

Acoustic Camera Sees Noise Problems

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You really can “see” sound. At least, you can see a map of sounds picked up by the **Acoustic Camera** from **GFal**, a German society that promotes applied computer science. At the **Hannover Fair**, the society showed off its latest acoustic cameras, which consist of a microphone array, a data recorder and sound analysis-and-visualization software. GFal has several array variants that target

different applications, but one example at the fair was an annular arrangement of 48 microphones with a fixed camera in the center. Point the Acoustic Camera at a machine, a car or whatever, and it will create a color-coded sound map that lets you see the intensity and sources of noise overlaid on an image of the recorded object. The Acoustic Camera can also do the same with movies to show noise changes over time. For example, the society showed a movie of a windmill with a changing sound map.

The Acoustic Camera’s signal processing principles have something in common with human hearing, which is why GFal showed the system as part of a larger **exhibit dedicated to bio-inspired engineering**. As GFal sales manager Kevin Hildebrandt explains, the system’s software creates the sound maps by analyzing the phase differences between the different microphones in the array. But the Acoustic Camera outperforms the our ears in the frequency and sampling department. Hildebrandt notes that it handles a frequency range that tops out at 60,000 Hz and sample at up to 192,000 Hz. “We have been able to record the sounds of a passing bat,” Hildebrandt says. (Think vampire, not baseball.)

The system has been around for a few years now and has mostly attracted automotive OEMs and systems suppliers looking to turn down the noise in their designs. But the Acoustic Camera has a couple of new abilities that could make it more attractive to a wider variety of engineers and machine builders looking to diagnose noise problems. For one, the system lets users tie the sound maps to an rpm input from a motor or engine. For another, GFal has come out with a new 3D version of its system that maps the sound results onto the appropriate surfaces of a 3D CAD model. One demo showed the noise from an dashboard indicator was displayed on the CAD model of the vehicle’s interior.

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