

Press release

Measuring vibrations at high temperatures

New triaxial miniature accelerometer by Kistler copes with severe temperature fluctuations

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With the 8248A3 triaxial accelerometer, Kistler launches a sensor that withstands high temperatures of up to 260 degrees Celsius. Thanks to a new, patented technology, the sensor stands out for its stability, particularly when exposed to severe temperature changes. It is significantly smaller and lighter than other piezoelectric sensors for vibration detection, making it suitable for many applications where limited space, weight of the sensor or an increased and varying ambient temperature play a role.

Whether in trains or in cars, demands regarding passenger comfort are on the rise. Engineers work to avoid undesirable noises caused by vibrating components inside and outside the vehicle. This requires precise measuring methods. Particularly when measuring vibrations of the powertrain or the exhaust system of a vehicle, the sensors must be able to cope with high ambient temperatures. The same applies to railway engineering or vibration monitoring in power plants. The new 8248A3 miniature accelerometer provides reliable results on vibrations in all three dimensions at temperatures of up to 260 degrees Celsius. Two different ceramic materials are used in the sensor itself, which react differently to temperature changes and balance each other out. This makes the sensor significantly less sensitive to temperature fluctuations.

Reliable results thanks to small size and piezoelectric effect

The mass of the accelerometer influences the natural frequency of the measured object, which has a negative effect on the results. To prevent this effect, the new sensor is significantly smaller and lighter than comparable sensors. The small size of the sensor is also an advantage where space for measurement technology is limited.

The natural frequency of the sensor itself is a decisive factor in the measurement of vibrations: If a force acts on the object to be measured, not only does the object start to vibrate, but so does the sensor. Piezoelectric sensors, such as the 8248A3 accelerometer, have a high natural frequency thanks to the stiffness of the crystal component. This high frequency minimizes the influence of the

sensor's own vibrations on the measuring results, which enables very demanding applications, such as precise measurement of z-forces in knock monitoring for engine development. The wide measuring range of +/- 2000 G with high linearity makes the new, temperature-stable sensor with charge output suitable for a variety of applications.

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



If the exhaust system vibrates too much, driving comfort is affected negatively. The 8248A3 miniature accelerometer provides reliable data in automotive vibration tests at up to 260 degrees Celsius.



Sensor 8248A3 is suitable for many applications where limited space, sensor weight or an increased ambient temperature play a role.

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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 2,200 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 2019, it posted sales of CHF 466 million. About 7% of this figure is reinvested in research and technology – with the aim of delivering better results for every customer.