

Press release

Next-generation wheel force transducer for motorsport

Kistler introduces new tire development tool RoaDyn Racing WFT for racing cars

Winterthur, June 2021

The Kistler Group has added a dedicated wheel force transducer for motorsport applications to its extensive portfolio of measuring solutions: the RoaDyn Racing WFT. The new transducer accurately measures forces and moments acting on the wheel. This helps tire manufacturers and racing teams to understand the tire's behavior and avoid issues like tire overheating and blistering in motorsports.

Tire development in motorsport needs to reconcile conflicting requirements. While driver and spectator safety at the race circuit is naturally a top priority, tire performance presents an equally critical factor as it determines the outcome of every race. Tire manufacturers and teams need to understand the tire's behavior throughout its lifetime to ensure the driver's safety while maximizing performance, taking account of external influences such as track temperature, weather conditions, speed, and aerodynamics.

Kistler has developed the new wheel force transducer RoaDyn Racing WFT to answer these challenges and to optimize tire performance. The transducer is especially suited for racing cars as it captures forces acting on the wheel, which is needed to determine tire load and estimate wear – both parameters are essential for driver's safety. Jim Vaughan, Sales Director Vehicle Testing at Kistler, explains: "With this data, motorsports teams are able to develop a reliable tire model and assess the tire's dynamic behavior. They can use the WFT data to run accurate real-time 'driver in the loop' simulations and to validate tire performance and degradation models."

Innovative design avoids aerodynamic impact

The new wheel force transducer from Kistler features a modular design. The core components are proven, temperature-compensated strain gauge load cells for precise measuring results, combined with battery power and integrated data storage. "We eliminated the requirement for an external stator by implementing an integrated angle encoder – that's an important consideration for open-wheeled race cars, because it avoids any aerodynamic impact," Vaughan adds. Knowing that motorsport is always a high-pressure environment, the developers at Kistler prioritized fast setup and convenient operation as key benefits of the new WFT.

Available in lightweight magnesium or aluminum versions, the RoaDyn Racing WFT has undergone extensive cornering fatigue testing with over two million load cycles. In addition, the WFT was validated on a tire testing machine at speeds of up to 250 km/h with a reference multicomponent measuring hub from Kistler (Type P530) and in real test situations with a Formula E racing car on the circuit to ensure high performance and driver safety at the same time.

The new transducer's modular design paves the way for future developments ranging from further race series to roadgoing performance cars. Summing up, Jim Vaughan comments: "With the RoaDyn Racing WFT from Kistler, developers now have a tool that is certain to improve their understanding of high-performance tires in the future."

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



The RoaDyn Racing WFT accurately measures forces and moments acting on the wheels of racing cars to assess the tire's dynamic behavior.



The wheel force transducer was validated on a tire testing machine at speeds of up to 250 km/h with the Kistler P530 multicomponent measuring hub.

Media contact

Kristina Palfy
Marketing Campaign Manager
Tel.: +42 12322 72655
Email: kristina.palfy@kistler.com

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 2,050 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.