

DETERMINATION OF AIRCRAFT MODEL USING A NOISE MEASURING SYSTEM

Igor Štimac, M. Sc.

Zagreb Airport Ltd.
Pleso b.b., HR-10000 Zagreb, Croatia
istimac@zagreb-airport.hr

Andrija Vidović, D. Sc.

University of Zagreb
Faculty of Transport and Traffic Sciences
Vukelićeva 4, HR-10000 Zagreb, Croatia
avidovic@fpz.hr

Vedran Sorić, B. Sc.

Lidl Hrvatska d.o.o.
Krste Hegedušića 30 L, HR-10360 Zagreb, Croatia
vedransoric@yahoo.co.uk

ABSTRACT

The development of turbo-jet engines resulted in the construction of larger, safer and faster aircraft. High power of the turbo-jet engine contributes to the increase of noise level and, in general, to the increase in the number of aircraft which produce noise. Noise created by aircraft on the ground refers to take-off, landing and taxiing on the ground. The maximum influence of noise is in the area close to airports and under the landing and take-off flight paths. Investigations of noise produced by aircraft began in the late fifties of the last century in order to explore the characteristics of noise sources, environmental impact on its spread and the subjective human perception of noise. Defining noise levels must be done by noise measuring systems, which is specified for that kind of aircraft noise. Noise measurements must include all the elements influencing on the formation and expansion in air traffic noise.

The measurement and research conducted at Zagreb Airport and area around it, except information about the negative impact of noise on the surrounding population, showed that by measuring noise, and visualizing the frequency spectrum of noise, it can be possible to determine the model of aircraft. Furthermore, it is shown that by using the frequency spectrum it is possible (with further research) to make an insight into the potential failure of an approaching aircraft. The result can be manifested in increasing of further air traffic safety, reducing maintenance costs and longer exploitation of an aircraft.

Keywords: aircraft noise, noise frequency, airport, “frequency signature”