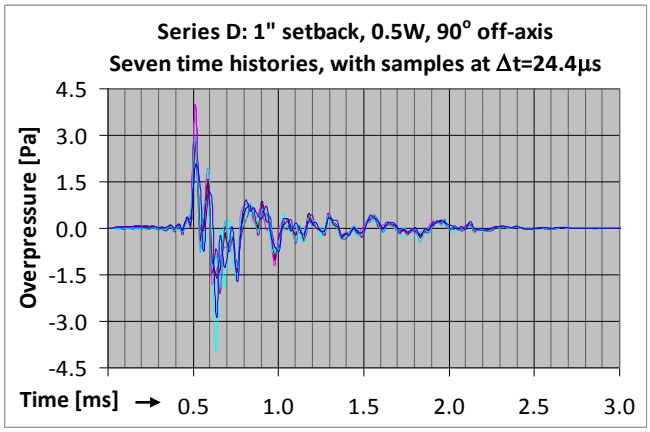
VACC, Inc. DBA
VIBRO-ACOUSTIC CONSULTANTS

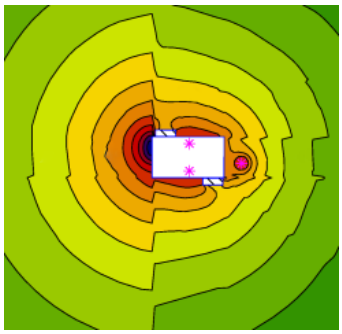
Product noise design and troubleshooting

Many consumer products generate unwanted sound and vibration. Some products are too loud; some are too quiet; and others just "don't sound right". Sound quality is an important parameter that involves customer psychology and expectations, above and beyond basic quantitative measurements like noise level. From regulatory compliance to consumer expectations, we can help make your product an acoustical success (or keep it from being dismissed because of how it sounds). Below we describe some of our work; names of manufacturers and products are omitted for confidentiality.

Drug delivery device (personal pharmaceutical dosing): impulse noise characterization for a new drug delivery system that caused a loud snapping sound. The manufacturer was concerned that this sound could reduce consumers' perceptions of quality and might elicit involuntary startle responses in patients. We performed detailed characterizations to determine relative noise levels and extremely-short-duration impulse noise characteristics.



Household power generator (alternative energy): product noise testing on a small fuel cell for home use. Similar in size to an air-conditioning condenser, the unit is intended to sit in homeowners' backyards. Outdoor noise impact on adjacent homes was of concern to the manufacturer. We helped define an appropriate criterion intended to minimize conflicts between customers and their neighbors, and generated high-quality noise data for different product configurations. The data allow customers and consultants to calculate noise impact and avoid violations of noise ordinances.



Electrostatic OEM component (consumer gadgets): noise characterization for a small embedded OEM component that utilized high voltage fields. Airborne particles occasionally caused the system to arc, creating short transient impulse sounds (crackling) with very short durations of less than 1ms. The manufacturer was concerned that the emitted sounds might turn off some potential customers. We devised a high-sample-rate noise testing methodology that captured noise related to the sparking and returned both time-domain as well as frequency-domain information. Frequency content data were especially important to guiding development of mitigation strategies.