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Press release

Bridge protection and traffic safety at its finest

Kistler presents unique Structural Health Monitoring and Weigh In Motion portfolio at Intertraffic 2024

Winterthur, February 2024

The next stop for condition monitoring of sensitive infrastructure: the Kistler Group is showcasing its latest solution for bridge protection and traffic safety, a comprehensive Structural Health Monitoring (SHM) portfolio, for the first time at the Intertraffic 2024 in Amsterdam from April 16 to 19. At booth 410 in hall 1, experts will also reveal the potential of digitalization through the new KiTraffic Digital platform, the most advanced and accurate Weigh In Motion system available on the market.

Overweight trucks, extreme weather, cracking, and corrosion are just a few of the factors affecting bridge infrastructure and shortening its lifespan. When structural deficiencies become too severe, drastic measures need to be taken, such as closing a bridge or imposing heavy limitations on traffic. To avoid such restricting actions and extend the life of bridges, Kistler has developed its unique Structural Health Monitoring (SHM) portfolio. The comprehensive system automatically monitors the bridge structures on a 24/7 basis, continuously measuring and tracking the actual structural resistance of the bridge and the real traffic load as reported by the integrated WIM system. This way, it detects even the smallest structural movements and vibrations as they occur and before they cause more serious damage. Structural engineers and road operators are constantly informed of the relevant data and are notified immediately via notifications and alarms.

From sensor to cloud – most reliable and continuous bridge monitoring

The customized SHM system from Kistler provides seamless availability of highly reliable bridge structural data thanks to the unmatched accuracy and performance of its acceleration sensors from the K-Beam family. The quality of the results depends on the sensitivity, frequency range, temperature stability, and signal-to-noise ratio of the sensors, as well as on the performance of the data acquisition system. Accelerometers from Kistler are specifically designed to withstand even the most extreme weather conditions. They operate in temperatures ranging from -55 to +125°C, have highest temperature stability (variations below 0.01 %/°C), measure highly accurately from 0 to 1500 Hz and can precisely detect even smallest vibrations.

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In addition to precise sensors, the turnkey solution consists of the KiDAQ data acquisition system and a cloud-based software platform. "This allows users to easily access the data and configure all the equipment remotely," comments David Cornu, Head of Business Unit Traffic Solutions at Kistler. "This type of system can be used not only to monitor damaged bridges, but also be implemented on new bridges or bridges under reconstruction. Our experts in measurement technology and structural engineering will assist users and operators in designing the optimal monitoring solution."

Weigh In Motion for increased bridge safety

Traffic loads, especially overloaded vehicles, have a significant impact on the condition of bridges and accelerate bridge fatigue. They put immense stress on the road surface and the entire structure. The KiTraffic Digital Weigh In Motion (WIM) system from Kistler detects overweight trucks on the road at any speed and in real time as they pass. Overweight vehicles are easily identified and can either be automatically fined, stopped and forced to unload, or diverted to an alternative route. All these measures ensure a highly effective protection of both pavement and bridge.

The advanced KiTraffic Digital platform harnesses the power of digitalization: the complete system provided by Kistler is based on several rows of Lineas Digital sensors installed in the road and a proprietary data acquisition and processing system installed in the roadside cabinet. The Lineas Digital are the world's first fully digitized Weigh In Motion sensors, generating a vast amount of valuable data to ensure longevity of roads and bridges. Furthermore, their unique piezoelectric quartz crystals provide extreme measuring accuracy, with a weighing precision of up to +/- 2 percent for the gross vehicle weight. This makes KiTraffic Digital the most accurate WIM system available to date and the first in the world to receive the OIML R134 certification for accuracy class F5 from the Swiss Federal Institute of Metrology, METAS. With this certification, the system can be used for automatic enforcement of overloaded vehicles, known as direct weight enforcement.

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

The Great Belt Bridge in Denmark, one of the world’s longest suspension bridges, benefits from Structural Health Monitoring thanks to measurement technology by Kistler.

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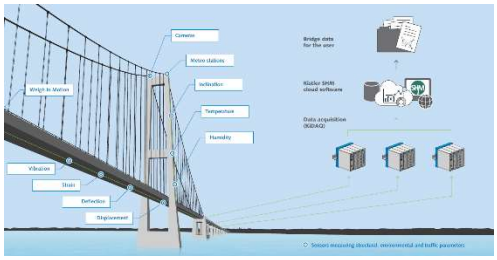

Structural Health Monitoring systems from Kistler consist of a cloud-based software, the KiDAQ data acquisition system, and a wide range of sensors measuring structural, environmental and traffic parameters.

KiTraffic Digital is a digital platform for improved road and bridge safety. With its unprecedented levels of accuracy, this Weigh In Motion system delivers precise data and is perfectly suitable for multiple applications, including direct weight enforcement.

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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 2,000 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 2022, it posted sales of CHF 434 million. About 8% of this figure is reinvested in research and technology – with the aim of delivering better results for every customer.