

Shhh, I'm Driving – How the Acoustic Solutions Team at 3M Helps to Provide a Quieter Ride



The test car was covered during testing to conceal its identity.

With people spending more time than ever in their cars, it comes as no surprise that drivers and passengers want the quiet quality found in their homes also to be found in the vehicles that carry them to their destination.

The automotive acoustic team at 3M is helping to achieve this by providing automotive design engineers with a variety of acoustic products to reduce noise, improve sound quality and add value and performance to virtually any vehicle design or application.

Recently, when a leading diesel automotive manufacturer had concerns about noise distribution inside one of its vehicle models, it contacted 3M for solutions. Finding a quiet solution for a diesel vehicle proved to be timely, since in some countries, the low retail price of diesel fuel has led to a recent surge in sales of diesel-run vehicles – even reaching up to 50 percent of new car sales in India alone.

Given the task of completely analyzing the noise, vibration and harshness (NVH) of the vehicle in question, the experts at 3M were able to conduct vehicle road tests at different speeds and gears to determine noise levels from different positions inside the car. Upon analyzing the data, problem areas were identified.

They then took the results and categorized them based on different areas, such as the engine/firewall, powertrain, tire noise, and plastics and trim (roof, instrument panel, etc). The 3M team also measured and factored in overall sound absorption, sound transmission loss and vehicle weight.

Once these measurements were taken and analyzed, the 3M team developed a collection of solutions based on 3M™ Thinsulate™ Acoustic Insulation, including vehicle door panels, headliners, wheel wells, pillars and instrument panels.

For this particular vehicle, the insulation featured a combination of layers to address noise ranging from high to low frequency. Additional benefits were observed due to Thinsulate insulation's extreme compressibility, flexibility and hydrophobicity as well as ease of attachment in tight or irregular-shaped areas.

Shhh, I'm Driving (continued)

When applied to the vehicle, the results proved to be outstanding, achieving noise level reductions up to 2.5 decibels while demonstrating a weight savings of more than 70 percent compared to traditional acoustic materials. This help to contribute to a quieter, smoother ride and improved drivability under severe road conditions.

“Whenever one of our innovations can demonstrate direct performance benefits to our OEM customers and end users, we’re extremely pleased,” said Jim McKeivitt, global business development manager, 3M Automotive Division. “Our automotive acoustic products offer many benefits by not only reducing noise and simplify the manufacturing process but also by contributing to weight savings and better fuel efficiency.”



Microphones and recording instruments were positioned at different locations inside the car.

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Automotive Division

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