

Case Study - Mechanical Testing

Vibration Durability - Automotive

A Tier 1 supplier of automotive parts approached us to perform a vibration durability test as part of a larger auto parts validation program. The client was developing a new type of pickup truck running board. This product was a new business area for them, so they had little experience with vibration testing. The client supplied us with a series of PSD profiles provided by their OEM client, a CAD model of their part, a duration for the test and a very tight development timeframe.

We reviewed the supplied information and provided the client with a complete one-stop testing solution. The solution included an initial liaison with the OEM to recommended modifications to the PSD profiles followed by design, fabrication and resonance qualification of a welded aluminum two station vibration fixture. We then went on to perform the vibration testing of a series of running board versions to prove out the final product design.

Development schedules have become ever more compressed, so naturally our client wanted to initiate the test phase as soon as possible. From their initial inquiry to the start of vibration testing on a fully qualified fixture took less than 2 weeks. Testing continued around the clock and through weekends and holidays.

One of the purposes of vibration testing is to verify the design model with simulations of real world inputs. In this case the client ultimately modified their design in three specific locations to resolve fatigue life limitations that were not apparent in the original design model. The fully qualified running board is now in production with an OEM vehicle manufacturer.

Areas of Expertise: CAD modeling
Random vibration testing
Vibration fixture design, development & manufacture
Vibration fixture qualification

Equipment Used: Solidworks CAD modeling software
Manual and CNC machine tools
Unholtz-Dickie vibration machine