KISTLER
measure. analyze. innovate.

Press release

Innovation from Kistler: wireless transmission of signals for industrial production monitoring

New telemetric measurement system revolutionizes process monitoring in moving machine parts – even in harsh environments

Winterthur, September 2025

With its new Telemetric Measurement System (TMS), Kistler for the first time achieves wireless, wear-free transmission of signals for process and tool monitoring in dynamic structures such as turret lathes. The system consists of the charge amplifier unit type 5190A and the base unit type 5290A and delivers reliable data without the use of slip rings, batteries, or cables. This opens up entirely new possibilities for process monitoring in series production. The TMS charge amplifier provides a robust solution for monitoring highly dynamic processes in industries where maximum process reliability is essential – such as automotive, aerospace, and medical technology. The generic system is suited for a wide range of monitoring applications in metal cutting, plastics processing, assembly automation, and many more.

Traditional hard-wired measurement systems quickly reach their limits when machine parts are in motion or difficult to access. It is not wear and tear, but rather the risk of cable breakage that poses the greatest challenges – especially for components subject to dynamic loads. In addition, cables often disrupt operation and restrict flexibility and mobility of sensor systems. Coolants, chips, and dust can cause connectors to malfunction. Batteries, in turn, require regular maintenance or replacement. As a result, critical processes often remain unmonitored, posing high risks of wear, scrap, and process instability.

The solution: telemetric measurement system for dynamic applications

This is exactly where the new Telemetric Measurement System (TMS) from Kistler sets new standards. It transmits signals wirelessly, continuously, and accurately around the clock. The TMS was specifically developed for single-channel piezoelectric measurements in moving machine elements, such as turret lathes, multi-spindle machines, robots, or assembly lines. Compared to indirect methods, such as spindle current analysis, the TMS – in combination with the highly sensitive piezoelectric sensor – offers significantly higher measurement sensitivity. For the first time, even the slightest forces in the range of a few newtons can be detected directly and with maximum process

Kistler Group
Eulachstrasse 22
8408 Winterthur
Switzerland

Tel. +41 52 224 11 11
info@kistler.com

proximity in industrial manufacturing. It even delivers consistent measurement data in demanding settings such as machine rooms or industrial facilities. This makes the TMS a dependable, cost-efficient alternative where conventional technologies fail.

”Existing wireless solutions on the market are primarily designed for research and development environments. They only have a limited measuring capability and rely on specially configured systems,” explains Kevin Meier, Product Manager Cooperation Solutions in Advanced Manufacturing at Kistler. ”They are often too large or specially designed, making permanent integration into 24/7 production equipment only possible to a limited extent.”

System architecture: two components – one closed system for process monitoring

The Telemetric Measurement System for wireless near-field transmission consists of two functionally distinct modules that are mechanically and electrically matched to each other. The miniaturized, single-channel charge amplifier unit type 5190A is mounted directly on moving machine elements, such as the tool turret. It converts the sensor’s raw piezoelectric signal into a voltage signal and transmits it digitally to the base unit type 5290A via the wireless interface. The base unit is firmly mounted on the machine and inductively supplies the amplifier with power. It receives measurement data via the telemetry near-field interface, providing a stable wireless connection even for complex strokes. The gap between the modules is 1 ± 0.5 mm.

Signals are processed with a resolution ranging from ±48 to ±140,000 pC at an analog voltage output of ±10 V. Alternatively, digital data can be output via Ethernet at a sampling rate of up to 25 kSps, including configuration and control through the integrated web UI. Standard interfaces, such as Ethernet, enable straightforward integration into existing control systems or higher-level monitoring platforms, such as the data analysis software PTS App or the process monitoring system maXYmos from Kistler. This allows for tool wear (for example in metal cutting), material deviations, or irregularities in chip formation to be detected in real time.

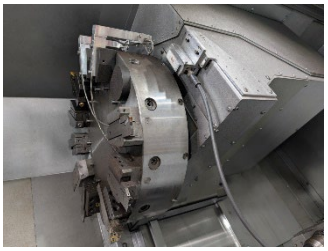
A robust and maintenance-free telemetric measurement system for continuous operation in manufacturing

Intelligent self-configuration is a key feature of the system. Following an initial setup and coupling via the near-field interface, the base unit automatically identifies the sensor and reads all relevant parameters, including calibration data, measuring range, and sensitivity within milliseconds. This system is immediately ready for measurement – without manual intervention or waiting times. Installation is also fast, precise, and reproducible thanks to defined coupling points. Users experience no delays in the process and no impact on cycle times.

The contactless, high-frequency signal transmission is bidirectional and resistant to interference, even under harsh conditions. The measurement system is highly resistant to chips, coolants, and vibrations thanks to its closed aluminum die-cast housing and ceramic-reinforced transmission surfaces.

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

The Telemetric Measurement System with wireless transmission of signals consists of a mobile charge amplifier unit and a stationary base unit, making it ideal for tool monitoring in lathes.



For the first time, the Telemetric Measurement System from Kistler enables precise process and tool monitoring with wireless transmission of signals directly at the tool turret.

The Telemetric Measurement System can be integrated effortlessly into control systems and analysis instruments like the PTS App from Kistler via Ethernet – allowing real-time identification of tool wear, material variations, and chip flow disruptions.

Kistler Group
Eulachstrasse 22
8408 Winterthur
Switzerland

Tel. +41 52 224 11 11
info@kistler.com

KISTLER
measure. analyze. innovate.

Media contact

Katarina Opatova
Marketing Project & Campaign Manager
Tel.: +421 232272903
E-Mail: katarina.opatova@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 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 2024, it posted sales of mCHF 448. About 9 percent of this figure is reinvested in research and technology – with the aim of delivering innovative solutions for every customer.