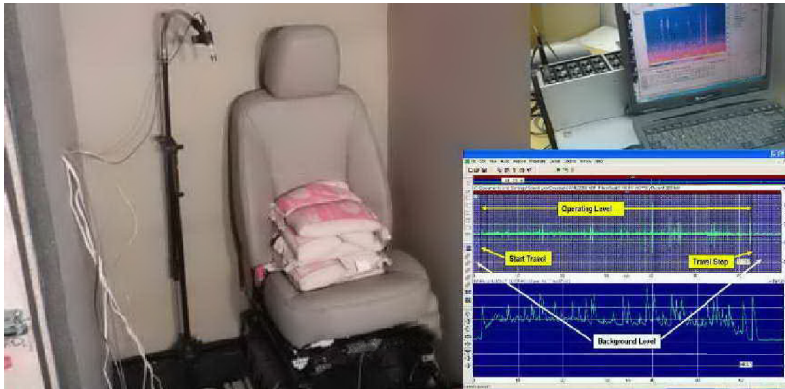

Case Study

Sound acquisition testing under challenging conditions Design + Build + Test Solution



Today's quieter cars need quiet power seats too.

The Customer

Our customer is a Tier 1 manufacturer of automotive seating systems. Successful manufacturers continue to improve their products throughout the duration of a production run. These improvements can either improve performance or reduce cost or both. Our client approached their OEM customer with a cost reduction that included a new supplier of some of the power seat adjuster components. The OEM was concerned that the new components could cause poor sound quality from the seat adjuster, particularly at low temperatures.

The Challenge

Our client could measure sound quality, but only under ambient conditions. They approached us with a request to measure the sound quality and electrical characteristics of a selection of powered seats both with existing production components and with the new components. The OEM specified that sound measurements must be conducted on the seats inside of a semi-anechoic quiet room while the environment was maintained at a temperature of -20°C. While we had both an appropriate quiet room and large environmental chambers, neither could meet all of the required conditions.

The Paragon Systems Solution

Our in-house test fixturing group was able to design and construct a portable hemi anechoic chamber that was sized such that it could be loaded into one of our large drive-in environmental chambers. With a noise floor performance of <25 dBA while inside the environmental chamber at -20°C, the anechoic chamber was quiet enough to measure the seat sound output which was expected to vary between 30 dBA to 50 dBA.

A multi-channel sound and vibration data acquisition system acquired the sound of the seat adjusters and a LabView data acquisition system acquired the current traces.

No one wants to hear an annoying noise coming from the power seat in their new car.

Annoying noises reflect hundreds of millions of dollars in costs for the automotive industry due to warranty claims.

Tools

- Custom semi-anechoic quiet room
- Drive-in environmental chamber
- Multi-channel 44 kHz data acquisition system