

## Press release

### Cutting force measurement – the latest technology

Kistler will present innovative solutions for tool monitoring and data analysis at EMO Hannover 2023

Winterthur, August 2023

**At EMO Hannover, the leading trade fair for production technology (16–21 September 2023), Kistler (Hall 4, Stand C05) will present its highly advanced solutions for cutting force measurement in development and production: While the world’s first rotating cutting force dynamometer (RCD) with a piezoelectric sensor simplifies R&D activities, the Piezo Tool System in combination with the maXYmos process monitoring system ensures optimized, transparent machining processes.**

The reliable monitoring of machining processes provides valuable real-time data on the current process, thus establishing the basis for predictable, productive and reproducible manufacturing processes. During micromachining or finishing processes in particular, tool monitoring was practically impossible up to now due to the small forces. The Piezo Tool System (PTS) from Kistler, which was developed in cooperation with Paul Horn GmbH, measures cutting force during turning with highly sensitive sensors located close to the shaft, thus establishing a reliable basis for optimization of these challenging processes.

#### Monitoring and optimization of tools and machines

The PTS integrates high-precision sensor technology into high-quality toolholders and tools and can be customized to be compatible with a variety of machine types and interfaces without altering the characteristics of a traditional machining system. Continuous cutting force measurement allows for optimized utilization of the tool lifespan while at the same time reducing the effort required on the part of the machine operator. Anomalies in the material and cutting tool wear or even tool breakage are detected immediately, thus preventing rejects and maximizing machine utilization times.

In combination with a process monitoring system from the maXYmos series from Kistler – which will also be presented at EMO Hannover – all measurement data can be efficiently recorded and visualized and used to optimize and automate production processes. Gunnar Keitzel, Head of Business Center Manufacturing Technologies at Kistler, says: “With the combination of PTS tools and the maXYmos process monitoring system, and thanks to our cooperation with HORN, we are

able to offer a complete solution that is able to make highly sensitive measurements and can be integrated into any production systems due to its interfaces.”

## **Wireless and highly dynamic measurements up to 16,000 rpm**

The wireless rotating cutting force dynamometer (RCD) from Kistler simplifies cutting force measurement for research and development, but can also be used in industrial production processes such as milling, drilling, grinding and superfinishing. The measured values for the forces  $F_x$ ,  $F_y$  and  $F_z$  and the torque  $M_z$  are transmitted via a wireless low-energy connection with a range of up to five meters. Thanks to its wide measuring range of up to 20 kN as well as its high resolution and sensitivity, the wireless RCD from Kistler can be used for a variety of different processing steps from roughing all the way to finishing. The integrated piezoelectric measurement technology with a sampling frequency of 10 kHz is perfect for recording data from highly dynamic processes of up to 16,000 rpm that would take other technologies to their limits.

Ideally, the wireless RCD is used together with the new PTS app from Kistler: This software automatically records, analyzes, and visualizes data from machining processes, creates trend analyses, and also includes an option to communicate with the machine. Consequently, data evaluation and storage with the PTS app makes it possible to automate large-scale testing series for research and development at a higher level and to significantly increase efficiency.

## **Services related to cutting force measurement**

Kistler also offers a number of specialized services for cutting force applications – from calibration of dynamometers right through to optimization of milling processes. Let us offer you in-depth advice at EMO Hannover. You can also find out more about the opportunities offered by dynamic cutting force measurement. The experts from Kistler look forward to seeing you at Stand C05 in Hall 4.

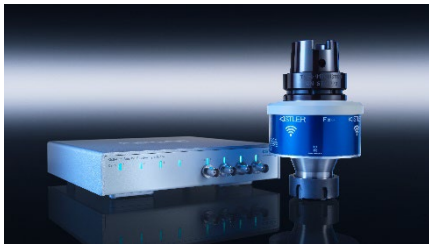
## **Image material (reprinting free of charge provided that the Kistler Group image source is quoted)**



Kistler developed the Piezo Tool System (PTS) in cooperation with HORN in order to continuously monitor cutting tools for microprocessing – see it for yourself at EMO Hannover. | © HORN/Sauermann



The maXYmos monitoring system from Kistler in combination with PTS enables the monitoring and optimization of mechanical processes during machining.



The new wireless rotating cutting force (RCD) dynamometer from Kistler simplifies the analysis of machining processes for research and development as well as during industrial production.

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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 2,000 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 2022, it posted sales of mCHF 434. About 8% of this figure is reinvested in research and technology – with the aim of delivering better results for every customer.