HEAD acoustics®

HEADlines

| Editorial |

Electromobility – New Challenges for Vehicle Acoustics

The automotive industry is undergoing a fundamental change. With the discussion about alternative drive concepts and the transition to electromobility, a far-reaching paradigm shift is on the horizon, which presents the industry with new challenges. The area of vehicle acoustics is no exception and will have to deal with emerging requirements and tasks.

Prof. Dr. Klaus Genuit
Managing Director

While acoustic driving comfort in the case of combustion engines is mainly achieved by reducing interfering noise, the new drive concepts present acoustics engineers with a completely new task: They have very low noise levels and thus open up unique design possibilities regarding acoustic comfort, while at the same time requiring innovative methods, tools and intelligent solutions. In order to design the soundscape of a vehicle with the goal of increased driving comfort, not only must vibro-acoustic analysis methods and suitable simulation tools be applied, but in particular the expectations and product associations of potential customers must be understood. Determining which vehicle sounds are desirable will be highly relevant in the future. Fulfilling this task will require the use of sound simulation and driving simulators for defining target sounds.

HEAD*lab*

Front-End Redefined

Are you looking for a system that allows you to acquire data in both stationary and mobile operation, with a low or high number of channels, and can also be set up in a decentralized configuration?
Then you need HEAD*lab*, the new multi-channel front-end system for uncomplicated data acquisition.

The rugged system has a modular design, consisting of a control unit and various signal-acquisition and power supply modules. A key feature is the flexibility of this data acquisition system. HEAD*lab* offers you reliable operation while carrying out either variable or very specific tasks. And like all HEAD acoustics products, it is very easy to operate.

In order to meet a wide range of requirements, the individual modules can be combined into a variety of custom system configurations. The possibilities of combinations range from a compact system to a decentral multi-channel system for extensive measurements with a high number of channels.

Furthermore, HEAD*lab* is suitable for both stationary and mobile operation: The powerful integrated rechargeable battery allows even complex systems to be operated without an external power supply.

The system does not require a cooling fan, so operation is silent. The front-end system supports the acquisition of data from sound and vibration testing. What makes it particularly well suited for applications in the automotive industry is that even the control module features interfaces for a digital artificial head, CAN bus, and pulse inputs. Consequently, there is no need for separate modules for recording these types of data. The system is also optimal for any application involving artificial-head recordings.

HEAD*lab* grows with your requirements: Additional modules extending the product family and allowing much higher numbers of channels are in development.

HEAD*lab* is a natural extension to the HEAD acoustics product range. Combined with the HEAD Recorder software and ArtemiS analysis software, it provides you with a complete measurement system.

Experience HEAD*lab* and learn more at www.head-acoustics.de/eng/nvh_headlab.htm.

HEADlab with decentral configuration

Faster, Better, Easier!
New Functions of the HEAD VISOR Software

HEAD VISOR, an innovation in the area of microphone array technology, is a system for real-time localization of sound sources. The new functions of the latest software version allow you to work even more efficiently, quickly and flexibly.

Gone with the wind

During measurements in a wind tunnel, the emitted sound is transported by the air flow. Thus, in the acoustic mappings the sources seem to be shifted in the downstream direction. Now, by recording the wind speed as an additional pulse channel and making a few parameter adjustments (distance from the array to the shear layer of the channel flow, wind direction) the software provides compensation for flow shifting.

Sound source or reflection?

The CoherenceGate function integrated into the latest version of the software allows you to differentiate quickly and effectively between original sound sources and sound reflections (echoes). It is also easy to assign reflections to their corresponding source.

Only hear what you want!

In order to make an adequate assessment of a sound result, not only the visual sense, but also the auditory sense must be taken into account for verifying the overall result. Therefore, HEAD VISOR provides a playback function giving you the flexibility to choose between playback of the band-pass-filtered signal (corresponding to the representation of the band limits) and the unfiltered signal.

What influences the generation of a sound?

As an alternative to FFT vs. Time curves, you can now also display rpm curves against time, so conclusions can be made regarding the sound based on the engine speed.

Take advantage of automatic distance measurement!

The MultipleEye technology, which uses the three cameras to determine the distance to the sound source, now features an autofocus function. It allows you to measure the distance to various measurement objects quickly and precisely, thus achieving an accurate localization. The auto-focus function can also be used in the generation of 3D surfaces, e.g. where there are multiple sources at different distances from the microphone array.

Export of movie files

The menu options and algorithms for exporting video files have been optimized, allowing you to export data very easily based on re-commended settings. The new export function also allows large files to be saved.

Display options

For the specific visualization of the sound source in the FFT representation, you can easily choose between octave bands and one-third octave bands. This allows an easy and precise representation of the sound source relative to the desired band.

Shifting of the sound source indication in the wind tunnel

Wind tunnel correction: Compensation for flow shifting

DIC24X

Universal compact front-end from the DATaRec 4 series as an ideal introductory system into the multi-channel measurement

With the DIC24X from the DATaRec 4 series, HEAD acoustics offers a powerful front-end solution allowing you to solve almost any measurement task with just a single signal input module. Decide on DIC24X today, or extend your existing DATaRec 4 series.

Offered exclusively by HEAD acoustics and equipped with 24 input channels, the measurement module was developed by Zodiac Data Systems based on our specifications and adapted to your needs.

Just like the DIC24 before it, the DIC24X offers 24 ICP/Line inputs, which can be sampled with up to 50 kHz per channel. In addition, six channels of the DIC24X provide optional DC coupling. With these inputs, you can therefore not only record the usual oscillating quantities, such as sound pressure level or acceleration of vibrating components, but also quantities with a constant component, such as brake pressure or steering angle.

Furthermore, four channels of the DIC24X are equipped with optional high-pass and low-pass filters, and two channels can be configured as pulse inputs. Sampled with 32 times the module sampling rate, the pulse inputs are optimal for high-precision recordings of the engine revolution speed.

Sensors can be connected conveniently, either directly via BNC sockets on the front side of the DIC24X or via breakout cables with six BNC connectors each. Breakout cables of this type are also used with the DIC61 signal module in our successful SQlab multi-channel front-end. You can therefore continue to use your existing wiring.

Combined with a power supply unit (e.g. PWD, PWH9), the DIC24X provides you with a full-featured, versatile and robust multi-channel front-end for your measurement tasks.

The DIC24X can be seamlessly integrated into existing system configurations with other modules of the DATaRec 4 series. If additional channels are required, you can easily set up acquisition systems with up to 768 channels.

Learn more about the DATaRec 4 series and DIC24X at www.head-acoustics.de/eng/nvh_datarec_4.htm.

Power supply module with DIC24X

| Application |

Did you know that ...?

- ... new versions of ArtemiS, HEAD Recorder and HEAD Data Portal with new features are now available?

- ... you can use ArtemiS to calculate time-dependent loudness according to DIN 45631/A1, the only standard to consider time-dependent loudness?

- ... you can now lend out licenses with the new ArtemiS network technology?

- ... ArtemiS, HEAD Data Portal and HEAD Recorder now feature an MDM interface? MDM (Measured Data Management) stands for an extendible, distributed software system for managing test result data.