SPECTRA TECH LTD
Cincinnati, OH • 513.419.9169 • service@SpectraTechLtd.com

August 6, 2010 For immediate release

Scientific Lab Instruments Have Low Tolerance for Vibration

When a product research laboratory at consumer goods manufacturer Procter & Gamble decided to relocate, it was not as simple as finding floor space in another building on the company's sprawling Winton Hills Technical Center office campus. The lab's sensitive instruments – including a Time-of-Flight Secondary Ion Mass Spectrometer (ToF-SIMS), Xray Photoelectron Spectrometer (XPS), Atomic Force Microscope (AFM), and several other scientific instruments – required an environment that was virtually free from vibration. In addition to the standard costs of interior renovations and mechanical / electrical systems modifications, the potentially-significant cost of limiting vibrations also needed to be considered.

A project team was assembled by Jones, Lang, LaSalle - the company's Facility Management firm. Cincinnati architectural firm BHDP, and M/E engineering firm PEDCO E&A Services, were charged with evaluating costs associated with relocation to three potential sites. Spectra Tech Ltd, a Cincinnati-based consulting firm specializing in acoustics optimization and noise / vibration control, was retained by PEDCO E&A Services to perform onsite testing to document existing vibration levels at each of the sites.

The lab instruments' operating specifications dictated that the maximum tolerable vibration acceleration level at the equipment mounting bases had to be limited to less than 0.0002 m/s^2 (about 1/1000 of an inch of displacement) in all three geometric axes (X, Y, Z) within the frequency range of 0.5 Hz to 300 Hz. Should vibration in excess of the specified levels be present, the lab's sensitive scientific measurements could be invalidated.

Using a programmable vibration analyzer, Spectra Tech conducted tri-axial vibration testing at multiple points at each site in accordance with ISO Standard #8569 (1996-07-01), entitled ***"Mechanical vibration and shock – Measurement and evaluation of shock and vibration effects on sensitive equipment in buildings."*** Peak and RMS acceleration levels over time were recorded. Sources of vibration at the three sites included HVAC system fans and pumps, elevators, nearby production lines, and miscellaneous apparatus. By turning the various machinery on and off, the vibration contributions of equipment scheduled to be removed or to remain were accurately assessed. In all, a total of 110 discrete vibration tests were performed to collect the necessary data. The test results were then downloaded to Spectra Tech's engineering data analysis program and individually plotted against the maximum permissible vibration criteria.

Where vibration levels were anticipated to remain above permissible levels after certain equipment was to be removed, the amount of additional work required to reduce vibration to the acceptable level was determined and associated costs were calculated. One of the three potential relocation sites required significant vibration control measures, one site required virtually no additional vibration isolation and the third site required minimal vibration control upgrades. The costs associated with vibration isolation were then factored into the overall relocation estimate for each site. Final site selection was made after all renovation costs, time factors, and operating costs were considered.

Visit the Spectra Tech website at www.SpectraTechLtd.com