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MINUS K'S NEGATIVE STIFFNESS VIBRATION ISOLATORS: THE CHOICE FOR LASER/OPTICAL SYSTEMS

Negative-Stiffness vibration isolation from Minus K® Technology, Inc. enables laser/optical instruments such as SPMs, micro-hardness testers and optical profilers to achieve performance that cannot be achieved with other passive and electronic isolation systems.

Laser and optical systems, whether used in academic labs or industry, are very susceptible to vibrations from the environment and these instruments frequently need vibration isolation. When measuring a very few angstroms or nanometers of displacement, an absolutely stable surface has to be maintained upon which to rest the instrument. Any vibration will cause noise and fundamentally an inability to measure high resolution features.

Improved Transmissibility: What Negative-Stiffness isolators provide is really quite unique to the field of laser and optical systems. They not only isolate vibrations vertically but also horizontally at less than 1 Hz, and without the need for air or electric power.

Negative-Stiffness isolators employ a completely mechanical concept in low-frequency vibration isolation. They are constructed primarily with springs and flexures without the need for any fluids or electric power. The result is a compact passive isolator capable of very low vertical and horizontal natural frequencies and very high internal structural frequencies. The isolators (adjusted to 1/2 Hz) achieve 93 percent isolation efficiency at 2 Hz; 99 percent at 5 Hz; and 99.7 percent at 10 Hz.

A Minus K customer with a Negative-Stiffness system for crystal growing when asked how the new isolators were performing, stated "Before we got the NSM system, I could actually see somebody walking down the

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stairs through the walls with a seismometer. With the Negative-Stiffness system in place, I can't even tell when they are shelling at the nearby Fort Riley military base."

Harsh Environments

The all-metal Negative-Stiffness systems can be configured to be compatible with high vacuums and other adverse environments, such as extreme high and low temperatures, and radiation. With vacuums, for example, the isolators can be used right inside the vacuum chambers. This offers other advantages such as much lower payload weights, more compact systems, and eliminates problems associated with vacuum chamber feedthrough.

Gaining Popularity

Negative-Stiffness vibration isolation systems have become a growing choice for laser and optical applications. Not only is it a highly workable vibration solution, but its cost is significantly less—up to one-third the price compared to active and traditional passive systems—making it an economical solution to cost-conscious administrators. Minus K has recently announced its new MK52 Optical table for large applications including Raman spectroscopy, AFM-Raman integration and optical laser testing systems. The MK52 tables come with a choice of accessories and table tops.

Minus K Technology works with many instrument manufacturers and academic laboratories designing custom vibration isolation systems, and has sold standard bench top and table vibration isolation products to over 300 universities and laboratories in 40 countries. The company was founded in 1993 to develop, manufacture and market state-of-the-art vibration isolation products based on its patented Negative-Stiffness technology.

For more information, visit booth #1535 or contact Steve Varma, Operations Manager, Minus K Technology, Inc.; 310-348-9656; email stevev@minusk.com. or visit www.minusk.com.