

We have one goal — improving the noise and vibration quality of our customers' products. Roush delivers innovative, effective noise and vibration control solutions. By combining advanced analysis capabilities, comprehensive engineering services, and state-of-the-art facilities, Roush has become a proven partner in identifying and resolving challenging noise and vibration issues. Backed by the diverse capabilities of the Roush family of companies, we are uniquely equipped to provide turnkey noise and vibration solutions.

Roush... your silent partner in developing smoother, quieter products.

Transmission NVH Engineering Engineering Services

Roush provides noise and vibration engineering services to transmission and driveline manufacturers. We have developed specific tools and methods to study the complex noise mechanisms in transmissions and continually develop new measurement and analysis techniques.

We have the facilities to study transmissions independently, with engines as full powertrains, or in-vehicle. We offer full-service engineering, including instrumentation, buildup, diagnosis, and design. We have the unique ability to support product development from initial design through final prototyping.

Transmission Facilities

Transmissions can be tested in our hemi-anechoic test cells with or without engines. Specially designed fixtures simulate the engine mounting surface stiffness, a cost effective means of finding solutions quickly.

Experimental and Analytical Services

Our engineering staff brings the most up-to-date analytical and experimental tools to each project.

We use a variety of CAE analysis packages, including:

- Finite element analysis (FEA)
- Acoustic boundary element analysis (BEA)
- Kinematic analysis
- Solid modeling

Experimental techniques include:

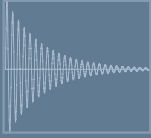
- Acoustic intensity
- Sound quality analysis
- Modal analysis
- Order tracking
- Operating deflection shapes
- Real time animation



Specially designed fixtures simulate the engine mounting surface stiffness, allowing fast cost effective testing.

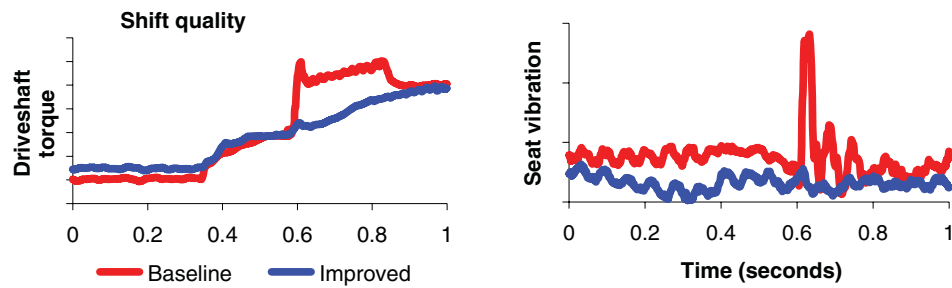


Roush offers full in-vehicle testing capability.



NOISE AND VIBRATION ENGINEERING

Full In-Vehicle Test Capability



Unacceptable “feel” as indicated by seat vibration is caused by abrupt change in driveshaft torque. Improved shift strategy reduces seat vibration.

We have successfully applied our transmission NVH capabilities to a wide variety of projects, including:

Gear Engagements

- Reduction of audible noise
- Improvements in transient torque output
- Analysis of vehicle sensitivity to engagements
- Static and dynamic gear and driveline lash measurements

Park Disengagements

- Analysis of transmission NVH contributions
- Transmission-specific design modifications
- Analysis of vehicle response

Transient Issues

- Shift quality
- Tip-in, back-out
- Methodologies have been developed to identify root cause quickly

Hydraulic Noise

- Identification and elimination

Balance and Runout

- Identify contributions of each transmission component to overall levels

Electric Vehicle Powerplants

- Resolution of problems specific to electric vehicles

Modal Analysis, Operating Vibration, and Real Time Animation

- Analysis of deflections and mode shapes of transmission internal and external components.

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