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Press release

More accurate, more robust, more durable

Smallest water-cooled miniature cylinder pressure sensor – Kistler unveils advanced version

Winterthur, January 2022

The latest M8 miniature cylinder pressure sensor (6041C) from Kistler breaks new ground in measurement excellence. This sensor incorporates state-of-the-art PiezoStar crystals along with improvements to its design and manufacturing process, resulting in outstanding performance. This versatile, reliable cylinder pressure sensor delivers measurement results of unrivaled precision – and can be considered the solution of choice for use in thermodynamic investigations in the engine development process, where overall accuracy is of the greatest priority.

Recent years and decades have seen continuous progress in the development of combustion engines – due to significant advances in measurement technology that play a key part in boosting performance and reducing emissions. The combustion engine is set to maintain a position in future propulsion concepts for many years to come, but new alternative fuels will challenge engine developers. Kistler's response: a portfolio of highly advanced sensors that provide maximum support for the development process.

Outstanding measurement characteristics

Kistler is known as a leader in the field of measurement technology – especially when it comes to combustion pressure measurement and analysis. The market launch of the 6041C miniature cylinder pressure sensor – the third generation of the company's smallest water-cooled sensor (size: M8) – confirms this positioning. The 6041C combines improved thermodynamic behavior with increased stability and minimal sensor-to-sensor deviation. In terms of measurement-related attributes, the new sensor's main features are:

- Minimal thermal sensitivity change – stable over the entire operating range
- Very small linearity deviation – accurate measurement data at all loads
- Low thermal shock error – assured mean effective pressure (MEP) accuracy under all conditions
- Long-term stability – due to the optimized cooling flow around the measuring element
- Long service life – with no loss of thermodynamic accuracy

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A robust sensor for diverse applications

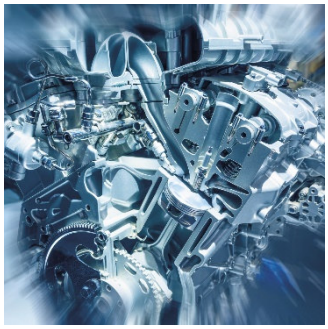
Compared to uncooled sensors, water-cooled sensors have the advantage that they can be flush-mounted even when subjected to high thermal loads so they can provide measurement results of maximum accuracy. This is due to the latest PiezoStar crystal technology and an advanced measuring element coupled with improvements to the production process. These advances also give the 6041C miniature cylinder pressure sensor higher natural frequency and excellent thermal stability within the application temperature range of 50±30°C, so the sensor is optimized for gas exchange analysis tasks.

The sensor can be installed in a sleeve or directly into an M8x0.75 bore, either flush-mounted or recess-mounted. Like its predecessors, the 6041C cylinder pressure sensor does not require excessive space and can be mounted in bores starting from a diameter of 12 mm. The sensor is compatible for mounting with its predecessors 6041B and 6041A, and the uncooled variants 6045A, 6045B and 6044A. The 6041C is always delivered with a mounted cable, and optionally with PiezoSmart sensor detection.

Highest precision for engine developers

Roger Leutwyler, Product Manager for piezoelectric cylinder pressure sensors at Kistler, comments: "High sensitivity, high natural frequency, a low thermal shock error and outstanding zero-point stability: these advantages enable our new 6041C cylinder pressure sensor to deliver measurement results with the highest accuracy. As a miniature sensor with an M8 mounting thread, it is particularly suitable for compact multi-valve engines where space is limited – and obviously, its benefits also come into play whenever precision and long-term stability are critical factors."

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



The new 6041C cylinder pressure sensor from Kistler – highly advanced combustion engines with low emissions require high-performance measurement equipment.

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The new 6041C version of the smallest water-cooled miniature cylinder pressure sensor from Kistler offers convincing benefits: excellent measurement characteristics, extremely robust design and a long service lifetime.

The new 6041C water-cooled M8 miniature cylinder pressure sensor from Kistler provides maximum precision in various installation options.

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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 to secure a 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 2,050 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 2020, it posted sales of CHF 361 million. About 9% of this figure is reinvested in research and technology – with the aim of delivering better results for every customer.