

Press Release

Using digital X-rays for quality control in measuring wheels

Kistler offers non-destructive materials testing and calibration from a single source

Winterthur, October 2020

As well as [calibration](#), the [Kistler Group](#) now also offers RoaDyn Structural Integrity Inspection by certified experts in accordance with ISO 9712. This digital X-ray inspection reveals even the tiniest volume defects in the measuring wheel. These are caused by the high stresses involved in vehicle testing and can potentially falsify the measurement result. Combined with fluorescent dye penetrant inspection, which visualizes micro-fissures in the surface, this reliable inspection method enables manufacturers in the automotive industry to achieve flawless measurement quality and saves them from having to invest in their own quality assurance processes.

Measuring wheels are the preferred means of carrying out measurements during driving dynamics campaigns or operational loads, for example when designing new components. The loads that measuring wheels are exposed to during these tests are sometimes equivalent to several vehicle lives – consequently, they are among the most heavily stressed metrological components. To ensure that they continue to function reliably and safely, it is essential to check the measuring wheels at an early stage and at regular intervals.

Component testing from a single source

Measuring wheels are regularly calibrated to detect deviations in sensor behavior at an early stage. In parallel with the necessary calibration, Kistler offers non-destructive component testing using two methods: digital X-ray and fluorescent dye penetrant testing. In the case of X-ray testing, components are exposed to short-wave electromagnetic radiation, in which gamma radiation excites the electrons in the detector's crystal array. Scintillation converts the X-ray photons directly into electricity. The resulting data is then digitally recorded. Depending on the degree of blackening, the X-ray image reveals the different thickness or density of the material and consequently also shows any fissures or pores that may be present.

The second test method, a fluorescent dye penetrant test according to DIN EN ISO 3452-1, is more complex. In this process, a liquid is applied to the surface of the component, which penetrates into the surface defects of the material. A subsequent developer layer creates a counter-capillarity, drawing out the liquid that has penetrated into the cracks and making even micro-fissures visible with the aid of UV-A illumination. This intensive control of the measuring wheels after calibration not only ensures the safety of the components, but also helps employees involved in vehicle testing to avoid potential accidents.

Expertise saves time and money

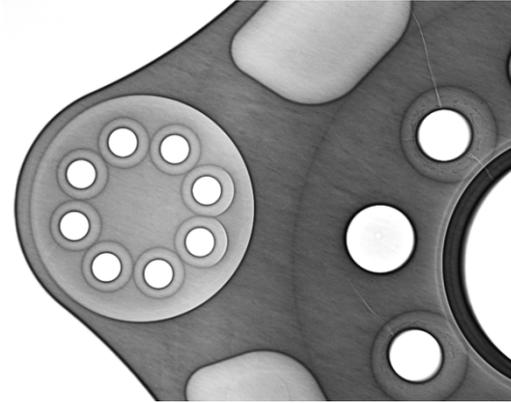
Bringing calibration and quality control under one roof saves manufacturers time and money. The short throughput time of Kistler's digital X-ray inspection is a particular advantage in series production testing. Rather than having to do without their measuring wheel for several weeks, as is usually the case, manufacturers who have their measurements carried out by Kistler get their measuring wheel back within just a few working days. In special cases, as little as a few hours. Our certified experts at Kistler are responsible for non-destructive materials testing and can reliably confirm the functionality of the tested measuring wheels, provided that the tests do not produce any findings.

"By combining calibration and RoaDyn Structural Integrity Inspection, we achieve a high quality of measuring wheel verification without our customers having to invest in their own control procedures at the factory – we take care of measuring wheel validation from start to finish and guarantee our customers the best possible results", explained Ibrahim Naji, who supervises digital X-ray and fluorescent dye penetrant inspection at Kistler.

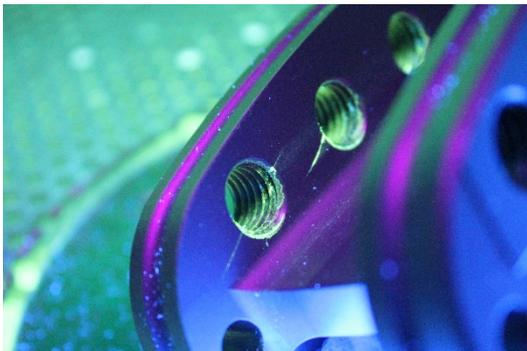
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Allowing Kistler to calibrate the measuring wheels ensures precise and reliable measurement results.



Digital X-ray inspection reveals even the tiniest cracks and pores in the material.



With the aid of UV-A illumination, fluorescent dye penetrant inspection makes even micro-fissures visible.

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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 in 2019, it posted sales of CHF 466 million. About 7% of this figure is reinvested in research and technology – with the aim of delivering better results for every customer.