



# STRESS ENGINEERING SERVICES, INC.

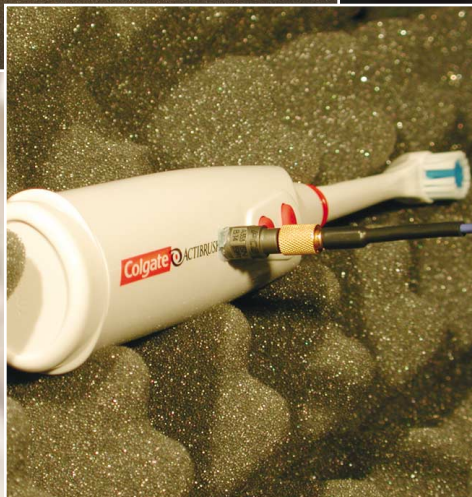
[www.stress.com](http://www.stress.com)

## Electro-Mechanical Devices

SES offers the design and analysis expertise necessary to predict and avoid development problems in electro-mechanical devices.



SES tested popular electro-mechanical toothbrushes to better understand the relationship between design, cost and noise level.



Management has been sold, product launch dates have been set and there's no turning back. Things are going mostly according to plan EXCEPT...an unanticipated problem appears. Then the small problem suddenly becomes a major one when you learn that your launch date is now in jeopardy. This is a familiar scenario. With the use of leading edge design, analysis and testing technology, it is also unnecessary.

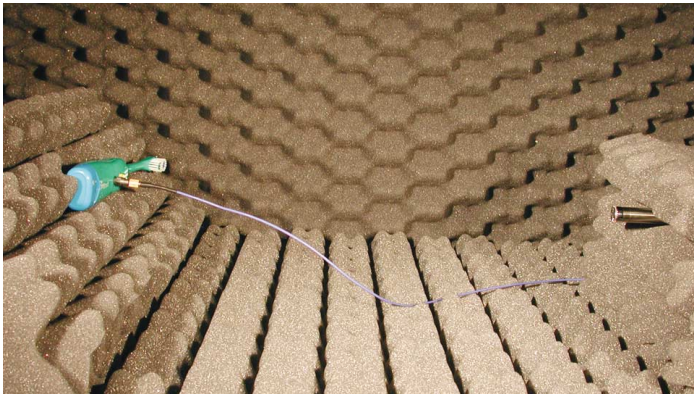
### A Cost-Effective Approach...Early in the Design

SES uses a practical approach to assessing the likelihood of problems very early in the design cycle, before commercial commitments are made. Using predictive analysis and simulation tools, as well as unique testing methods, SES can help you determine if a small problem with your new device is likely to become a large one.

## Case Study: Solving Toothbrush Noise Problems

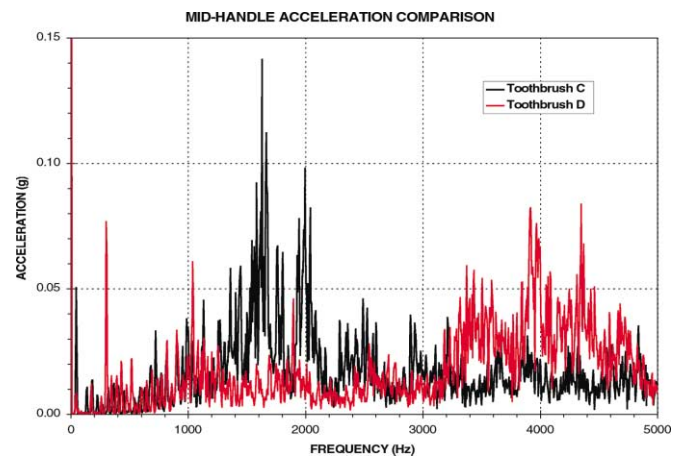
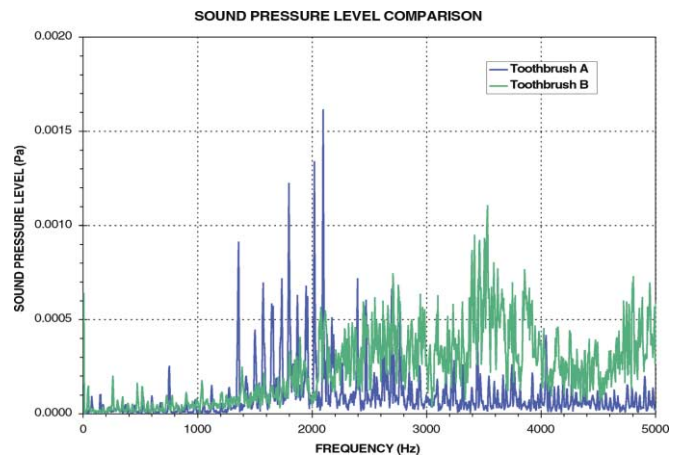
With most electro-mechanical devices, noise is only considered after the development is nearly complete and production quality prototypes are available for testing. Unfortunately, noise problems are usually identified too late in the product development cycle to be effectively solved.

A recent example where SES demonstrated the value of predictive analysis, simulation and testing tools is in the electric toothbrush market. This category has become a commercial battleground for new, lower cost, innovative products. To better understand the relationship between design, cost and noise level, SES conducted a survey of several of the most popular electro-mechanical toothbrushes. The results helped establish a noise benchmark for future brush development.



SES used a semi-anechoic chamber to measure near-field noise. Inside the chamber, device operating noise level is monitored with an acoustic microphone, while mechanical response spectra are measured using an accelerometer.

Data from the tests are displayed graphically in both time and frequency domains. The data makes it possible for SES to identify the sources of the noise and provides a basis for engineering a solution.



SES offers a broad range of experience in the development, design and manufacturing of electro-mechanical devices and products. Our in-house multi-disciplinary team includes electrical, electronics, mechanical, materials and test engineers.

**To Avoid Development Problems With  
Electro-Mechanical Devices, Call SES Today.**

Visit us on the web at [www.stress.com](http://www.stress.com)

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