ROUSH®

MODAL ANALYSIS

Roush provides expert modal testing. Each year Roush performs many modal tests, either stand-alone, or as part of a larger noise and vibration problem solving effort. Modal results are used to diagnose vibration problems, verify targets, validate analytical models, and design damping treatments. LMS CADA-X software is used for complex multiple-reference modals, and MEScope is used for simpler single-reference modals. We have the specialized tools for modal tests on almost any scale from printed circuit board components to full-sized Recreational Vehicles.
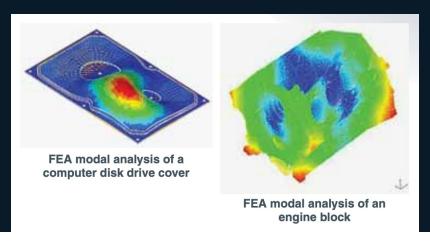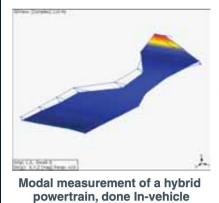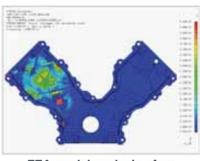
Roush also provides expert modal analysis using ABAQUS FEA software. One of our specialties is estimating automotive powertrain (engine and transmission combined) natural frequencies with partial FEA models (e.g. the engine block and only the shell of the transmission). We have world leading technology to design high performance applied damping and sound barrier treatments.
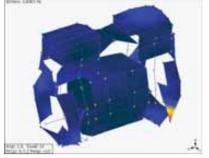
Roush has developed a technology to determine the stiffness of a structure using modal test data. This method is very cost effective because data from a single modal test is used to replace multiple structural tests (e.g., torsional, bending, breathing, and matchbox stiffness). The method is also used to measure local versus global stiffness.

FEA modal analysis of a computer disk drive cover

FEA modal analysis of an engine block

Modal measurement of a hybrid powertrain, done In-vehicle

FEA modal analysis of an engine front cover

Modal analysis of an air pump

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