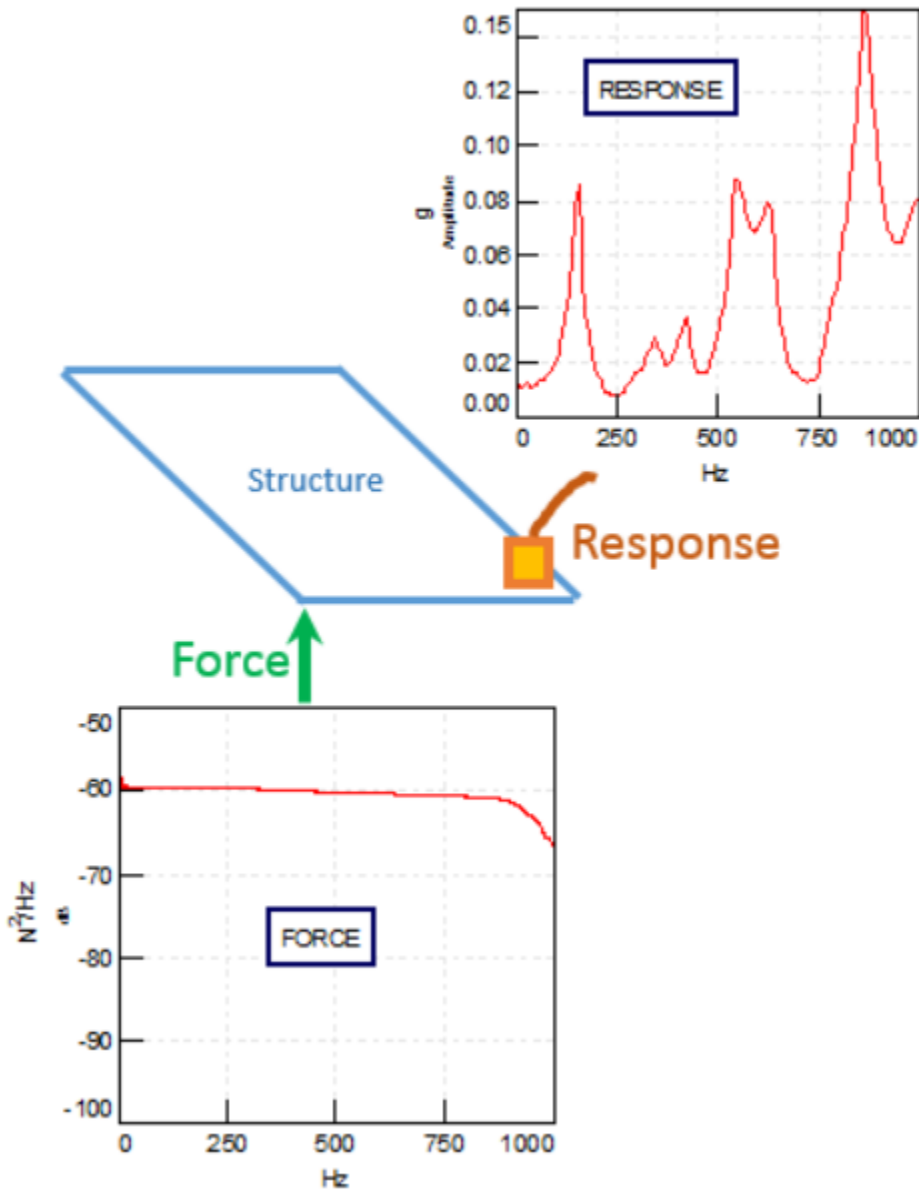


Modal Test based -Material Comparison

Modal analysis is the study of the dynamic properties of linear structures, based on structural testing or finite element analysis-based simulation. These dynamic properties include resonance frequencies (also called "natural frequencies" or "eigenfrequencies") and structural modes (or "eigenmodes"). Dynamic properties are dependent on the mass, stiffness and damping distribution on the structure, and determine structural vibration behavior when exposed to operational loads. Every deformation of a linear structural system can be expressed as a linear combination of the structural modes.

Modal testing combines data acquisition with further analysis. In an industrial application, the complete process is often referred to as modal testing and analysis, or experimental modal analysis (EMA).

Results of modal testing and analysis are used in various simulation and testing applications, including vibration response calculations, root cause analysis of vibration problems and damage detection, but also for adding flexibility to multibody analysis and speeding up durability and vibro-acoustic simulations. Modal-based calculations are very effective and allow efficient evaluation of structural changes to responses of any kind.



PSK Gong is an experiment done by ADL to assess the damping levels of Solvay grades in comparison to commercially available commodity and engineering plastics grades.

ADL supports R&I New Product dev studies by experimentation and data analysis. ex: KALIX NVH, LCE

Modal Analysis: Experimental Equipment

> What equipment does ADL have for modal analysis?

Item	Part #	Description
LAN-XI Module	3677	Instrument hookup, data acquisition (DAQ)
Impact Hammer	8206	Apply impulse to samples & measure force
Teardrop Accel	4517	Measure acceleration, low mass instrument
Microphone	4966-H-041	Sound up to 20kHz
Accelerometer	4508B	Measure acceleration
Handheld Shaker	5961	Apply tonal excitation to samples
Force Transducer	8230	Measure dynamic force



DAQ



HAMMER



TEARDROP ACCEL



FORCE TRANSDUCER



SHAKER



ACCEL



MICROPHONE



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