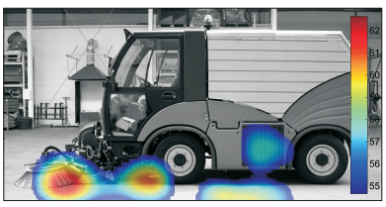
AKUSTIK FORSCHUNG

Research & Development - Test - Consultancy

AFD 7000 - AcoustiCam®

Localization of sound sources in the engine compartment of a passenger car

Localization of sound sources on a screw-type compressor using a double-circular array



Localized sound sources of a cleaning machine

Measuring Technique

The measuring system AFD 7000 - AcoustiCam® guarantees the accurate localization and separation of sound sources. Any sound field can be mapped as colored, 2-D, absolute distribution of the sound pressure level. This method takes only a single measurement and works for any chosen scanning plane. To visualize the sound field, an optical photograph of the test object can be laid underneath.

Technical Data

Microphone Array:

- 32 microphones (1/4", IEPE-conditioned)
- numerically optimized double-circular microphone configuration
- application-oriented microphone arrays
- Default:
  - carbon frame array on mobile tripod
  - suitable for investigations of vehicles and machines
  - diameter: 1,3 m
  - frequency range: approx. 500 Hz to 10 kHz
- Mini:
  - hand-held boundary layer array
  - suitable for investigations of e.g. vehicle interiors
  - diameter: 0,325 m
  - frequency range:
  - 2 kHz to 20 kHz
- minimum distance to test object: approx. 25 cm
- dimensions of test object: arbitrary
- maximum aperture angle: 60°
- integrated camera: Sony XCD-V50, VGA,1/3" IEEE-1394 a/b
- array tripod with wheels

Data Acquisition:

- 32 simultaneously-sampled analog input channels (scalable), BNC (female), IEPE-conditioning
- PC connection via Cardbus-Interface (PCM-CIA)
- sampling rate: 48 kHz

Analysis software AFD 7001

- localization, separation and analysis of stationary and non-stationary sound sources
- classic and novel beamforming algorithms in the time domain and in the frequency domain
- e.g. pass-by option for moving objects of constant speed, orthogonal beamforming for separation of independent sound sources
- depiction of the sound field as colored, 2-D mapping of the sound pressure level
- visualization of the sound field by laying an optical photograph of the test object underneath
- real-time localization of sound sources (live mode)
- record of time data without time limitation (streaming)
- generation of audible source signal at an arbitrary point (listening)
- determination of sound pressure spectra and spatial sound pressure profiles
- analysis of trigger signals
- support of arbitrary microphone configurations
- import of external time data (ASCII-format)
- export of analysis results (ASCII-format)

Date 04/2009, Subject to change.