ADAMS ENGINEERING PROJECTS PVT LTD

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Visualizing Sound in 3D

Microflown Scan&Paint 3D | A measurement study in an acoustically treated room

Sound can vary significantly from one position in a room to another. Reflections from walls, floors and ceilings create room modes—frequency-dependent patterns that can amplify or cancel sound locally. Microflown's article shows how Scan&Paint 3D was used to visualize these effects and examine the performance of an acoustically treated test room.

Inside the test: what Microflown did

Test objective: Understand sound-energy distribution in a room built to develop and evaluate DeNoize smart soundproof-window technology, with particular interest in low-frequency noise.

- **Test room dimensions:** 2.5 m × 4 m × 2.4 m.
- **Frequency focus:** The DeNoize window technology targeted low-frequency noise in the 100–1,000 Hz range.
- **Excitation method:** A white-noise signal was introduced through a vibro-acoustic actuator mounted directly on the glass window.
- **Measurement system:** Microflown Scan&Paint 3D was used to capture acoustic data at locations around the room.
- **Measurement duration:** Data collection continued for more than 50 minutes.



What did the measurements show?

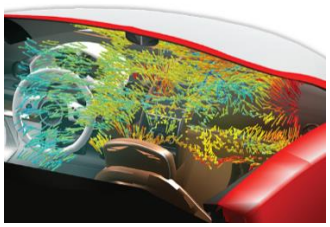
- **Low-frequency room modes:** The sound-pressure data revealed natural amplification zones, demonstrating how room dimensions and reflections can create uneven sound levels.
- **Sound radiation at higher frequencies:** The treated room showed a distinct radiation pattern that the article reports as closely resembling the theoretical behaviour of a moving piston—in this case, the excited window.
- **Room-treatment evaluation:** The measured sound field provided evidence for evaluating the effectiveness of the room's acoustic treatment.
- **Absorption and scattering:** The visualization helped investigate sound absorption and scattering effects that can be difficult to characterize through standard room assessment alone.



How this approach can support our industry

- **Automotive & NVH:** Map sound variations in vehicle cabins, component test areas and acoustic development environments.
- **Aerospace & Defence:** Investigate sound distribution in cabins, equipment enclosures and specialist acoustic test spaces, where suitable for the measurement setup.
- **Acoustic chambers & laboratories:** Assess room response and help evaluate whether acoustic treatment is performing as intended.
- **Industrial noise control:** Identify spatial variations in sound around equipment or inside enclosures to guide further acoustic investigation.
- **Research & product development:** Visualize measured sound behavior and compare it with design expectations or simulation results.





Why it matters for ADAMS customers

Three-dimensional visualization adds spatial context to acoustic measurements. Rather than relying only on individual measurement points, engineers can see where sound pressure changes across a test space and investigate possible causes. This can support acoustic assessment, treatment evaluation and product-development decisions. Actual suitability depends on the application, measurement conditions and required frequency range.

Explore acoustic measurement solutions with ADAMS Technologies

Explore acoustic measurement solutions with ADAMS

Contact ADAMS to discuss acoustic measurement and testing requirements for your application.