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RESEARCH ARTICLE

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Abstract

The use of military air bases for civilian purposes is not a new idea, there are many places in the world where they make full use of this possibility to reduce the excessive reliance on the civilian airports. We have examined this kind of usability of military airports at Dezső Szentgyörgyi Air Base, in Kecskemét, Hungary. As a result of our research it seems that it may be the first mixed-service airport in the country. At the same time, an appropriate technical, infrastructural and personal background is indispensable to establish a mixed-use airport. The examination and result of this will be presented in detail subsequently. The implementation of the civilian part would be of course a challenge but everything is set to create a mixed-use air base with relatively little improvements.

Keywords

airport, mixed-use, infrastructure, military

1 Introduction

The utilisation of military airports is usually low – especially in our country – while both the equipment and the personnel operate in 24 hours resulting from their tasks. According to their basic function, the military bases do not produce income but costs, but their operation could be made more economical with the mixed-service (Abeyratne, 2014). To this effect, an appropriate legal background must be created ensuring the mixed operation. Currently, Kecskemét Airport is only used for military purposes but there are earnest endeavours so that the base could become mixed, that is, it could become available also for civils. The major reason for establishing a mixed-use airport is that there are many multinational companies in the city which would lay a claim to the use of the neighbouring airport (Fragoudaki and Giokas, 2016; Bohl et al., 2017).

2 The process of establishing a mixed-use airport

The possibility of a mixed-use airport is really current in the life of the base. In the autumn of 2016, the amendment to *Act XCVII of 1995 on Air Transport* was introduced according to which the establishment, development and termination of the mixed utilization of the airport have been authorized. The Act's amendment includes the development of Kecskemét Airport to a mixed-use airport which will be classified under non-public airports that can only be utilized on the basis of the owner's or the operator's permit. The main reason for this is that the Ministry of Defence intends to keep its powers as a military aviation authority. In addition, it intends to involve in its powers the right to establish, develop and terminate airports as well as the authorization of the anti-noise shelter belt (Licitra et al., 2014; Bera and Bera, 2016). The military aviation authority intends to involve the issue of the ground handling in their own powers. Fig. 1 shows the process of the establishment of a mixed-use airport.

The steps displayed in the flow chart will be examined in detail concerning Kecskemét Air Base.

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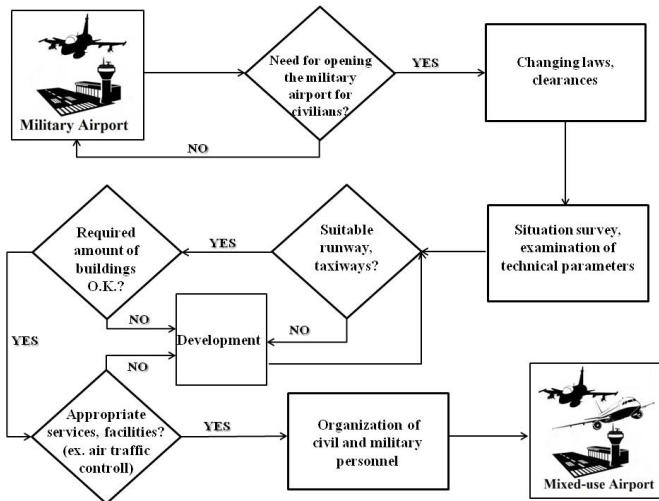


Fig. 1 The establishment of mixed-use airport (own edition)

3 Situation survey of Kecskemét

The situation of Kecskemét is very similar to Győr, but it is even more advantageous in some respects. While in Győr only one German enterprise is present, there are three operating multinational companies in Kecskemét, namely, the Mercedes – Benz Manufacturing Hungary, the Knorr – Bremse Fékrendszerek Kft and Siemens. The continuously increasing traffic of Győr-Pér Airport as well as the recent improvements and investments all prove that – in addition to Budapest Ferenc Liszt International Airport – there is a need for smaller airports in our country to serve international air transport. Similarly to the example of Győr Airport, the multinational companies operating in Kecskemét would receive a considerable role in opening the base to the civilian traffic. All of the aforementioned three companies are located within the administrative boundaries of the city; Mercedes factory is the furthest away with 7 km which can be seen in Fig. 2.

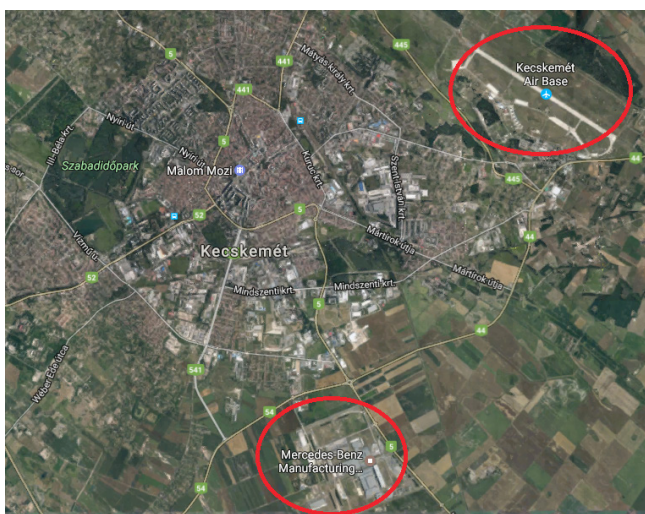


Fig. 2 The geographical position of the Mercedes factory and the airport (own edition based on Google Earth)

If these companies laid a claim for a similar airport to that one which was established in Győr, the mixed-use would presumably be more profitable. The companies would not only be present as users at the base but they could also participate in the operation and further development of the civil part. The location of the air base is favourable. The city is more or less situated in the middle of the country, the eastern and western borders can be reached in an equal length of time on M5 motorway. Thanks to the motorway, the capital city can be reached within an hour by car or bus. A new road-section has been handed over in September 2015 which avoids the city centre, as a result of which the whole city of Kecskemét can be avoided. The road-section to be built is close to the air base enabling fast and simple access to the base and the connection to the major roads (e.g. motorway). The market-town is accessible also by train. The central railway station receiving both national and international lines is in the city centre a few kilometres away from the airport. The airport has a built rail track connection, thus it may be appropriate to consider its utilization for the supply of goods to the airport.

4 The possible scene of civilian usage

The airport fully complies with the requirements imposed by the ICAO and NATO standards, but without the further development of the base it is not possible that it could satisfy the needs expressed by the military-civilian airport. The first and most important investments would build civilian terminal. Since due to the situation of the city there is a great potential in the utilization of air cargo, it may be appropriate to establish a smaller cargo base or at least build a warehouse within the airport boundaries. The first step is to choose the right place for the civil part of the airport. Four possible sites were selected in the area of base in a way logical for us. These locations are marked in Fig. 3.

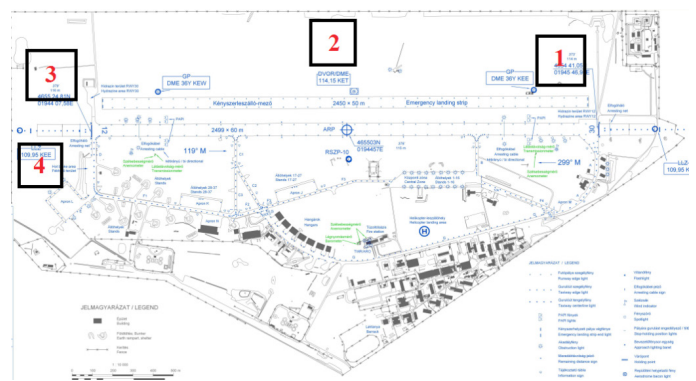


Fig. 3 The possible locations of the new terminal in the field the base (own edition based on MILAIS 2013)

In order to perform the comparison, we have applied the Kesslering method as a decision support tool. (Kindler and Pappa, 1977) With the procedure I can compare multidimensional systems in order to receive the most favourable result. To

Table 1 Calculation results (own edition)

Sites	pi*si values								Σpi*si	Pi	Ranking
	1st	2nd	3rd	4th	5th	6th	7th	8th			
1	8	24	5	6	16	45	12	20	136	0.579	4th
2	4	6	15	6	20	45	15	50	161	0.685	2nd
3	20	18	20	18	12	36	3	30	157	0.668	3rd
4	20	30	25	30	8	27	12	40	192	0.817	1st
Weighting (si)	4	6	5	6	4	9	3	10			
max	20	30	25	30	20	45	15	50	235		

this effect, the criteria must be pointed out first, then they must be assessed and weighted. The criteria were the following:

1. distance from the runway,
2. distance from the nearest main road,
3. distance from the track on the base area,
4. distance from built standing places, which can be used civilian by airplanes,
5. space design (area accuracy),
6. the possibility of installing parking area,
7. noise (operation of jet fighters),
8. distance from important military buildings (severability).

After determining the criteria, the values needed to be weighted which we performed on a 1-10 scale where 1 is the weakest, 10 is the strongest value, thus we have received the points. This was followed by the calculation by means of the formula below:

- Weight of assessment factor (s_i),
- criteria under the i^{th} assessment factor of j^{th} alternative (p_{ij}),
- final point value of j^{th} alternative (P_j).
- The final point value is calculated with the following formula:

$$P_0 = \frac{\sum_i p_{i0} * s_i}{\sum_i p_{ijmax} * s_i} \quad (1)$$

The calculated values are included in Table 1.

By means of the method we have managed to establish that site No. 4 is the most favourable one. There should be built the fewest infrastructural elements, it can easily be integrated to the city's traffic network and it can totally be separated from the military operation.

5 The evaluation of the airport

The 2,499-m long runway of the base is also suitable for the reception of bigger passenger airplanes which is also proven by the fact that the runway was already used earlier by Wizz Air's A320 planes thanks to the agreement concluded between MH 59. Dezső Szentgyörgyi Air Base and Wizz Air Hungary

Kft according to which the pilots of the airline had already utilized the airport for training purposes. From the mixed-use perspective it is likely that the civilian planes will also use those taxi-ways which have already been constructed at the base. However – depending on the location of the new terminal –, the construction of a new taxi-way may be necessary. Another important element of the ground airport infrastructure is the hall. As a result of the Kesselring method it seems that the most appropriate area for the civil zone is located directly next to Lima hall. If the civil part was established in this area, this hall – which is not utilized completely since it is a relatively out-of-the-way area – would be suitable for carrying out all the functions. But if another location is negotiated, it is more likely that a new hall should be built as the other halls cannot receive civilian planes because of the military operation, and there the construction of terminals is not possible either. It is important to note that due to the investments of NATO the ground lights are in conformity with the regulations but the pilots using the airport must take into account the base's CAT I ranking and utilise it accordingly as because of the operation of fighter planes, the airport cannot be upgraded.

The fire safety characteristics of the given airport depends on, for example, the ranking of the airport. There are different expectations against an international public airport compared to a national public airport. It is also important whether the new base operates permanently or temporarily and if it is prepared, for example, for air search-rescue or air safety. But the most important factor is the fire safety category of the planes using the airport. This determines the number of firefighters as well as the tactical-technical parameters and quantity of the standby technical tools. In addition – as it is about mixed-use – the airport rescue-fire safety forces must comply with both the military and the civilian regulations. Kecskemét Airport is currently category 5 which can be increased to 7, if it is necessary. If this level 7 was made permanent at the airport subsequently it would be sufficient to receive A320 or A321-type planes. As regards mixed operation it may be a question if the existing military fire safety forces performed the tasks related to the civil part too, or there would possibly be a separate station operated by the civils. (MILAIS, 2013)

Whether from a cargo or a tourist traffic aspect, customs inspection as well as baggage and passenger handling apparatus and equipment are indispensable at an international airport. Currently, the customs inspection and frontier guards operate based on prior consultation, if the airport has scheduled international traffic; this service must be developed anyhow with regard to the mixed-use. At the base they have recently established scanning tools which are intended to check the baggage and the passengers. The equipment itself may be insufficient when it comes to the service of an international airport with regular traffic but at the same time it may be appropriate as a starting point and later – supplemented with other tools and procedures – it may provide the inspection at an appropriate level.

The implementation of mixed-use does not only affect the airport but also the people who work there. It is important to note that the civilian traffic would greatly increase the current traffic of Kecskemét Airport, the values calculated for the implementation of anti-noise zones would greatly be modified. Thus, pursuant to the Act the boundaries of the current anti-noise zones must be modified anyhow for the mixed-use and appropriate measures must be taken to handle the noise effect arising from the increased traffic. Apart from the noise, the harmful substances emitted by the airplanes must also be taken into account in order to protect the health of citizens, plus the related legislative provisions must also be complied with.

At Dezső Szentgyörgyi Air Base there is a separate meteorology service in favour of the dynamic operation of the base. They have 24-hour runtime and provide continuous information about the current weather which is not only available for the people who work at the base. (MILAIS, 2013)

The opening of the airport would not only call forth the increase of air traffic. The traffic of public roads around the base may also be increased greatly, it is advisable to examine their capacities and to build new roads, if necessary.

6 Issues of air traffic controlling

According to the current legislative provisions, the joint air traffic control may also be a problem. The military air traffic control is very similar to the civil air traffic control: in many occasions it even requires a more complex solution but it remains impossible to accept the military licences at an international level or to cooperate with the civilian licences. In summary, it may be considered that this area should be regulated as regards mixed-use but we must not forget about the controllers at the airport who would perform the tasks arising from the civilian traffic perfectly within the appropriate legislative and remuneration frameworks.

Another possible solution may be the so-called Remote Tower (the remote tower control) developed by HungaroControl. Essentially it means that they install modern cameras at the airport and the environment of the runway so the controllers can view the events at the airport more closely and they can

handle situations much more effectively while they should not even be there in the given airport as they can perform their controlling tasks from a completely different city or centre. This can be an absolutely safe and cost-effective solution. (www.hungarocontrol.hu)

7 Discussion

Thanks to the developments of NATO the airport is currently equipped with modern technology, thus it is the second best equipped airport after Budapest Ferenc Liszt International Airport. Therefore, it can be established that it would also be capable of completing the workflows arising from the mixed-use. Currently, the legal background is also available for the establishment of the operation, the next step is to reconstruct the airport, make it suitable and clarify the issue of personnel.

It is an important question who would utilize the airport or who would finance it. The Hungarian State can be considered but since the base is owned by the Military of Hungary, which is practically the state's property it may be simpler to deal with these type of financial issues through the Military. Currently, the municipality of Kecskemét does not participate in any way in the airport's operation but the maintenance of the civil part could be a big opportunity. Here, not only should the civil buildings of the base be taken into account but also, for example, the parking areas to be established next to the airport or other establishments serving the passengers, thus this possibility must be considered too.

It may be appropriate to think about the PPP (Public-Private Partnership) concept which means the cooperation between the public sphere and the private capital concerning a certain task, that is, there is a complex cooperation during which the state involves the public sector too. Since our country is a member of the European Union, it may be appropriate to examine the tendering opportunities in any case as well as the costs maintained for this kind of investment since they provide a considerable source of money.

We cannot ignore the multinational companies which successfully operate in the city. If these companies laid a similar claim to the airport as it happened in Győr, the mixed-use would possibly be profitable. The companies would not only be present as users at the base but they could also participate in the operation and further development of the civil part.

8 Conclusion

In summary, the military base in Kecskemét complies with the requirements specified both by NATO or ICAO standards due to the developments taken place recently. It is primarily a military base where there are trainings, operational flights and, not in the least, air safety and real-life flights, thus the civil part must not disturb these functions of the base. By means of the Kesselring method we have established which location the most appropriate one to establish the new part.

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