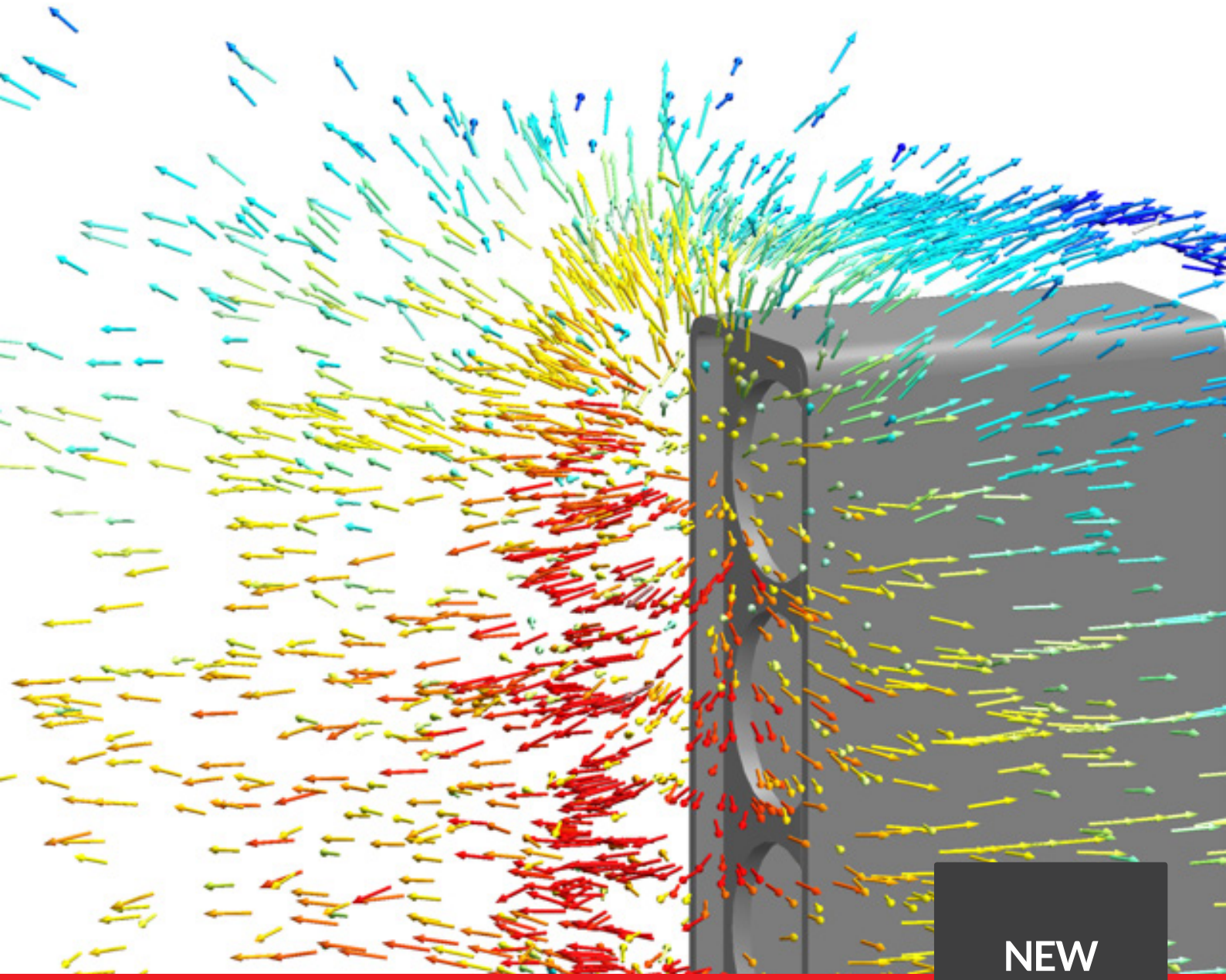
Microflown Technologies
Charting sound fields



NEW PRODUCT

Product Leaflet

SCAN & PAINT 3D

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MICROFLOWN // CHARTING SOUND FIELDS

SCAN & PAINT 3D

3D SOUND VECTORS ON A 3D MODEL IN A MATTER OF MINUTES

The Scan&Paint 3D is a groundbreaking new portable, all-in-one box solution for acoustic measurements. It is a unique tool for acoustic trouble shooting and sound source localization, allowing you to visualize what you hear. It makes complex problems simple and easy to understand.

Sound source localization is an important topic in the working field of sound & vibration, from the product development stage to the end of line quality control.

In a matter of minutes the complete sound field, as 3D sound intensity or particle velocity, is displayed on a 3D model over a broad frequency range and with an unparalleled dynamic range. The very small 3D sensor makes it possible to obtain results with a very high spatial resolution enabling measurements even on very small objects.

Localize your sound sources and visualize the sound propagation in full 3D.

Microflown probes enable the direct measurement of both sound pressure & particle velocity, thus the sound intensity can be obtained by taking the time averaged cross spectrum between both. This allows for direct measurements across a broad frequency range (20Hz to 10kHz). Furthermore the sensors are not highly affected by the environment and allow sound intensity measurements in situations with a high sound pressure over sound intensity ratio (p/I index). This unique feature makes the system a superb engineering tool for troubleshooting or benchmarking all kinds of objects on the spot. In practice, there are many cases where anechoic conditions are not applicable, for instance in an industrial manufacturing enviroment, or a car interior. Finally, a solution is offered which does not require any compromise when taking measurements even in acoustically challenging environments.

The tracking camera, that automatically tracks the position and orientation of the sensor, can be repositioned easily during measurement sessions, providing flexibility together with the ability to capture complex objects, such as a car interior in full 3D. Multiple measurements from different camera views can be merged into one full 3D project.

FEATURES

The Scan&Paint 3D system at glance

- **Broadband Solution | 20Hz - 10kHz**
- **Fast Method;**
  short setup, measurement and processing time
- **3D visualisation of:**
  - **Sound intensity vectors**
  - **Particle velocity vectors**
  - **Sound pressure distribution**
- **Applicable in (real) operating environments;**
- **Automatic 3D tracking of the sensor position**
- **3D modeling tools embedded in the measuring system for fast 3D sound mapping e.g. import of CAD and SketchUp models**
- **2D visualisation available for all angles of the 3D model**
- **Easy to operate**
- **Single sensor solution**

A REAL 3D SOUND INTENSITY PROBE

The state of the art sensor used in the system is the three dimensional 1⁄2 inch USP regular probe. The sensor consists of three orthogonally placed Microflown acoustic particle velocity sensors and a sound pressure microphone.

The Microflown USP probe is the only sensor that has the unique capability of allowing the direct measurement of all acoustic quantities: sound pressure and tri-axial particle velocity. The sound intensity can be calculated by taking the time averaged cross spectrum of particle velocity and sound pressure. 3D Sound intensity vectors can be obtained without any frequency limitations covering a range of 20Hz to 10kHz. The actual sensor configuration without the protective cap, occupies a volume smaller than 1cm^3. This small size allows measurements to be taken with an unmatched spatial resolution.

3D POSITION TRACKING USING AN INFRARED CAMERA

The sensor´s orientation and position are automatically tracked in 3D by the tracking camera. The optical tracking system is based on monitoring a defined measurement space using an infrared stereo camera.

Each camera is equipped with an infrared (IR) pass filter in front of the lens, and a ring of IR LEDs around the lens to periodically illuminate the measurement space with IR light. This light is not visible to the human eye and is completely safe to work with.

The sensor is equipped with a spherical marker, consisting of embedded retro reflective stickers. The incoming IR light is reflected by the stickers. The IR light reflections are detected by the stereo camera, and the tracking system translates them to exact 3D coordinates along with the sensor orientation.

3D MODEL CREATE OR IMPORT

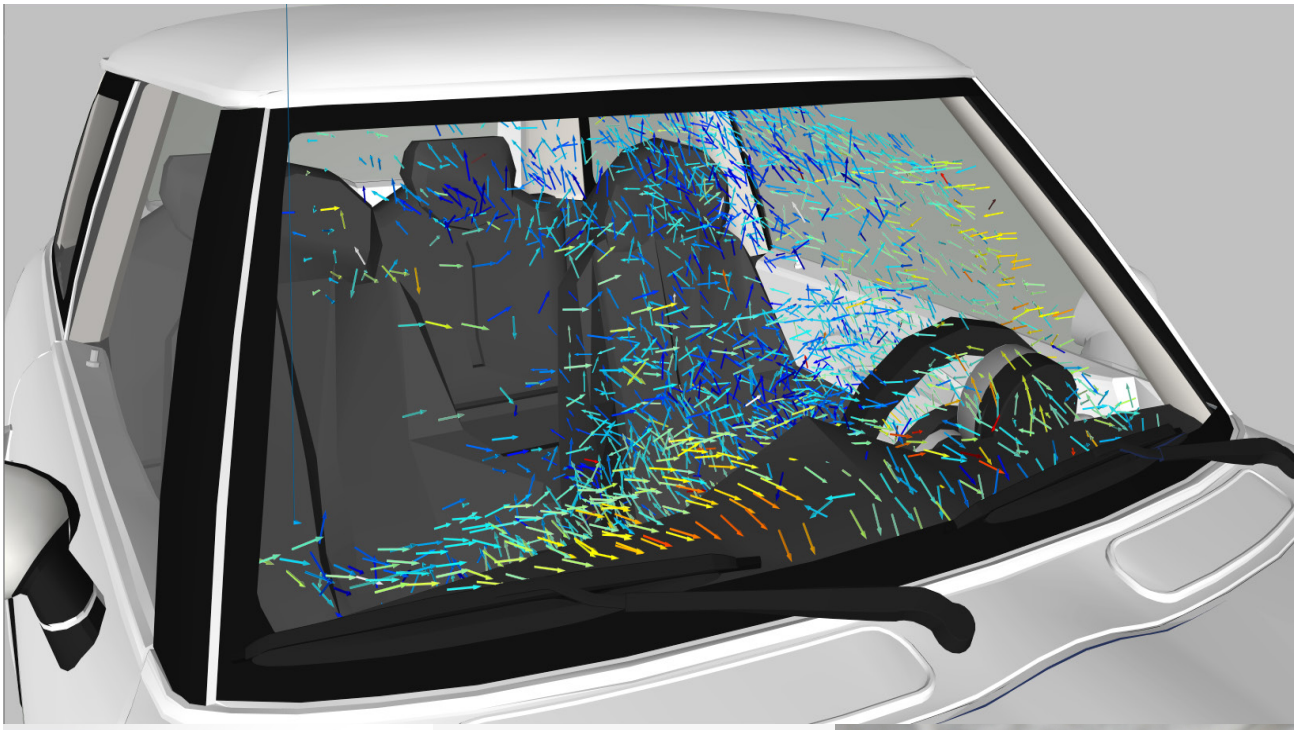
All results can be visualized on an interactive 3D model. The built in 3D Shape Editor offers a variety of options to create a 3D model.

The 3D shape editor offers a drawing tool to quickly create basic models. If your 3D geometry is already available, the 3D shape editor is equipped with the possibility to import 3D models from a variety of popular file formats e.g. CAD or Sketchup files.

Alternatively, if no model is availably for import, a fast method using a Structure Sensor to obtain a detailed 3D model can be offered. The Sructure Sensor can be used either with an Ipad or normal PC and provides you with a 3D model in a compatible import format for the 3D shape editor in a matter of minutes.

"MEASURE, PROCESS AND VISUALIZE...

...IN ONLY A MATTER OF MINUTES"



HARDWARE

Scan&Paint 3D

1 Tracking camera

Automatic real-time tracking of the sensor position and orientation using a stereo infrared camera

2 Scout | Data Acquisition

Highly accurate 24 bit, 4 channel data acquisition. The device is USB powered so no additional power cables are required.

3 MFPA-4 | Signal Conditioner

Signal conditioning unit for the 3D USP sensor supplying power and preamplification.

4 3D USP Sensor

Broad band 3D intensity probe (20Hz-10kHz) 3x particle velocity sensor and 1x microphone

5 Tracking sphere

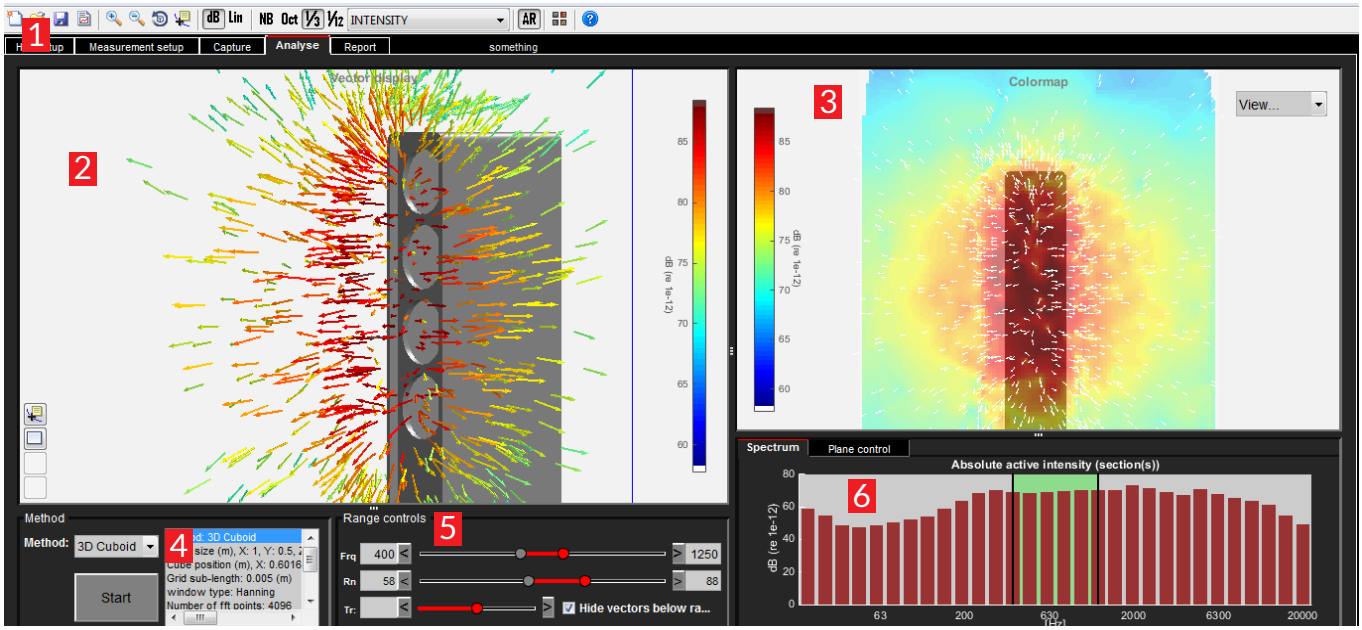
Sphere with IR reflecting markers allows for accurate probe tracking, with an accuracy down to millimeters.

6 Remote Handle

Remotely start and stop your measurement, monitor the signals in real time and manage your measurements.

SOFTWARE

Scan&Paint 3D



1 Tab workflow

Follow the 5 main tabs that guide you step by step from setup to report of your measurement. Open, manage and work in saved projects.

2 Interactive 3D visualisation

3D sound vectors displayed on a 3D model. View the results from any angle and in your prefered settings e.g. frequency range, octave band etc.

3 2D slices

Set one or multiple section planes in either x, y or z direction and show the interpolated result in 2D on the object.

4 Project parameters

Directly view the parameters of the current project you are working in.

5 Controls

Full flexibilty in setting the frequency range and dynamic range of the visualisation.

6 Spectrum

See the averaged spectrum for the the Sound Intensity or Particle Velocity in octave or narrow bands for the selected plane, individual vector or whole measurment run.

REDUCE THE PRESSURE IN YOUR WORK GO FOR PARTICLE VELOCITY

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