



# Services for Sound Design for EV/HEV

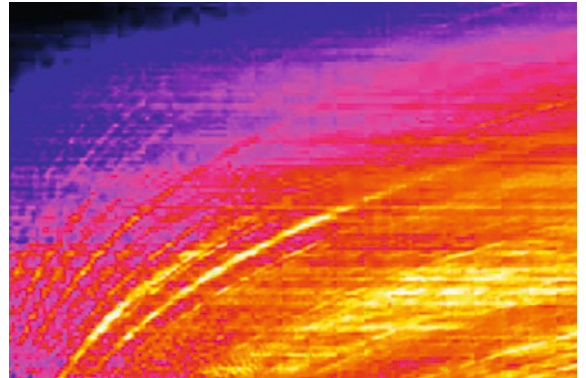
Solutions for your acoustic and vibration needs.

# NEW DEMANDS MEET INNOVATIVE METHODS

Psychoacoustics Analysis | HEAR! | Metric | Brand Sound Definition | BTPA | AVAS

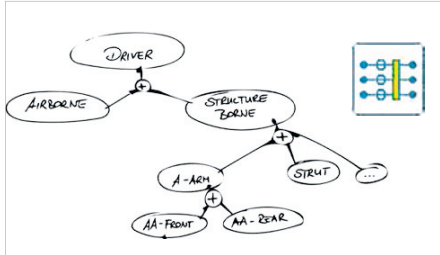
Powertrain Phenomena experience shift towards higher frequencies

- ✓ Less masking
- ✓ Changed drivability
- ✓ Different expectations
- ✓ New kind of brand experience
- ✓ Proven and reliable methods



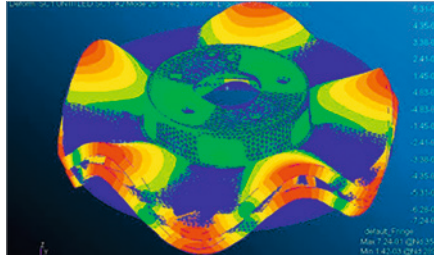
# SYSTEM DESCRIPTION | ROOT CAUSE ANALYSIS | OPTIMIZATION | AURALIZATION

BTPA



Understand relevant NVH and drivability issues and find potential for optimization with PROGNO[ISE].

Simulation



Efficient simulation of necessary structures and direct evaluation of the acoustical result.

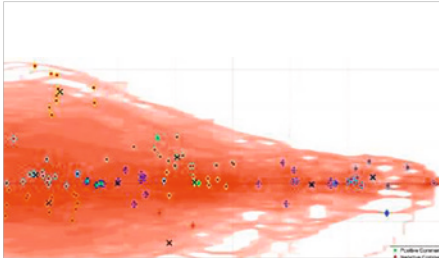
AVAS



"Acoustic Vehicle Alerting System": Meet the regulations with a unique designed brand sound.

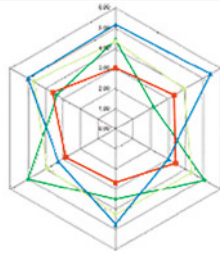
# NOW SUPPORTING THE FULL ACOUSTIC DESIGN PROCESS.

Hear!



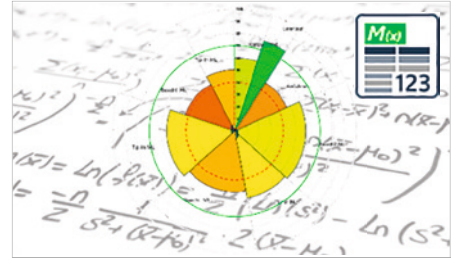
"Head Empirical Assessment Ride"  
for the identification of relevant NVH  
and drivability issues.

Brand Sound

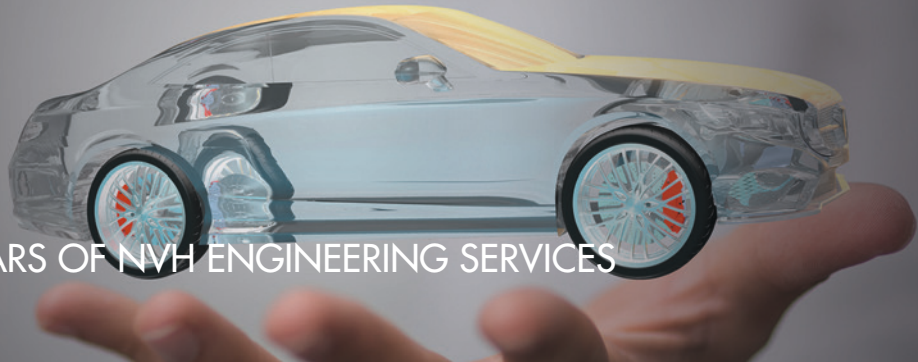


Development of sound targets and  
brand sounds.

Metric



Automated sound quality evaluation  
with advanced psychoacoustics  
metrics "Tonality (Hearing Model)".



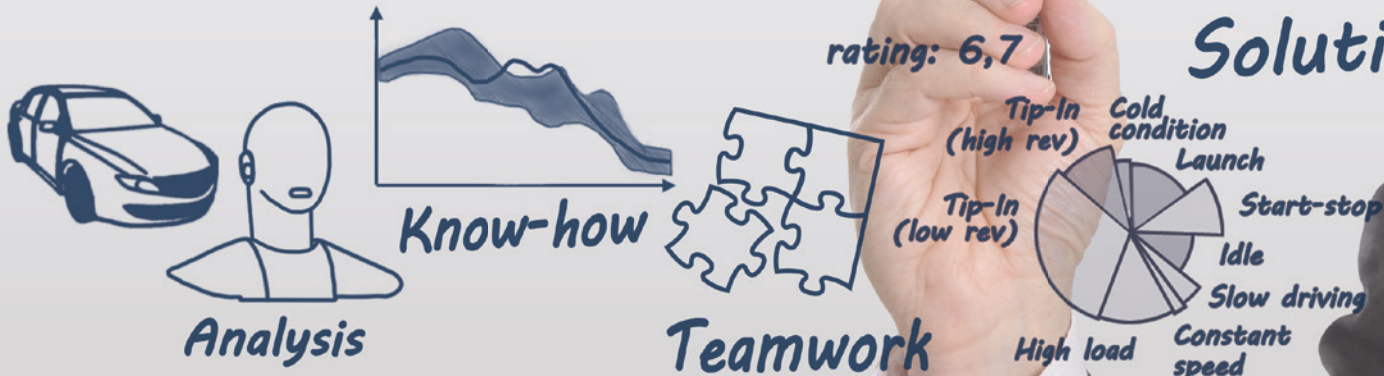
## MORE THAN 30 YEARS OF NVH ENGINEERING SERVICES

For over 30 years, HEAD acoustics has been a leading company in the area of head-related recording and playback systems and aurally-accurate analysis of sound events. HEAD acoustics has always been a pioneer in developing innovative technologies, such as head-related stereophony, hearing-related analyses, interactive sound simulation systems and transfer path analysis.

Our experienced team of acoustic engineers, technicians and mechanics will accompany you in the entire optimization process of your product, from problem identification to problem solution.

# Success

# Solution



**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.