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NOVEL APPROACH TO MODEL PASSENGER CARS’ URBAN EXHAUST EMISSIONS, AIR POLLUTION IMPACT: THE CASE OF THE CITY OF SKOPJE

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Abstract

With the problem of air pollution in mind, as well as the lack of reliable data for light passenger vehicles’ (cars) share in the overall exhaust emissions in an urban setting, a novel, urban transportation, emissions model is derived based on the city of Skopje’s (Republic of North Macedonia) traffic characteristics. For that purpose, the coefficients of emissions from mobile sources which are already derived by the European Environmental Agency were optimized and modified to comply with Skopje’s traffic conditions and characteristics, and furthermore they were used in creating a unique length emission coefficient based on these urban driving conditions. The model considers different stages of the European emission standards (better known simply as EURO emission standards), average velocities and distances covered. Additionally, the model provides an insight into the urban emissions footprint, based on a future projection that considers the share of different alternative fuels and powertrains in light passenger vehicles in Skopje up to and including the year 2050.

Key words: optimization, length emission coefficient, precision, urban traffic characteristics

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