

Establishing noise emission for an electric road vehicle category in CNOSSOS-EU

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ABSTRACT

The CNOSSOS-EU road noise emission model described in EU Directive 2015/996 makes use of model coefficients that represent the average noise emission spectrum and speed dependence for each particular vehicle category. Separate coefficients are provided for the road surface influence and for accelerating/decelerating conditions at intersections. Appendix F provides default values for cars, trucks and two-wheelers with combustion engines.

This study describes a method to establish the noise emission coefficients and road surface corrections for a new vehicle category. The primary aim is to include electric and hybrid vehicles in the noise assessments, to enable evaluation of EV/HV proliferation scenarios. To separate rolling and propulsion noise, a combination of pass-by (CPB) and close proximity (CPX) methods on an appropriate selection of instrumented vehicles is proposed. Instrumented vehicle measurements also provide the intersection corrections. The total noise emission is then calibrated using roadside measurements on vehicles in regular traffic. Acoustic transfer functions are calculated to derive the sound power coefficients from the measurement results.

The method description forms a basis for a future BSI standard, which may also cover noise emissions for the British CRTN national noise assessment method. Recommendations for further development of such a standard are given.

Keywords: Electric, Road, CNOSSOS

As this research has not yet been finalized, the paper could not yet be written. Results will be presented at the ICA conference, and a full paper will be made available.

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