

## AAC 2024

November 25<sup>th</sup> – 27<sup>th</sup>, 2024

**Place:**

Aachen, Germany

**Title:**

Tuning of Active Sound Design in electric vehicles with focus on In-Car Communication

**Authors:**

Fabian Kamp

Stefan Hank

Stefan Bleiholder

**Abstract:**

Application of Active Sound Design for Electric Vehicle Sound Enhancement (EVSE) provides creative possibilities for car manufacturers to enrich driving experience and establish a vehicle image that stands out from the competition. However, boundary conditions for the implementation of synthetic sound in the vehicle interior need to be respected, as the additional sound elements must fit the existing interior sound field and respect the quality of in-car-communication.

With focus on the latter, the tuning of the implemented sound elements is a crucial step. Typical requirements on load and speed dependency, interactivity in transient conditions and spatial placement in the vehicle cabin limit the tuning parameters – underlining feedback under load but maintaining a comfortable acoustic scenario in typical commuter traffic and larger distance voyages. Acoustic analysis methodologies are needed to address the effects of EVSE tuning on in-car communication.

Investigating an exemplary case study of a high-performance electric vehicle, this paper discusses current progress regarding the tuning process of Active Sound Design, focusing on the analysis of in-car communication. A methodology for target breakdown with focus on signal properties is presented based on results of parameter studies for different EVSE variants.

Find more event abstracts in our >> [abstracts archive](#) <<