

Statistical evaluation of the noise emission of heavy vehicles at lower speeds

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ABSTRACT

Heavy vehicles are considerably noisier than passenger cars and therefore contribute significantly to the overall noise emissions of roads. Through the introduction and enforcement of new EU vehicle noise limits, the European Commission sees the potential in cutting noise emissions at the source and thereby delivering a major improvement in the health and quality of life of citizens who live near roads. In order to be able to accurately predict the noise emissions of urban roads, it is essential to precisely characterize noise emissions from different heavy vehicle categories. This study aims to provide such a characterization and presents statistical data of heavy vehicles' noise emissions at the lower speeds of between 30 and 50 km/h. The data was acquired during a measurement campaign of statistical pass-by measurements at eleven locations in Switzerland. The study derives and proposes spectral noise emission functions for different categories of heavy vehicles. The results are compared to the European noise emission model CNOSSOS and show that, indeed, heavy vehicles have become quieter in the low speed range. This study, moreover, provides evidence that noise emissions of heavy vehicles are far more speed dependent than is suggested by current traffic noise emission models.