Press Release

Vibracoustic integrated Top Mount Module cutting weight, cost and development time

Darmstadt, 29 March 2021 | Vibracoustic, a global leader in automotive NVH (noise, vibration and harshness) solutions, has launched an integrated Top Mount Module for light vehicles. It combines five separate parts – the plastic top mount and integrated bearing, spring seat, dust boot and jounce bumper – in one module. Therewith, the Top Mount Module provides light vehicle manufacturers with space, weight and cost savings while consolidating the full strut function within a single solution.

Vibracoustic's Top Mount Module delivers weight savings of more than 25 per cent while also improving structural stiffness by as much as 35 per cent for jounce and 70 per cent for rebound when compared to an equivalent steel part. It also provides cost savings by substituting a single complete module for five separate parts.

The Module provides excellent isolation for small amplitudes without compromising the shock absorber's performance. This ensures that the vehicle maintains a direct steering response by absorbing lateral loads and eliminating low parasitic torque that is often present during steering wheel movements.

Alongside performance, cost and simplicity, the integrated module allows for packaging improvements. For Macpherson type suspension, integration of the sliding bearing means that the total design height is reduced. This helps light vehicle manufacturers to comply with current pedestrian safety regulations and allows increased wheel dimensions.

Integrated concept with new patents

"The Top Mount Module's design draws from the expertise of our engineering team and their experience in developing customized lightweight parts with industry-leading NVH performance," explains Dr. Jörg Böcking, CTO at Vibracoustic. "They systematically evaluated each component of a conventional top mount strut system and began to optimize it for NVH while also exploring the use of new materials."

Using high-performance plastic parts designed for the module's real-world loading and stresses, Vibracoustic was able to reduce mass and improve rigidity of the system within operational temperature ranges. The prototype underwent exhaustive testing to confirm its performance and durability under a variety of loads, including tests to ensure that steering accuracy and feel was maintained.

Significant focus was placed on the development and integration of a sliding bearing into the Top Mount Module. Existing patents made the process challenging but Vibracoustic's engineers utilized their knowledge of advanced plastics to produce a novel sliding bearing design. The new bearing was comprehensively tested and validated in the prototype phase and is now one of two new patents the company has filed as part of the project.

Manufacturers seek a solutions approach

Many vehicle manufacturers and e-mobility providers focus on long-term strategic development of electrified powertrains and autonomous driving capabilities. To support this trend, Vibracoustic offers the design and production of complete sub-system modules. These are intended to accelerate new vehicle development and streamline OEM supply chains, while improving NVH performance, cutting mass and lowering cost.

Using this modular approach, the production of vehicles – in particular the sourcing of components – becomes much simpler. It eliminates the need to specify, develop and test each component individually, instead delivering an integrated part that has been tailored to the vehicle.

With the globalization of popular vehicle platforms, finding improvements to any vehicle system can result in significant savings in weight, emissions, and expenses. Given the scale of production, everything that simplifies the

logistics, purchasing and warranty of new vehicles can be hugely beneficial to light vehicle manufacturers. This is one of the most significant features of Vibracoustic's Top Mount Module, it replaces several components from different providers with a single component from a dependable and highly regarded worldwide supplier.

Dr. Böcking adds: "Working with the world's leading vehicle manufacturers allows us to understand the current focus of OEM engineering teams. Providing pre-assembled and pre-validated subsystems frees OEMs from a large burden of work. They can also be confident that we have already optimized these subsystems for NVH performance – the Top Mount Module being a perfect example. Vibracoustic is reducing complexity in the development, engineering and supply chains of OEMs, partnering with them across the entire product lifecycle. Our solutions are safe, efficient and durable, providing excellent driving comfort without compromising handling."

About Vibracoustic

Vibracoustic is a leading global automotive NVH expert, providing customized solutions adding comfort and supporting efficiency, safety and durability. Its expertise along the entire product life cycle and all vehicle systems as well as its broad product range enable Vibracoustic to solve current and future NVH challenges across all automotive segments. With more than 10,000 employees at 42 production and engineering locations across 18 countries, Vibracoustic serves all major automotive manufacturers. In 2019 Vibracoustic recorded total sales of 2.1 billion €. For more information, see www.vibracoustic.com

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