KISTLER
measure. analyze. innovate.

Press release

New cylinder pressure sensor from Kistler offers maximum accuracy and robustness under extreme conditions

Kistler introduces new piezoelectric cylinder pressure sensor 6054CU20 for research and development in the field of high-performance combustion engines.

Winterthur, February 2025

Research and development in the field of high-performance combustion engines relies on cylinder pressure sensors that can withstand high peak pressures while providing the best possible accuracy and signal quality. Pre-ignition or heavy knocking are typical characteristics during the development of motorsport or hydrogen combustion engines. These conditions are highly demanding for the robustness of the cylinder pressure sensors with the piezoelectric cylinder pressure sensor 6054CU20, Kistler offers a model for engine development that outperforms the previous variants of highly robust pressure sensors in terms of measurement accuracy and has an overload resistance of up to - 500 bar.

When developing the new cylinder pressure sensor 6054CU20, the focus was on maximum accuracy with significantly increased overload resistance. The sensor Type 6054C, which is already established on the market and is considered to be the most precise in the M5x0.5 design, was used as the base for this development. With the piezoelectric cylinder pressure sensor 6054CU20, Kistler successfully combined outstanding measurement accuracy with a level of robustness, that was up to today only available in less precise models.

High-performance combustion engines require high-performance sensor technology

For combustion analysis, the accuracy and reproducibility of thermodynamic metrics are essential to increase engine performance, reduce emissions or extend service life. The new cylinder pressure sensor 6054CU20 from Kistler, which is also suitable for use in hydrogen combustion engines, covers the challenges in the development of high-performance combustion engines with impressive accuracy and overload resistance:

- Large measuring range up to 400 bar; increased overload pressure limit up to 500 bar
- High sensitivity with 15.5 pC/bar

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- Excellent linearity of 0.3%
- Low thermal sensitivity change of max. 1% between 23°C and 350°C

Cylinder pressure sensors from Kistler – a large family of sensors for almost every application
With the new cylinder pressure sensor 6054CU20 Kistler expands its range with a model that is specifically designed to meet the requirements of high-performance combustion engines. This piezoelectric pressure sensor extends the family of the 6054C series and offers the advantage, that the measurement results follow the known pattern thanks to identical basic properties and the same mounting tools can be used.

Kistler Group customers can rely on the proven quality and precision. You enjoy the advantages of a family-run company that focuses on its core competencies, responds flexibly and quickly to customer needs, and embodies continuity.

You can find all further information on the cylinder pressure sensor 6054CU20 here:

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

The cylinder pressure sensor 6054CU20 for combustion analysis in high-performance engines, such as those used in motorsport, combines high-precision measurements with the greatest possible robustness. It complements the family of M5x0.5 cylinder pressure sensors from Kistler.

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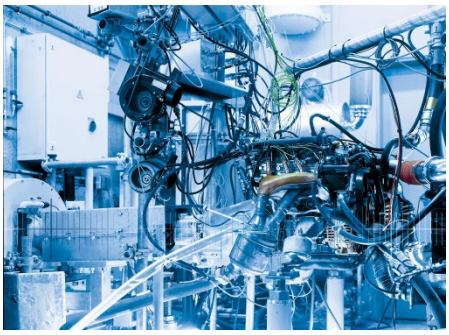

Research and development in the field of high-performance combustion engines involves combustion analysis on modern and complex engine test benches. Research and development pushes engines to their limits, and knocking and pre-ignition are not uncommon. The cylinder pressure sensor 6054CU20 is designed to withstand these conditions.

For high-performance combustion engines, cylinder pressure sensors from Kistler cover the entire spectrum for research and development – regardless of the type of fuel. The new pressure sensor 6054CU20 is also designed to meet the special requirements for use in hydrogen combustion engines.

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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 posted sales of CHF 465 million in 2023. About 9% of this figure is reinvested in research and technology – with the aim of delivering better results for every customer.

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