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Press release

Intertraffic 2026: Kistler showcases digital Structural Health Monitoring solution for bridges

Integrated digital sensors deliver real-time insights for smarter maintenance, extended service life, and improved safety

Amsterdam, January 2026

At Intertraffic Amsterdam (March 10–13), Kistler will present its latest innovation in infrastructure monitoring: its first fully digital Structural Health Monitoring (SHM) system for bridges. This next-generation solution marks a significant leap forward in how operators monitor, maintain, and protect critical assets – combining real-time structural insights with data-driven decision-making to ensure safety and longevity. Visitors can find free trade fair tickets on the Kistler website.

Across the globe, aging bridge infrastructure faces unprecedented challenges. Increasing traffic volumes and heavier vehicle loads accelerate fatigue and structural degradation, yet maintenance budgets remain tight. At the same time, damage often develops long before it becomes visible, making early detection essential to avoid costly repairs or dangerous failures.

The new fully digital SHM solution from Kistler for bridge monitoring addresses these challenges head-on. The measurement system delivers actionable insights and an objective view of how bridges behave under actual operating conditions. This enables infrastructure operators to detect damage at an early stage, to prioritize maintenance effectively, and extend service life.

From analog to digital: increased flexibility and precision

Until now, structural health monitoring solutions have relied heavily on analog technology. The new system from Kistler introduces a fully digital architecture that offers significantly greater flexibility, precision, and ease of integration. At the heart of the new SHM solution are state-of-the-art digital sensors. All sensors are fully digital and organized in flexible sensor clusters that can be installed in daisy chain or star topologies. This modular approach allows optimal adaptation to any type of bridge geometry while minimizing cabling effort. The system continuously measures key structural parameters, including strain, displacement, cracks, vibration, inclination and temperature. Open interfaces allow operators to integrate additional custom sensors as needed. To ensure perfect time alignment among all channels and maximum data reliability, all sensor clusters are synchronized within microseconds. The sensors come in a robust, weatherproof design with full immunity to

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electromagnetic interference. Thanks to their self-configuring digital technology, setup time is dramatically reduced, and manual adjustments are minimized, resulting in a faster and more cost-efficient installation.

Combining digital Structural Health Monitoring with Weigh In Motion for even better bridge safety

For complete monitoring data and active bridge protection, the new digital SHM system can be combined with the proven Weigh In Motion (WIM) technology from Kistler. Installed upstream of the bridge, WIM systems measure traffic loads and detect overloaded vehicles, which can be automatically fined or prevented from using the bridge. Both SHM and WIM data streams are processed by a dedicated edge device (IPC), ensuring high-resolution data capture with precise time synchronization. Operators can configure time- and event-based triggers as well as automatic alarms that notify them when sensor readings exceed predefined thresholds. It is also possible to directly correlate traffic loads with the resulting structural impact, giving infrastructure operators real-time visibility into how traffic affects structural health.

Proven expertise: reference projects worldwide

Bridge owners and operators worldwide rely on the Structural Health Monitoring and Weigh In Motion technology from Kistler to monitor and protect bridges. At the Washington Bridge in Providence, Rhode Island, for instance, Kistler implemented an integrated WIM and SHM solution to support operators during restoration work on the historic structure. Increased traffic volumes required real-time insights into actual vehicle loads and the bridge's corresponding structural behavior. By correlating traffic data with vibration, strain, and movement measurements, engineers could derive site-specific load ratings based on real data rather than conservative assumptions. This improved maintenance planning and safety interventions.

The WIM technology is also deployed on major international bridge projects, such as the longest bridge in Southeast Asia, the Sultan Abdul Halim Muadzam Shah Bridge (Penang Second Bridge) in Malaysia. As part of a high-speed WIM program, the system is installed to continuously monitor vehicle loads and traffic patterns across the 24-kilometer crossing between mainland Malaysia and Penang Island. The accurate traffic and axle load data supports the operation and maintenance of one of the most important transport links in Southeast Asia long-term.

For even larger structures, such as the 915 Çanakkale Bridge in Turkey, multiple Kistler WIM sensing lanes offer continuous insights into live traffic loads and number of overloaded vehicles. Integrated into the existing monitoring framework, the system allows operators to correlate real traffic conditions with structural response and environmental influences. The resulting data support more accurate

fatigue assessments, service life predictions, and site-specific load ratings– critical factors for long-term bridge protection.

Visitors to Intertraffic Amsterdam will have the opportunity to see Kistler's fully digital solution in action. Those interested can register for free using this link: Get your free pass here.

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

Kistler showcases its fully digital structural health monitoring solution for real-time bridge monitoring for the first time at Intertraffic 2026 in Amsterdam (hall 1, booth 410, March 10-13). The modular measurement system offers real-time insights into structural conditions of bridges to support proactive maintenance, extend bridge service life, and improve traffic safety.

The fully digital Structural Health Monitoring (SHM) system continuously monitors bridges for strain, displacement, vibration, cracks, inclination, and temperature. Its modular architecture allows for flexible deployment with digital sensor clusters and the addition of customer-specific sensors.

The bridge monitoring system at the Washington Bridge in Providence, Rhode Island consists of accelerometers, strain gauges, temperature sensors, inclinometers and a meteorology station – to measure, collect and interpret bridge health data, and a Weigh In Motion system to monitor specific load conditions.

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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 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 2024, it posted sales of mCHF 448. About 9 percent of this figure is reinvested in research and technology – with the aim of delivering innovative solutions for every customer.

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