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Press Release

Schaeffler at bauma 2025 (Hall 6, Booth 103)

Schaeffler presents innovative range of sensors for construction machinery

SCHWEINFURT / YOKOHAMA, *2025-04-03*.

- Sensorization for greater machine capacity utilization and availability
- Schaeffler offers construction machinery manufacturers a range of customized sensors
- Sensors detect overloads and critical operating conditions

Much like the industrial production segment, the construction sector also wants to use its machine pool to full capacity where possible and push construction machinery to its performance and loading limits while avoiding machine breakdowns. To achieve these objectives, the stress on machine components needs to be measured. The Motion Technology Company Schaeffler offers two solutions for achieving these ends: torque measurement modules and the LoadSense-Pin.

Torque measurement module TorqueSense

The torque measurement modules are based on the proven, non-contact sensor technology TorqueSense. Via an analog or CAN-bus interface, the data from the module captured during operation can be used e.g. for optimized control of operating functions, for safety functions, and for needs-based maintenance. Monitoring the torque allows the cumulative operating load to be evaluated, not just a recording of the operating hours of the respective drivetrain. The modules are generally developed as customized solutions. However, a deeper integration into the drivetrain is also possible. The magnetostrictive measuring principle offers exceptionally small hysteresis and high measuring accuracy.

LoadSense-Pin measures operating loads in components

The Schaeffler LoadSense-Pin allows stresses in metal components to be measured. It is pressed into a bore in the component and is therefore subject to the same stresses as the surrounding material. The LoadSense-Pin has a strain-sensitive meander-shaped PVD (physical vapor deposition) coating on its surface that functions as a sensor element. With this small yet smart component, critical operating conditions and load peaks can be identified and operating costs reduced.

Sensors for clean combustion in diesel engines

At this year's bauma, Schaeffler will also be showcasing components for exhaust gas aftertreatment in combustion engines. These will include NOx sensors with sensor control unit that have been incorporated into Schaeffler's portfolio as a

result of the merger with Tier 1 supplier Vitesco Technologies. Typically, two NOx sensors are used, one upstream and one downstream of the SCR catalytic converter (SCR = selective catalytic reduction). The NOx sensor upstream of the SCR catalytic converter measures the volume of nitrogen oxides being produced by the diesel engine. The engine control system uses these measured values to calculate the AdBlue dose for optimum reduction of the nitrogen oxides in the SCR catalytic converter. The NOx sensor downstream of the SCR catalytic converter monitors the functioning of the SCR catalytic converter. It measures how much NOx is still in the exhaust gas following the chemical reaction in the SCR system. Based on this data, the engine control system can adjust the AdBlue dose to ensure that the nitrogen oxide emission is minimized without consuming unnecessary amounts of urea solution. The sensor also recognizes whether the SCR catalytic converter is working properly or if there is a malfunction that could result in higher emissions. Thanks to the combination of the two sensors, a precise control of the exhaust gas aftertreatment is enabled, which helps to ensure compliance with the stringent statutory emission limits (Stage V) and optimize the consumption of fuel and AdBlue.

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Schaeffler Group – We pioneer motion: The Schaeffler Group has been driving forward groundbreaking inventions and developments in the field of motion technology for 80 years. With innovative technologies, products, and services for electric mobility, chassis solutions, and renewable energies, the company is a reliable partner for making motion more efficient, intelligent, and sustainable – over the entire life cycle. Schaeffler describes its comprehensive range of products and services by means of eight product families: from bearing solutions and all types of linear guidance systems through to repair and monitoring services. With around 110,000 employees and more than 250 locations in 55 countries, Schaeffler is one of the world's largest family-owned companies and ranks among Germany's most innovative organizations.

The torque measurement modules are based on the proven, non-contact sensor technology TorqueSense. Image: Schaeffler

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A small, sensorized metal pin, the LoadSense-Pin, can capture operating loads and opens up new possibilities for intelligent operating and maintenance strategies. Image: Schaeffler

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Vitesco NOx sensor with sensor control unit for optimum exhaust gas values Image: Schaeffler

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