

ACOUSTICS2008/2103

Significance of Psychoacoustic Aspects for the Evaluation of Vehicle Exterior Noise

Klaus Genuit

HEAD acoustics GmbH, Ebertstrasse 30a, 52134 Herzogenrath, Germany

Since 25 years acoustic engineers have been using specific measurement technologies and analyses to determine sound quality of vehicle interior noise. However, with regard to exterior vehicle noise only standard measurements, e.g. the A-weighted sound pressure level (ISO 362), have been used and interpreted so far. Extensive knowledge and experiences concerning the evaluation of interior noise is still unutilized for an advanced assessment of vehicle exterior noise. Within EU research projects, such as SVEN or QCity, exterior noise was investigated, methods established and psychoacoustic analyses carried out. The relevance of vehicle exterior noise with respect to perceived product quality was underestimated for a long time. Today, manufacturers recognize the importance of exterior noise beyond the annoyance perspective. Vehicle exterior noise conveys an impression of product quality. By optimizing the product sound quality manufacturers can compete against others and meet increased requirements. Customers prefer vehicle sounds which match their expectations, also applying to the exterior sound of a vehicle. The acoustical fingerprint of a vehicle - inside and outside - provides enormous marketing opportunities. This paper shows how the knowledge of sound quality analyses with regard to interior noise can be transferred to the evaluation of exterior vehicle noise.