HEAD acoustics

NVH Engineering Services

Drivetrain Measurements

Start-up Boom, Load Change Clunk, Gear Rattle

Take advantage of our long-term experience and competence in vehicle acoustics.

We help you to reduce…

- Start-up boom/Low-speed boom
- Load change clunk
- Gear change clunk
- Gear rattle

We analyze the dynamic behavior of the drive train, focusing on customer-relevant and transient conditions.

High-resolution measurement of rotation angle and speed

We offer data acquisition at various parts along the drive train:

- Before and after clutch/DMF
- Input and output of transmission or differential
- Side shafts
- Cardan shaft
- Wheels

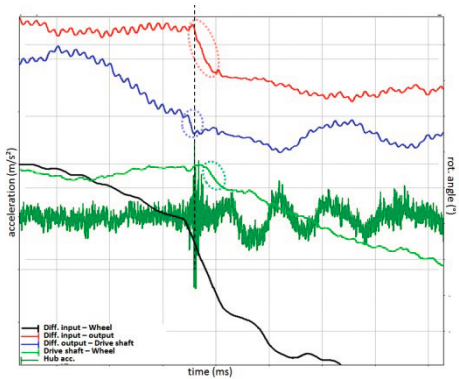
Optionally we add dynamic torque measurements on drive shafts.
CAN data and further signals (e.g. TPA sensors) are recorded in parallel and analyzed in combination with the speed signals.

Torque and speed sensors on drive shaft

The combination with Binaural Transfer Path Analysis (BTPA) allows integrated analysis of the complete system and listening to simulated modifications.

We provide meaningful analyses of acoustically relevant phenomena:

- Amount of backlash in individual joints and gears as well as the rate of torque rise, as causes of load change clunks
- Transfer of torsional vibration along the drive train
- Effects of various torsional dampers (DMF, CPA)
- Torque sensitivity and torque-based TPA for low-speed booming
- Gear backlash as cause of gear rattle



Example: Time domain correlation of backlash components with vibration

Use our infrastructure and benefit from our flexibility!

In our test facilities we are equipped to handle complex measurement tasks using the latest HEAD acoustics measurement instrumentation. Alternatively, let us meet your test objectives at your site with our know-how and our products! Find out more about interesting topics from our engineering services portfolio.

HEAD acoustics

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The expertise of our specialists will support you throughout the entire development process. You will benefit from our long-term experience in the fields of acoustic measurement methodology and psychoacoustic analysis, and the acquisition of jury test data.