

THE AIRPORT TRACING & HANDLING IN THE NEAR FUTURE

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DOI: 10.19062/2247-3173.2016.18.1.1

Abstract: *The article shows a new approach to the vision in design of airports. This approach allows for analysis and assessment in the forecasting a new way of the aviation project. Moreover, this aspect influences on safety of aircraft and security of passengers.*

Due to the extensive theme, the subject of research was limited to select all technical sciences areas associated with a new system in the project process of the aircraft.

Key words: *aviation design, safety and security system, project process.*

1. INTRODUCTION

Nowadays airports already considered “cities” due to the millions of passengers who attend a day, but also the attractions and many other establishments have, making people feel good and more comfortable. Being considered a world apart, airports require a lot of supervision and safety by all employees who work there because of the many people who attend daily, as mentioned earlier.

One of the areas that most headaches gives airport managers are Tracking and Handling of baggage and cargo. It is a very complex process that requires many trained workers and adequate specialist in Ground Handling, and many security measures.

We will now explain all this complex process that will begin at check-in and will end only when the passenger to get back in the suitcase back, already at your destination [3].

Airports are vital parts of every kind of air transportation network and therefore day and night as well as under any weather condition, which allows aircraft operation, needed for perfect and safe handling services in any way. This includes provision of accurate de-icing and anti-icing of aircraft surfaces prior take off. Without proper treatment of an aircraft during snowy and ice conditions, the accumulation of frost, ice or snow changes the airflow over the aircraft wings, reducing the lift and increasing the drag. Ice and snow also adds to the total weight of an aircraft, increasing its required lift for takeoff. The combination of these effects can bring about significant consequences. The need to improve all-weather flying safety is absolutely necessary and beyond of any discussion. Two main factors are influencing the possibilities of avoiding ice on aircrafts and making it necessary to continuing optimizing the existing procedures: first economic reasons and second ecological reasons. For the economical approach a simple sentence is valid: An aircraft only makes money if it's airborne [7]. Thus airlines want the overall turnaround process, which includes de- and anti-icing, at the gate, which includes de- and anti-icing, to be as short as possible. For environment protection the providers of de- and anti-icing services are legally forced to use a minimum of applicable chemicals, depending on the used technology. This part of the article discusses current procedures provided by Ground

Handling Operators as well as new ways in tracking by RFID system and to ensure ice-free aircraft surfaces, but does not discuss the possibilities of built-in technologies to protect the aircraft during flight.

2. A NEW WAY OF BAGGAGE TRACKING AND HANDLING

The passengers and baggage make boarding as easy and as quick as possible. A lot of the time they get it right and their flight leaves on time and without delay. But sometimes things happen that are out of their control and things seem to go wrong. For an example, you may have been called to the departure gate and the aircraft isn't there, your first thought is probably "Why am I here?". To try and answer this question, and others, they have put together a timeline of what is happening while you are standing in a queue.

The boarding procedure starts when you get the call to go to the gate (normally an hour before the STD). You should try and make your way to the gate as soon as possible, but as long as you are there before the gate closes you'll be fine. Once you're at the gate, normally two queues will appear. The speedy boarders who have paid for up front seating, over wing seats and families with children under 5, and passengers with reduced mobility and the other queue for the all remaining customers. About 30 minutes before take-off, there will be something called "Pre-boarding" this is when the staff at the gate will start to check ID documents and boarding passes (if appropriate) and you'll move through the gate. While this is happening it is quite common that the plane will have only just got to the gate. As soon as the plane has reached the gate, passengers are disembarked, their luggage is unloaded and the cabin is tidied by the cabin crew. Also in this time, extra catering may be brought on board and refuelling the plane will begin. All of this happens within the first 10 minutes after touchdown. As soon as refuelling is nearly complete, you'll be asked to start boarding the plane. Your boarding pass isn't required after your check at the gate, so you can walk straight onto the plane and take your seat. Just remember your seat number. While you are doing this the plane will finish refuelling and your hold luggage will be loaded. This part of the process should only take 10-15 minutes. Once you are all on board and sat down, the cabin doors will close along with the hold doors and you'll be nearly ready to take off [6].

Airlines have tinkered with different boarding systems almost since the days of Orville and Wilbur Wright, who tossed a coin to decide who would fly first aboard their biplane. Plenty of people have offered ideas for improvement, but no perfect method has ever emerged. Most airlines let first-class and other elite customers board first. After that, some carriers fill the rear rows and work toward the front. Others fill window seats and work toward the aisle. Some use a combination of the two. Airlines have also tried other tricks, like letting people board early if they do not have aisle-clogging carry-on bags. It's not trivial stuff. With many flights full, anxious passengers know that boarding late means there might not be any room left in the overhead bin. And it matters to the airlines. Slow boarding creates delays, which mean missed connections, unhappy customers and extra costs. Delta's Early Valet service will offer to have airline employees take carry-on bags at the gate and put them in the bins above assigned seats. The airline wants to see if its own workers can load the bins faster than passengers [1].

According to a method, the first seat to board would be the back window, followed by the third-to-back window on the same side, and so on up the aisle.

People need about two rows to stow their stuff, the model showed. Then the other side of the plane would board outside-first, back-to-front. When all the window seats were seated, the middle seat passengers would file in, back to front-allowing for multiple people to sit at the same time. Travelers don't always come in single-servings-What about

for families or people who are traveling together?-According to this question: fill the even-numbered rows first, starting on one side of the plane and moving to the other. Then repeat with the odd-numbered rows. This method also beat out the competition, boarding twice as fast as starting in the back.

Today many world airports or we can say almost everyone, using the RFID system as tracking and baggage handling.

An RFID system consists basically of one antenna, a transceiver, which is the signal reading and transfers the information to a reader device, and also a transponder or RF tag (radio frequency), which should contain the circuit and the information to be transmitted. These labels can be present in people, animals, products, packaging, in short, in different equipment [4].

Thus, the antenna transmits information by issuing the integrated circuit signal to transmit its information to the reader, which in turn converts the radio waves from RFID to digital information. Now, after converted, they can be read and understood by a computer to then have your data analyzed.

For this, the transponders should be attached in bags and on passengers' tickets at check-in, so that there is a unique ID for both the purpose of enabling the tracking of baggage all the way and identification of their respective owners.

With regard to the utilized transponders, for safety is the type read-only, i.e., no information in addition to the serial assigned at registration, must be registered. Therefore, no luggage identification or passenger will be changed to avoid possible fraud. In cases of additional information will be registered in a central database, at the time a suitcase go through an RFID reader and its serial is captured.



FIG. 1. The tracking of bags made by f RFID readers system
source:www.waspsbarcode.com

The tracking of bags will be made by means of RFID readers, shown in Figure 1. They will be present at times when the bags are in and out of the aircraft. Readers should be attached to conveyor belts to indicate whether the case is in connection, going to another aircraft, or if she is going to the landing section.

We can say that this system is quite functional and mostly effective in the way it is used in international airports.

Although effective are increasingly lost luggage throughout the world and many of them end up never return to their respective owners, this is due to the fact that air traffic is increasingly rising. This system is used by the Lost and Found (telecommunications software) by almost all airports worldwide with this tracking system.

A measure which can help this system is very introducing a GPS chip. This chip could help us understand exactly the precise location of a suitcase or a load that may be lost. Despite the RFID system is quite effective often is lost bags between location stations, but also we have a GPS chip know for sure where the suitcase is, what will help Handling Ground companies and will help companies air service level.

3. POSSIBLE FUTURE OF DE-ICING TECHNOLOGY

The infrared (IR) de-icing technology involves melting frost, ice, and snow from aircraft surface with infrared energy. IR energy systems are based on natural gas- or propane-fired emitters that are used to melt frost, ice, and snow. Infrared energy does not heat up the surrounding air and tests have shown that it has negligible effect on the aircraft cabin inside temperature. Among others Radiant Energy Corporation with the InfraTek™ system is one provider of this kind of technology. The InfraTek™ system consists of infrared generators, so-called Energy Processing Units (EPUs), located in an open-ended, hangar-type structure. The EPUs are fueled by natural gas and generate IR energy waves to melt and evaporate frost, ice, and snow. If the aircraft surface is dry, the IR waves are reflected. Although these systems are as fast as conventional ADFs, more ecofriendly and way cheaper some disadvantages can interfere a widely usage: the huge physical size of systems such as InfraTek™ make planning and design for quite complex.

Also, due to the aircraft processing capacity of an InfraTek™ type system, an IR facility can be a bottleneck during peak traffic hours. While IR systems reduce the need for ADFs, thus limiting the environmental impact from these fluids, the system cannot provide anti-icing protection. Some anti-icing fluid use is still required to ensure holdover times [5].

Tempered Steam Technology (TST) uses a mix of air and steam-infused air to melt ice on aircraft surfaces and then pure hot air to dry the surface. Several tests have been conducted during the 2006 – 2007 de-icing season. The new device demonstrated the ability to deice and dry up to 6 cm of snow and up to 2 cm of ice in about 10 minutes. TST can thus prove to be useful for frost removal and pre-de-icing applications, potentially reducing the volume of Type I ADF needed to deice an aircraft.

Several additional projects are researching for new technologies and testing systems which are still under development:

1. Polaris Thermal Energy Systems, Inc. has been evaluating warm fuel as a de-icing method. If the wing fuel tanks are infused with heated fuel, frost, ice, and snow will not be able to develop on the aircraft wing surface. This will reduce the amount of ADF needed to deice the aircraft.

2. At the Dartmouth's Thayer School of Engineering, Dr. Victor Petrenko is working on pulse electro-thermal de-icing. This method uses short pulses of electricity to break the ice.

3. Foster-Miller, Inc. is trying to develop technology that will provide anti-icing protection by coating the aircraft surface. This surface treatment will not require ADF usage.

Deciding on and installing a new de-icing system is quite complex, especially with the expansion of various new technologies and environmental regulations. At this stage, it looks like no technology can escape at least some ADF usage, which means that airports will always need to contain the environmental impact of these fluids. Does it make more sense for airports to invest and change their systems to accommodate new de-icing technology that uses less ADFs or to invest in advancing new glycol collection and recycling systems? It seems that particularly major airports will not be able to avoid large capital expenditure associated with de-icing operations.

Flight delays, lost luggage, messing with changed routes, which will take off fields - airports can be quite stressful. What if technology can make the whole history of air transport more efficient and even enjoyable? In view of this, the airport operators have invested almost 7 billion. euro IT services last year experimenting with automated check - in navigation applications and new ways for quick checks on security stations and

passport control. In the future we can expect a laser scanners for security, virtual shopping walls, gates and biometric holographic assistants that will improve our experience and travel at the same time will raise the profits of operators. Airports may even become destinations in themselves - filled with technology terminals that enchant and amaze us.

For example Jewel expansion of Changi Airport in Singapore. It will open in 2018 and his grand design of steel and glass will include five floors above ground and five below it , a huge indoor park with native flora and hiking trails , as well as the tallest indoor waterfall in the world - 40 meter "Rain Vortex" with their own sounds and lights. Security measures with which it will have will be the last generation and some of them even have no analogue in the world as it will be introduced for the first time.

Annoying airport operations such as registration will increasingly be automated. Airports London Heathrow and Amsterdam Schiphol is already testing the self-catering biometric gates that use technology for face recognition. A Japanese Nippon Airways provide their guests "smart tags" allowing them to be checked quickly navigate the airport and receive messages in real time for their flights. Gatwick airport in London, meanwhile, builds largest automated baggage area in the world that will allow you to check in your luggage for 12 hours before the flight by simply dropping it on the conveyor belt. From a security perspective, this will allow sufficient time for people who check baggage to do their job peaceful and inspect baggage being problematic or even threaten the security of passengers and the airport. Technology Face Detection is now increasingly entering a requirement in airport security. This technology continues to evolve and constantly improve for its reliability and security saves time and money. Gatwick Airport, for example, uses the technology for face recognition to ensure that time spent in the queue checks always less than five minutes. The faces of the passengers are monitored at four points during the passage through security to get feedback about how long it takes your process. This data is combined with the expected changes in traffic and can actively open and close checkpoints by sending emails to staff phones. Recognition technology people can develop to the recognition of facial expressions or body movements that suggest that someone can carry contraband or may be a security risk, experts say, although such technology could fall foul activists privacy.

X-ray laborious process can also be changed. US firm Genia Photonics has created a „molecular laser scanner " that penetrates clothing and other organic matter to reveal traces of explosives or drugs. The technology, which some analysts say will eventually occur at airports , scanning several people simultaneously and works a distance of 50 meters.

Making airports more efficient and pleasant is one thing, but dealing with the expected increase in air traffic is another. The number of passengers is expected to reach 7.3 billion by 2034, more than double the 3.3 billion in 2014, according to a forecast by the International Air Transport Association. This will probably mean that our skies will become increasingly congested, causing more flight delays and emissions of carbon dioxide [8].

All these increasing performance require constant development and improvement of new and optimized security systems to be both highly effective and timesaving. Since the dawn of its creation, the civilian air transport is one of the fastest growing and dynamic sectors. Its importance is crucial for the economy globally. For this reason, the level and security measures must constantly meet the growing demands of this type of transport to ensure its full and normal functioning.

4. CONCLUSION& ACKNOWLEDGMENT

In the new boarding process, passengers get a boarding number at the gate, which will be based on their seat number. When boarding begins, the numbers will be displayed in a sequence on screens at the gate.

After passengers with reduced mobility, those travelling with children and SkyPriority members have boarded, the new process will come into effect. The order in which the numbers will be displayed ensures that passengers with a window seat board first, starting at the rear of the aircraft.

Next, passengers seated in the middle seats can board, after which the passengers with aisle seats will be allowed to board. This ensures that passengers can wait their turn in the boarding lounge, rather than having to queue up in long lines at the gate.

In summary that the RFID system is one of the nominees for the screening of baggage, but like any system or model always has some flaws and is always room for improvement. The inclusion of a GPS chip can in the future to improve this system, which is almost perfect.

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