

Media release

Safe micro range machining

New dynamometer sets standards in dynamics and precision

Winterthur, 29 May 2018 – Kistler is pleased to introduce MicroDyn, the world's smallest series-produced cutting force meter. This now provides manufacturing companies and research institutions with a solution for highly precise measurements of cutting forces in the development of micro tools.

The machining of very small workpieces puts high demands on the tools used. In order to examine cutting forces in micro machining applications for example, in watchmaking, highly compact and sensitive measuring instruments are needed. With the new MicroDyn 9109AA dynamometer, Kistler is creating new opportunities for its customers in the fields of ultra-fine machining, micro-precision machining and ultra-precision machining – especially in the development of tools for the machining of brittle-hard materials and the optimization of machining processes.

Smallest dynamometer on the market

Measuring only 30x30 mm, the MicroDyn is the smallest dynamometer in the world. Thanks to the high natural frequency of 15 kHz in all three axes, an increase of about a factor of 2.5 compared to its predecessor, highly dynamic forces up to 500 N can be measured very accurately and the resulting torques of up to 50 Nm calculated. This makes it possible to detect forces with tool speeds of up to 120,000 RPM on individual blades of the tool. The piezoelectric measuring crystal rings ensure high sensitivity and a very low threshold. They are also installed in such a way that temperature influences are largely compensated.

Exact measurement in tool development

In particular when developing new tools, it is crucial to know how they behave. With typical questions being what cutting forces occur? How does the tool behave in different situations (process stability)? How can the tool be designed so that force peaks are avoided (service life) and the machining process still takes place quickly and efficiently? Only accurate measurements during the development ensure the achievement of process reliability and prevention of rejects. For example, when milling a case, a watchmaker needs to ensure that the process runs smoothly and is stable, even in constantly changing engagement conditions, and that the tool is not overstressed.

Flexible attachment and data evaluation

The new MicroDyn 9109AA is equipped with a variety of mounting options. It can be both mounted vertically and horizontally to the machine tool machine tool table and the workpiece can be clamped accordingly; this benefits measurement accuracy. For quick and error-free data recording and analysis, the combination of MicroDyn with multi-channel charge amplifiers, in particular the high-end solution 5080A; is recommended. Kistler offers corresponding complete packages including the Dynoware software for an easy and error-free configuration in which the rules for the force and torque calculation are already stored. In principle, however, the MicroDyn can also be used with other analysis systems. MicroDyn is available now.

For more information please visit www.kistler.com/microdyn



MicroDyn, the world's smallest dynamometer (30 x 30 mm), ensures dynamic and high-precision measurements of cutting forces on tools used in micromachining.

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About the Kistler Group

Kistler is the global leader in dynamic measurement technology for measuring pressure, force, torque and acceleration. Cutting-edge technologies provide the basis for Kistler's modular solutions.

Customers in industry and science benefit from Kistler's experience as a development partner, enabling them to optimize their products and processes so as to secure a sustainable competitive edge. The owner-managed Swiss company's unique sensor technology plays a key role in the evolution of automobile development and industrial automation, as well as in numerous emerging sectors. With a broad knowledge of applications and its absolute commitment to quality, Kistler is making an important contribution to the further development of current megatrends. This includes topics such as electrified drive technology, autonomous driving, emission reduction and Industry 4.0.

Some 1 860 employees at 61 locations worldwide are dedicated to developing new solutions and offer customized service for individual applications. Since its founding in 1959, the Kistler Group has grown along with its customers, generating sales of CHF 422 million in 2017. Approximately 8% of this went back into research and technology — and thus into achieving better results for all our customers.