

AERODYNAMIC INVESTIGATION OF OVERTAKING BUS UNDER CROSSWIND BY USING COMPUTATIONAL FLUID DYNAMICS ANALYSIS

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ABSTRACT

The purpose of the study was to investigate the aerodynamic response of a detailed bus model in overtaking process with the interference of crosswind. A scaled bus model was used in the simulation with the different positions representing the buses during the overtaking process. The results discussed the alteration of drag force coefficient, lift force coefficient, side force coefficient, during the position on overtaking process. The resulting turbulence kinetic energy around the bus was also discussed by comparing the case without crosswind and when the yaw angle was . The most prominent aerodynamic forces alteration occurs when the overtaking process was at $X/L=1$. Further explanation about the pressure coefficient at the surface of the bus and the area around the vehicle was investigated at this position. The accuracy of numerical results calculation was verified by comparing the result of simulation and experimental testing of C_d and C_l with the percentage of deviation 0.37% and 2.90% respectively.

Kata Kunci: *aerodynamics, bus, CFD, crosswind, overtaking, simulation, yaw*