Helicopters' multi-role twin engine H160 has been granted its type certificate by the European Union Aviation Safety Agency (EASA), marking a new chapter for the program. The company is expecting FAA certification to follow shortly prior to first delivery to an undisclosed US customer later this year.

"The successful completion of the H160 Type Certificate is the result of several years of tremendous work and efforts accomplished jointly by the involved technical teams of the Agency and Airbus Helicopters in a remarkable fruitful cooperation spirit," EASA Certification Director Rachel Daeschler said. "It is the result of thorough design and testing efforts, to ensure the highest safety standards are reached. The design of the H160 makes it suitable for a wide range of versatile missions. It is also one of the most environmentally friendly with respect to fuel

consumption and one of the quietest helicopters of its class.

My personal appreciation and warmest congratulations are conveyed to the involved technical staff who continuously showed high commitment for constructive collaboration to overcome the challenges inherent to this type certification project," she added.

"We are proud that the H160 has received its EASA type certificate. This achievement represents years of hard work designing, industrializing and defining the support ecosystem with our suppliers and partners and I would like to thank everyone who has dedicated their time and energy to turning this next generation helicopter into reality," said Bruno Even, Airbus Helicopters CEO. "I now look forward to the H160 entering into service and offering its innovative

features that bring competitiveness alongside additional comfort and safety to customers worldwide," he added.

Airbus Helicopters relied on three prototypes, the first serial aircraft, and two additional test means, the dynamic helicopter zero and the system helicopter zero, to develop and certify the aircraft and continues to mature the aircraft ahead of entry into service. The helicopters have flown over 1500 hours both for flight tests and demo flights so that customers can experience first-hand the innovation and added value the H160 will bring to their missions.

Designed as a multi-role helicopter able to perform a wide range of missions such as offshore transportation, emergency medical services, private and business aviation, and public services, the H160 integrates Airbus Helicopters' latest

technological innovations. These include breakthrough safety features with Helionix's accrued pilot assistance and automated features as well as flight envelop protection. The helicopter also provides passengers with superior comfort thanks to the sound-reducing Blue Edge blades and superb external visibility that benefits both passengers and pilots.

H160 was not just designed with passengers and pilots in mind. Operators will appreciate its competitiveness thanks to its increased fuel efficiency and customer-centric simplified maintenance eco-system: equipment accessibility has been facilitated by the helicopter's optimized architecture, the maintenance plan was thoroughly verified during the Operator Zero campaigns, and it is delivered with intuitive 3D maintenance documentation.

Airbus Concludes ATTOL with Fully Autonomous Flight Tests

July 01, 2020, following an extensive two-year flight test program, Airbus has successfully concluded its Autonomous Taxi, Take-Off and Landing (ATTOL) project. In completing this project, Airbus has achieved autonomous taxiing, take-off and landing of a commercial aircraft through fully automatic vision-based flight tests using on-board image recognition technology- a world-first in aviation.

In total, over 500 test flights were conducted. Approximately 450 of those flights were dedicated to gathering raw video data, to support and fine tune algorithms, while a series of six test flights, each one including five take-offs and landings per run, were used to test autonomous flight



capabilities.

The ATTOL project was initiated by Airbus to explore how autonomous technologies, including the use of machine learning algorithms and automated tools for data labelling, processing and model generation, could help pilots focus less on aircraft operations and more on

strategic decision-making and mission management. Airbus is now able to analyse the potential of these technologies for enhancing future aircraft operations, all the while improving aircraft safety, ensuring today's unprecedented levels are maintained.

Airbus will continue research

into the application of autonomous technologies alongside other innovations in areas such as materials, alternative propulsion systems and connectivity. By leveraging these opportunities, Airbus is opening up possibilities for creating new business models that will transform how aircraft are developed, manufactured, flown, powered and serviced.

The rapid development and demonstration of ATTOL's capabilities was made possible due to a cross-divisional, cross-functional, global team comprising of Airbus engineering and technology teams, Airbus Defence and Space, Acubed (Project Wayfinder), Airbus China and ONERA under the leadership of Airbus UpNext.



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helping people in need through its '1 Million Kilos' campaign : From July to the end of December, charities will be able to use the services of Qatar Airways Cargo to transport humanitarian aid and medical supplies all over the world, free of charge.

Qatar Airways is donating 1 million kilos of freight to selected customers around the world to give to the charities of their choice. This will allow the movement of medical equipment, humanitarian relief and essential products to where they are most needed, free of charge.



Alpteknik Aviation is a Lockheed Martin International Sales Consultant for Sikorsky Helicopters in Turkey and Central Asia Countries. Alpteknik Aviation is also the Dealership for Robinson R44.

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