

Meta Design: Next level of acoustic performance in automotive industry

Mercedes-Benz, Phononic Vibes and Adler Pelzer partner up to create light weight metamaterials for increased acoustic insulation performance

THE CHALLENGE

For decades vehicle acoustic insulation was all about weight and thickness of raw materials used. The transmission loss is directly linked to the mass per unit area: the heavier the better. Lightweight solutions were always linked to a loss in acoustic performance. Until now, no solution was available for this. It became even more of an issue with the transformation to electric mobility and the increasing demand for lightweight vehicles. . Electric vehicles offer the benefit of a quiet ride. This in turn increases the demand for even better acoustic insulation due to the lack of masking sound levels from the combustion engine.

THE SOLUTION

Phononic Vibes invented a material called Meta Design. It allows to redistribute mass from the heavy layer of the acoustic insulation in a periodic manner that enhances the acoustic insulation properties. Thereby, the overall material used can be reduced by approximately 25%. The metamaterial effect of Meta Design originates from designed mechanical multiple resonances. Alder Pelzer contributed to the project their proprietary production technology to produce these periodically distributed masses. The metamaterial effect from Meta Design has proven itself in a PoC with flat samples and handmade prototype parts in a car.

IMPACT

Today, Meta Design is the world first metamaterial application in the automotive industry that is planned to be used in series production. Meta Design, applied to an acoustic insulation part, has proven to have less weight but still enhanced acoustic performance.

PHONONIC VIBES

Phononic Vibes' technology is redesigning acoustic insulation parts by lowering their weight and enhancing their performance via proprietary metamaterials.

Phononic Vibes is mainly targeting customers in the automotive and infrastructure industries. Their focus is on applications in manufacturing business areas.

PHONONIC VIBES

THE ART OF NOISE MANAGEMENT

HEADQUARTERS

Italy, Milano

FOUNDED

2018

NO. OF EMPLOYEES

11 – 50

WEBSITE

phononic-vibes.com

ACKNOWLEDGEMENTS

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ABOUT STARTUP AUTOBAHN

STARTUP AUTOBAHN powered by Plug and Play is an open innovation platform that provides an interface between innovative tech companies and industry-leading corporations. The basis of the program is the partnership that develops between startups and the corporate business units. The two entities hold an equal footing from the get-go: together they evaluate the potential for a joint venture, move forward to pilot the technology, and work to achieve the ultimate goal – a successful production-ready implementation. Designed with the intention to exceed startup acceleration, STARTUP AUTOBAHN powered by Plug and Play moderates a community for collaboration with a focus on implementable results. Over the years, the platform has successfully cultivated over 400 projects with more than 300 startups since its founding in 2016.