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Place:

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Title:

Validation of Active Sound Design Models using Driving Simulator and Test Drive Evaluation

Authors:

Stefan Hank; Philipp Sellerbeck, HEAD acoustics GmbH

Alexis Beyfus; Michael Wirtz, BOSE

Abstract:

The use of Active Sound Design (ASD) in passenger cars pursues highly emotional goals: to give the vehicle a top-quality acoustic appearance, to convey the brand image, to enhance the user experience by providing feedback about the driving condition, and finally: to put a smile on the driver's face. Deciding on the best ASD model in the current revolutionary shift to electrified vehicles is a complex and difficult task: Successful application can set standards for the entire automotive industry, while failing might ruin the brand image entirely.

This problem calls for innovative methods for the perception-based evaluation of ASD models. Efficient and targeted procedures must combine the creative aspect of designing sound with technical requirements, and ultimately ensure a focus on user experience and acceptance in the real-life application.

In this paper, a holistic approach to ASD is presented. Using an acoustic driving simulator closely connected to the creative software environment, ASD models can be developed efficiently in the context of the realistic vehicle soundscape. Linking the design stage with live in-vehicle testing, an empirical assessment methodology for evaluation of test drives in public traffic conditions is applied to validate the acceptance of the sound concept and to optimize the tuning of the sounds.

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