

Press release

Vibration monitoring in extreme and changing temperatures

Kistler presents improvements to temperature-resistant accelerometer family

Winterthur, March 2023

Kistler has improved the piezoelectric accelerometer family 8766A for measuring vibrations in surroundings with extreme temperature changes. Thanks to an improved IEPE circuit, the sensors now feature lower noise thresholds for all its ranges, resulting in even more accurate measurements. Additionally, the new generation includes a model suitable for a measuring range of 2000 g.

Measuring micro-vibrations is crucial for many applications. Especially in the automotive and aerospace industries, these tests may take place near engines and other heat sources which can cause extreme temperature changes during the measurements. With a regular accelerometer, the effects of heat fluctuations must be eliminated via an algorithm to guarantee precise data. This requires a lot of expertise as well as exact knowledge of the technology being used.

The IEPE (Integrated Electronics Piezoelectric) triaxial accelerometers of the 8766A family offer a more user-friendly solution: Thanks to its unique piezoelectric element, these temperature changes do not affect these sensors. Instead of quartz, they are based on PiezoStar crystals, which Kistler grows in its own facilities. PiezoStar elements are extremely stiff, providing sensors with a high natural frequency for improved accuracy. Their main advantage, however, is their temperature resistance: fluctuations between -75°F and 330°F or -60°C and 165°C only have minimal effects on the sensitivity of accelerometers with this special piezoelectric material.

Reduced noise thresholds for more precise measurements

The new 8766A generation also features significantly lower noise thresholds, which determine the smallest possible level of vibrations that can be reliably picked up: the 50-g range now comes with a 53 percent lower noise threshold, the 100-g range with a 58 percent and the 250-g range with a 40 percent lower noise threshold. For the 500-g range, the threshold was reduced by 29 percent and for the 1000-g range, by 35 percent.

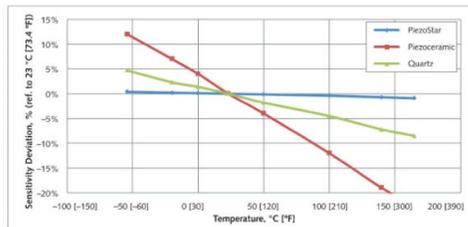
All sensors of the 8766A family permit vibration monitoring in three mutually perpendicular axes and provide a wide frequency response in each orthogonal axis, making them well-suited for dynamic vibration measurements, especially on lightweight structures. An integral silicone cable variant is available for underwater vibration testing at up to 16 bars. Sensors of the 8766A family can be

installed on test objects either via adhesive mounting or flexible studs thanks to three 5-40 threaded holes. This allows engineers to make use of each mounting side of the cube design, ensuring reliable mounting for the calibration of each axis.

Image material (please name the Kistler Group as picture source)



IEPE triaxial accelerometers of the 8766A family are equipped with a temperature resistant PiezoStar crystal.



Piezoelectric sensors equipped with PiezoStar crystals are only minimally affected by temperature fluctuations between -75°F and 330°F (-60°C and 165°C).

Media contact

Martin Marinak
 Marketing Manager for BU Test & Measurement and E-Business
 Tel.: +41 52 2241 974
 Email: martin.marinak@kistler.com

About the Kistler Group

Kistler is the global market leader for dynamic pressure, force, torque and acceleration measurement technology. Cutting-edge technologies provide the basis for Kistler's modular solutions. Customers in industry and scientific research benefit from Kistler's experience as a development partner, enabling them to optimize their products and processes so as to secure sustainable competitive edge. Unique sensor technology from this owner-managed Swiss corporation helps to shape future innovations not only in automotive development and industrial automation but also in many newly emerging sectors. Drawing on our extensive application expertise, and always with an absolute commitment to quality, Kistler plays a key part in the ongoing development of the latest megatrends. The focus is on issues such as electrified drive technology, autonomous driving, emission reduction and Industry 4.0. Some 2,000 employees at more than 60 facilities across the globe are dedicated to the development of new solutions, and they offer application-specific services at the local level. Ever since it was founded in 1959, the Kistler Group has grown hand-in-hand with its customers and in 2021, it posted sales of mCHF 411. About 7% of this figure is reinvested in research and technology – with the aim of delivering better results for every customer.