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# ANALYZING VNO AIRPORT TRAFFIC DATA OF 2023: SPECIFIC AIRCRAFT NOISE MEASUREMENT AND MITIGATION RECOMMENDATIONS

Simonas Zavadskas<sup>1\*</sup>, Raimondas Grubliauskas<sup>2</sup>

<sup>1</sup> Vilnius Gediminas Technical University, Department of Environmental Protection and Water Engineering, Saulėtekio al. 11, LT-10223, Vilnius, Lithuania

\* **Corresponding author.** Email address: [simonas.zavadskas@stud.vilniustech.lt](mailto:simonas.zavadskas@stud.vilniustech.lt)

**Abstract** – The expansion of airport operations worldwide yields numerous advantages, yet it also brings about certain adverse consequences, notably noise pollution. In addressing noise pollution, airports deploy a range of noise control strategies, which can be broadly classified into four categories: passive noise mitigation methods, active noise mitigation strategies, regulatory measures, and technological innovations. The paper investigates the feasibility of Balanced Approach (BA) implementation at Vilnius International Airport (VNO according to IATA). In this study, an in depth analysis was conducted on the data pertaining to the frequency of movements, the distinct types, models and age of aircraft that utilized VNO facilities during the calendar year of 2023. Following the analysis conducted throughout 2023, a total of 38 699 aircraft movements were recorded, from which predominant aircraft types were identified: Boeing B737 (A1), Airbus A320 (A2), Airbus A220 (A3), Bombardier CRJ/Challenger (A4), Embraer (A5) and ATR 72-500 (A6). Average age of aircraft most frequently arriving and departing at VNO is 14.35 years. The sound measurements for A1, A3 and A6 were done with Bruel&Kjaer 2270 Investigator sound analyzer. Data then was post processed by BZ-5503 Measurement Partner Suite and measured data  $L_{eq}$ ,  $L_{MAX}$  different noise levels were compared. Measurements show that permitted noise levels are exceeded, especially by older age aircraft. Reducing air fleet age would be the most efficient noise mitigation measure according to BA.

**Keywords** – Aircraft noise; balanced approach; Vilnius City Airport; noise pollution

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