

Press release

Kistler pushes the limits of sensor technology for injection molding

Quantum leap in contact-free cavity pressure measurement – plus improved thermocouple amplifier

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Thanks to a new PiezoStar crystal, the 9239B miniature longitudinal measuring pin from Kistler achieves almost five times the sensitivity of its predecessor – which already ranked as the technology leader. Also new: the 2205B thermocouple amplifier – now with multiple improvements – to integrate temperature sensors more efficiently into the measuring chain for high-grade injection molding.

Contact-free cavity pressure measurement with piezoelectric sensors is the most sophisticated of the three measurement methods used in injection molding (the other two are direct and indirect measurement). The contact-free method is mainly used where high quality and process requirements have to be met: examples include absolutely flawless products for automobile interiors, high optical quality (for items such as lenses), or situations where very compact injection molds are used.

The 9239B miniature longitudinal measuring pin from Kistler gives customers a cavity pressure sensor that takes up virtually no space when installed (diameter: 2.5 mm), and performs its task without contacting the melt. It is mounted directly behind the cavity wall in the mold structure or the embossing die, where it measures the pressure-induced compression of the mold during the injection and holding pressure phases. "Thanks to its compact dimensions for optimal installation, the 9239B gives moldmakers more freedom when positioning it in smaller molds or multi-cavity molds with more complex structures," according to Marko Marceta, Product Manager Plastics at Kistler.

Utmost accuracy – but no contact with the part

The 9239B miniature longitudinal measuring pin represents a major advance on its predecessor model: it features a PiezoStar crystal grown by Kistler itself, which increases the sensitivity many times over – to no less than 27 pC/N. The new measuring pin from Kistler is a world first that elevates contact-free cavity pressure measurement to an unprecedented level of accuracy. The mounting method eliminates the possibility of marks on the part, and the sensor is not exposed to

abrasion or corrosion. Another benefit: because the measuring pin is installed in the preloaded state, it can capture both compression and tensile forces with very high accuracy.

Using temperature sensors more flexibly

Kistler has also made significant improvements to its 2205B multichannel temperature amplifier. It is used to convert signals from temperature sensors installed in the injection mold (known as thermocouples) into standardized voltage signals. These improvements have been incorporated as compared to the 2205A predecessor model:

- Eight channels for up to eight thermocouples
- Simultaneous connection of different types (K, J, N) is now possible
- Type J thermocouples can also be used at 400°C
- Uniform measurement range (0 to 400°C) reduces variants

Measuring the mold temperature opens up further scope for process monitoring and control of injection molding with thermoplastics, and for many other applications. The 2205B has a standard operating temperature range of 125°C which can be extended to 195°C with an additional housing. The temperature sensors are connected using the cut-and-grip method to avoid the need for connectors and tools.

Final words from Dr. Robert Vaculik, Head of BU Plastics at Kistler: "With these two innovations, we are offering our customers yet more opportunities to continue enhancing the quality of their products and manufacturing processes. They are ideal for Class A surfaces or in the medical sector, for instance: the key to setting new standards for industrial injection molding."

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



Thanks to its highly sensitive PiezoStar crystal, the new 9239B miniature longitudinal measuring pin from Kistler sets new standards in contact-free cavity pressure measurement.

The new 2205B thermocouple amplifier from Kistler allows greater efficiency and flexibility when using temperature sensors installed in the injection mold.



Media contact

Suzanne Graeser Bieri
Head of Marketing
Tel.: +41 52 2241 469
Email: suzanne.graeserbieri@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.