

TRANSPORT SYSTEM OF MODERN CIVIL AIRPORTS

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Article discusses the transport system of the modern civil airport. The subject is transportation to the airport and all transport systems located at the airport. Air travel is currently the fastest form of transportation. Therefore, it is natural that its development is still heading forward. New technologies that are massively used in aviation are upgraded every day and are moving at lightning speed. The aim of airport traffic management is its smoothness, efficiency, speed and ultimately the profitability.

Keywords: transport system, airport, infrastructure

1 INTRODUCTION

The increase in air traffic and the assumption of its rapid development over the next fifteen years predetermines the need to address environmental issues in aviation. New rules require visible changes in the management of airport operations such as noise reduction, changes in regulations icing, prevention of environment pollution, air and groundwater. The theme of "greening" of airports has become the most discussed in international aviation conferences. In addition to these two majority and now the most debated topics in the field of aerodromes, of course, pay attention to the continuous improvement of airport systems, the introduction of new management methods and new technologies. All this with a view to ensuring the most regular, efficient and safe operation of the lowest operating costs.

2 CONNECTION OF THE AIRPORT

The attractiveness of air transport compared with other modes of transport is mainly in achieving time savings in transit. This preference is largely deteriorated by increasing the lost time during the end of land transport, passenger transport from home to the airport and back. The road passenger does not begin or end at the airport, but at home, in a hotel in the workplace and so on. For airline importantly eliminate costly delays while waiting aircraft in the air, from the perspective of a passenger is equally annoying when stuck in a traffic jam (the road to the airport even unpleasant). The occupant is crucial total journey time from point to point. When considering the location of the airport is also a need to consider two different factors.

The problem is that the majority of missing links between development plans and the city airport, which has a cartridge in the development of transport systems. Sometimes the responsibilities for planning and operation of the different modes of transport divided between several departments and within an airport. Already in the early days of aviation airlines put emphasis on ensuring transport passengers to and from the airport. For many passengers or other means of transport to the airport did not exist. Airports were and are, in contrast to the railway station, located outside the city. Transport passengers to the airport because airlines considered normal service. Most used buses for transportation. At the end of the thirties were the airports of Berlin and London built the first link the airport and the city using rail transport. After World War II due to mass development of passenger car traffic has been increased problems in transportation to the airport. Most of the passengers began to transport to and from the airport used car. For airports that compete in the common catchment area is well designed system of land transport terminal one of the important factors when choosing airport passengers.

General Plan for the airport can be characterized as airport construction plan that considers the possibility of maximum airport development in the locality. General Plan airport can handle both the existing as well as brand new airport regardless of the size of the airport. Airport General Plan should include a roadmap construction of buildings in various stages of construction. The basic objective of the processing master plan must be the master plan must be approved by the competent authorities and accepted by the public.

Airport General Plan includes plans, specifically a systemic plan for airport development, the objectives and tasks. The General Plan includes plans for economic planning, which is the aviation market analysis and forecast of market development, plan development objects, which is the way air traffic control, airport access. The General Plan also includes plans for environmental protection, which cover an analysis of the impact of the construction and operation of the airport and the area surrounding the airport.

General Plant airport also includes a plan to connect the airport to the transport system, which covers the factors affecting the choice of the users of land transport, modes of transport used and the like. Linking the airport to the transport system under the General Plan should be reviewed by:

- time transfer to the airport (attractiveness decreases when the time is over 55 minutes)
- negative impact of aviation

It is likely that the length of time for each specific trip to the airport is a random variable with a normal distribution around the mean. It can be assumed that deviations from the mean travel time to the airport every individual trips are proportional to the mean value.

Factors affecting the choice of the transport system, according to the General Plan as follows:

- use different modes of transport, which is broken down by size of airport
- Administration airport
- mode of transport
- distance from the airport, travel time to the airport
- price, time, transfers, baggage handling
- different times during the transportation process
- comfort and quality

General Plant airport should consider all the factors mentioned above, to minimize the time it takes to travel from and to the airport, otherwise klesá attractiveness of aviation. The General Plan must analyze individual points to assess the size and location of the airport, to the airport at the time of operation could with a full measure of functional exercise its role. The General Plan also

needs to take into account users that ground transportation to and from the airport daily use.

3 TRANSPORT INFRASTRUCTURE

The deployment of large aircraft late sixties made it necessary for expansion of airports, especially check buildings. Larger wingspan require greater distances between the stalls, it meant an extension of walking distances for passengers who need to get their aircraft. Economic reasons in turn forced airlines to increase daily aircraft utilization and shorten the duration of stay of aircraft on the ground. These facts can at major airports necessary to establish a passenger. Most of the means of transporting passengers, which are used at airports were originally developed for the transport of people in cities. Some of them were for airports upgraded or modified.

In terms of the legislation by IATA maximum walking distance from the terminal to the aircraft should not exceed 300 m. If it is larger, it is necessary to provide passengers with surface transport. This is justified by shortening the time the passengers and thus minimize the time between each line.

Most of the vehicles that were used to carry passengers from the terminal to the aircraft had previously been originally constructed as funds earmarked for public transport. However, currently used at airports special airport buses that can transport large numbers of passengers in a very short time. Are wider and have a higher carrying capacity compared to the bus stop.



Figure 1 Airport bus

To mark the equipment used for the transport of passengers at airports is to take the English name "people movers". The bottom line people mover comes from the idea, which was already 500 years ago. In the world was built in the Australian Salzburg in the 15th Transport century, which served to transport food to the castle, which was high in the mountains. He worked on a simple principle, which took over today's people movers. First, people movers were constructed in 1950 by General Motors. They were later improved throughout, novelty models as we know them today have been around in the market in the 1975th

The airport terminal building with a capacity of up to 5 million passengers per year, usually even require installation people mover. On the one hand it is necessary to facilitate the movement of passengers to the airport, but be warned, and that every people mover means an increase in the cost of investment in the construction of the airport. It also represents increased operating costs and the difficulty in ensuring interoperability of equipment. At the same time a passenger who uses a people mover, can use the services of the airport, and is therefore a double loss for the airport. Therefore, if it is acceptable for passengers, is trying to dispense free airport people mover. When selecting a suitable system must be assessed in particular:

- Speed - capacity - Safety
- transport distance and height difference
- desired frequency and reliability
- fitness equipment for disabled people
- mode of transportation storage, maintenance
- design requirements, acquisition and operating costs.

3 LUGGAGE TRANSPORT SYSTEMS

Cargo and baggage handling air passengers is part of the handling process. Baggage handling plays a key role in the timing, especially if we take into account the airports with a high number of departing and arriving passengers. The great advantage of air freight is transit times. In order to maintain the advantages of air carriers constantly trying to facilitate,

especially to modernize and accelerate the process of moving air cargo airport. The main focus is to simplify and speed up the handling of air cargo from a technical point of view and simplification of customs clearance and documentation.

Although the current conventional system handling air cargo is largely automated, it is still labor intensive and good technical equipment of the airport's cargo. The very process of handling air cargo is a certain degree of risk of damage to cargo and danger safety employees themselves. Likelihood of risk events in this process is given by themselves Handling operations which may cause damage to cargo handling, employee injuries, due to adverse weather conditions (snow, rain, frost) during loading / unloading of the cargo damage, collisions and handling service means the ramp, theft and the like.



Figure 2 Loading luggage into the aircraft by the conveyor

Streamlining the process air handling baggage and air cargo should be addressed through full automation, mechanization and reducing the flow of cargo routes from the terminal to the aircraft. This will reduce the handling time with air cargo, reduce overall operating costs and to some extent it also eliminate some security risks in occupational safety hazards and damage to air cargo. At modern airports in the world is the access / egress of passengers handled by boarding bridges strongly related to airport terminal. This

method not only speeds up the whole process of embarking and disembarking passengers but also brings a number of benefits associated with security clearance for aircraft to take-off, reducing service costs the airport, protect passengers from bad weather, and more. These advantages passenger boarding bridges were substantial, which were taken into account in the design like the boarding bridge and method for loading / unloading of cargo (mainly storage) to / from the aircraft.



Figure 3 Loading bridge

Loading adjustable bridge could find their application in rail freight transport, automobile truck transport, logistics centers and industrial parks.

4 TS SOLUTIONS FOR AIRPORT

The road to the airport is the first step in planning. Construction of new airport is a major investment and large-scale works. Concept airport I need to design for as long as possible. Must be considered maximum potential for development in the proposed airport site and so the limits of the final expansion of critical airport facilities.

In addition to problems assessment airport, its parameters need to be further assessed and questions the airport and its surroundings, the impact of the airport on the environment, communities and the environment. The chosen location for the airport and runway orientation system must allow long-term development of the airport at the lowest financial cost and social impacts.

The main steps in the selection and assessment of sites for the airport include:

- approximate determination of the required land area
- assess the factors affecting the location of the airport
- pre-selection of potential sites
- inspection of sites
- assessment of environmental impacts
- review of the selection of potential sites
- processing drawings and cost estimates
- final selection of a site assessment
- processing of the final report and recommendations.

Location of the airport must meet a number of factors, and one of them is the transport system road to the airport. When planning forgetting the distance to the airport nearest the center of the city. The ideal length should not exceed 30 minutes time. Applies here, the less the better minutes.

Integrated transport system and its connection to the airport

When asked about the transport system road to the airport we mention the new concept of an integrated transport system in Slovakia is planning to Bratislava and Kosice. IDS is a system of transport service area of a comprehensive public transportation, which includes multi-modal links multiple carriers, in which passengers are carried by common transport and tariff conditions. Transport within the IDS provide various means of transport: trains, metro, trams, trolleys, buses, cable cars or even boats.

The IDS passengers can be transported by different carriers. Passengers can use a single ticket, which is valid regardless of the carrier and means of transport used. The purpose of IDS is to offer an effective alternative to individual transport, specific contribution is then eliminating collapse and reduce external costs.



Figure 4 Plan new IDS in Kosice - Airport connection to IDS in Kosice

The solution of the transport system within the airport. The transport system at the airport is the term for all systems that are automated in some way. The solution can be broken down into sub-systems to transport passengers to the terminal or to a particular flight - elevators, moving walkways, escalators, people movers and airport buses, and for baggage handling systems, which include, for example, or conveyor belts.

Introduction of new technologies

Technologies of today allow us to accelerate the process of obtaining pre-departure and thus minimize the time required for this activity. This is what the whole air transport. About minimize the time required for the transport of two distant points.

Procurement and deployment of new technologies for small airport can be ineffective and there may be times when it does not have to use them. For example, the criticality of the conclusion of a large international airport, has a much higher weight than the conclusion of a regional airport. Similarly, the equipment for the winter season is vastly different. Their winter maintenance plans vary. While regional airport runways sufficient treatment in those times, according to airport operation, large airports must be secured virtually maintenance pathways constantly.

Introduction of new technologies to airports as the use of kiosks and web or mobile check-in systems to simplify travel and increase passenger comfort, is in fact slowly but surely becoming commonplace with most of the operation of airports. Possibility of introducing a system of self-check-in at the airport which does not have such a system would mean a reduction in staff

costs, speed up check-in process and reduce the waiting time of passengers. Again, we are in saving time and ultimately the finances.

5 CONCLUSION

The development of air transport in Slovakia is often annotated by the laity as not very positive. Taking into account the collapse of SkyEurope, Air Slovakia and Seagle Air is not a reason to laugh, but the crying. Air transport in Slovakia is in poor condition. The situation here saves while only Ryanair, but which has also admitted financial problems and the significant reduction timetable losing attractiveness. The whole situation while saving foreign airlines, whether it's in the charter or scheduled.

A possible solution proposed by Vizia2020, the strategic location of the airport activities affecting the movement time passenger airport, as well as its comfort, closer to the runway, and in the spaces below ground. According to this concept, therefore passengers will come to an aircraft, aircraft and not the passenger. But of course, passengers will be transported to the aircraft by rapid groundwater transport systems, so-called. People movers. It is also considered an alternative option called. Intermodal containers that transported passengers and their luggage. This could speed up the location of passengers and their baggage on board the aircraft. He even thinks, how such a system of containers put on board an aircraft could. I note that the CSA has recently joined the companies that already use loading and transporting luggage in containers. This way, despite investment in treatment Airbus fleet CSA is more efficient in terms of overall handling, time, price, security.

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