

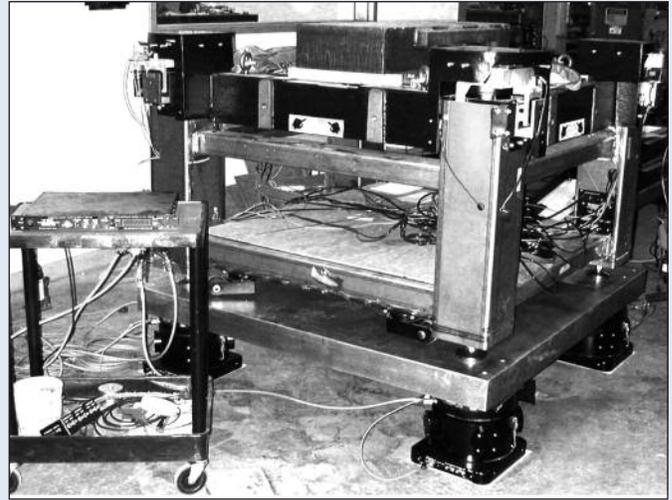
## APPLICATION NOTE

### STACIS® as a Microseismic Shaker

*Equipment manufacturers can use STACIS® to generate micron-level floor vibration simulating real world floor activity to develop tool vibration criteria.*

*Semiconductor equipment makers, electron microscope manufacturers, and other precision tool makers struggle to develop meaningful floor vibration criteria for their instruments. These criteria can be derived either theoretically or empirically. Theoretical calculations are extremely complex and are often impractical or do not reflect actual tool sensitivity because of the many variables that cannot be easily modeled. Floor vibration criteria arrived at empirically are typically based on gathering tool performance information from a wide range of installations represented by various floor vibration levels. These floor vibration levels and the corresponding tool performance are used to create an upper limit of vibration amplitudes over a frequency spectrum that represents floor vibration levels that will result in acceptable tool performance. Both of these approaches are extremely difficult, time consuming, and do not result in a precise vibration specification for the tool.*

STACIS® 2100 offers a completely unique and novel way to approach the development of tool vibration criteria. STACIS, which is normally operated as a floor vibration isolation/cancellation system, can also be operated to provide micron-level shaker input. This shaker signal can be white noise, discrete frequency, or a sine-swept wave-form. STACIS can provide independent or combined X, Y and Z axis vibration input. As a shaker, STACIS can be run to simultaneously cancel building floor vibrations providing a quiet foundation while superimposing on this the desired frequency and amplitude vibration spectrum required to test tool performance. No other shaker system can control inputs down to such small amplitudes. No other shaker system can isolate ambient floor vibration while *simultaneously* providing a controlled vibration frequency spectrum. The vibration generated at the STACIS digital controller at extremely low amplitudes is not corrupted by ambient building floor vibrations at the test site.



*STACIS® 2100 is used as an isolation system/micron-level shaker within TMC's own factory to test performance of other TMC vibration isolation products.*



Complete working tools can be mounted on a STACIS isolation/shaker system, and the STACIS vibration amplitudes can be adjusted as overall tool performance is evaluated. The tool can be excited at given

frequencies or given bands of frequencies to determine the exact amplitude/frequency relationship of vibration input that limits overall tool performance. The result is an overall tool vibration criteria level that corresponds to the exact vibration level at which the tool can provide optimal performance. This testing can be completed relatively quickly and easily – without shipping tools to customer sites and waiting for large amounts of field data or relying on questionable modeling information.

Contact TMC or your local sales representative to acquire a STACIS® 2100 system for use as a shaker for testing your sensitive equipment in a controlled vibration environment.