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Outlook; References; Chapter 5 - Full Vehicle Testing; 5.1. Introduction; 5.2. Road Testing; 5.3. Road Simulators 5.4. Finding and FixingChapter 6 - Buzz, Squeak and Rattle Detection for Modules, Subsystems and Components; 6.1. Introduction; 6.2. Major Issues Involved with the Physical Test Setup; 6.3. Vibration Test Methods; 6.4. Evaluation of BSR Noises in the Lab; 6.5. Application Example (Including Test Methods and Lessons Learned); 6.6. Conclusion and Outlook; Chapter 7 - Universal Graining to Prevent Creaking Noises with Plastic and Elastic Contact Partners; Coulomb's Friction Theory; Desaguliers' Adhesion Model; Bowden and Tabor; Lessons Learned; References Chapter 8 - Squeak and Rattle CAE Simulation Using FEA8.1. Introduction; 8.2. Nonlinear Method - Rattle Simulation Using Rattle Factor; 8.3. Quasi-Linear Method - Rattle HotSpot Check; 8.4. Summary and Outlook; Acknowledgments; References; Chapter 9 - Squeak and Rattle Prevention in the Design Phase Using a Pragmatic Approach; 9.1. Motivation for Prevention: Warranty Cost, Afterworks Cost and Image Loss; 9.2. S&R Elimination Starts in the Design Phase; 9.3. Solutions in Prevention of Squeak; 9.4. Solutions in Prevention of Rattle; 9.5. How to Proceed Chapter 10 - Experimental Friction Behavior of Elastomers on Glass10.1. The Problem; 10.2. Experimental Setup; 10.3. Results; 10.4. Test Method; 10.5. Summary; References; Chapter 11 - Development of Squeak and Rattle Countermeasures Through Up-Front Designs; 11.1. Introduction; 11.2. Root Causes of Squeak and Rattle Problems; 11.3. Squeak and Rattle Sensitivity Areas; 11.4. Development of Squeak and Rattle Countermeasures Through Up-Front Designs; References; Chapter 12 - Coatings for Low-Noise Body Seals; 12.1. Coatings; 12.2. Mechanism of Function; 12.3. Materials 12.4. Troubleshooting Anti-Noise Coating Problems

Sommario/riassunto

Buzz, squeak, and rattle (BSR) is the automotive industry term for the audible engineering challenges faced by all vehicle and component engineers. Minimizing BSR is of paramount importance when designing vehicle components and whole vehicle assemblies. This is the only book dedicated to the subject. It provides a self-contained reference to the background theory, testing, analysis, and elimination of BSR. Written for practicing engineers and industry researchers, the book has a strong focus on real-world applications making it an ideal handbook for those working in this important area. Ch