

Cable and hose test bench at Schaeffler Engineering

High-voltage cables as a relevant structure-borne sound transmission path in
motor vehicles

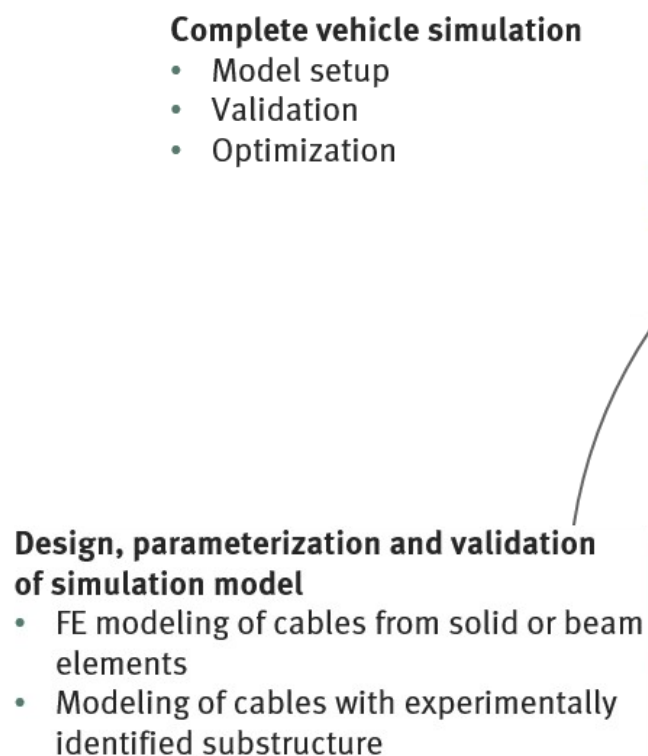


Cables and hoses as a relevant transmission path of structure-borne noise in cars

Vehicle acoustics have always had the task of improving the well-being in the vehicle and the experience for the driver. Acoustic behavior is closely linked to the feeling of quality and the perception of the vehicle.

High-voltage cables in the focus of acoustics

With the replacing of the combustion engine, other noise sources that were previously overshadowed by engine noise are coming to the fore. Consequently, new components are now under the spotlight as noise sources of transmission paths for structure-borne noise. These components include electric drives and the associated high-voltage cables, which have the potential to transmit structure-borne noise due to their large cross-section and can ultimately generate excitations that are perceived as disturbing.



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Recognize and act before the first prototype is created!

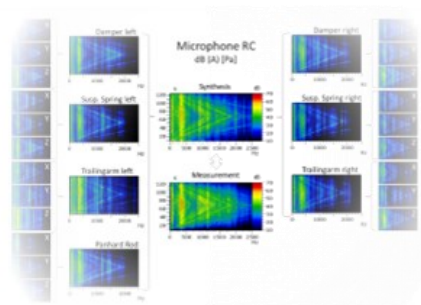
In order to identify possible new transmission paths, it is essential to utilize reliable validate complete vehicle simulations. A key objective of this process is to identify potential weaknesses before the first prototype is built. With our new “cable & hose test bench”, we are able to parameterize finite element models for high-voltage cables based on dynamic blocked force and vibration measurements and thus map the “high-voltage cable” transmission path in the simulation. Missing material properties are determined by parameter variation. Furthermore, substructures of entire routings, such as in the vehicle, can also be considered and parameterized for hybrid models. In addition to high-voltage cables, hydraulic lines can also be tested on our test bench, even under pressure if required.



NVH Services

- Acoustic all-wheel drive chassis dynamometer
- Acoustics engine & transmission test bench
- Vibration & modal analysis
- Transfer path analyses
- Signal analysis
- Blocked-force measurements
- Microphone hemispheres
- Acoustic test fixtures

Transfer path analysis (TPA) by direct force measurement



Dynamic blocked-force test bench measurements

- Stiffness and damping
- Determination of non-linearities
- Influence of routing
- Fastening elements
- ...



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