Press release
Mobility Electronics

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Sensor technology: Bosch sets standards for Bluetooth-based tire pressure sensors
New fully integrable MEMS sensor with ultra-low power consumption

- New Bosch tire pressure sensor SMP290 with Bluetooth Low Energy simplifies vehicle architectures.
- Standardized Bluetooth interface enables new use cases such as direct interaction with smartphones.
- Extremely low energy consumption ensures long lifespan of tire pressure sensors.
- Nominated for the “Best Sensors Awards 2025” in the category “Best Automotive & Mobility Solution”.

Stuttgart, Germany – Tire pressure sensors play a crucial role when it comes to safety and efficiency in road traffic – whether for motorcycles, trucks, cars, or buses. They help to extend tire life, reduce fuel consumption, and increase vehicle safety. Tire pressure monitoring systems (TPMS) are already required by law for passenger cars in many regions of the world, including Europe, the U.S., and China. With the new SMP290, Bosch has developed and launched the first extremely compact MEMS (micro-electromechanical system) sensor with an integrated Bluetooth Low Energy (BLE) interface for measuring tire pressure.

SMP290: energy and precision marvel with great potential

The SMP290 is based on Bosch's leading MEMS technology. It is the first fully integrated solution with a Bluetooth interface available on the market. The sensor combines all essential components for TPMS. These include a microcontroller, Bluetooth interface, 2-axis acceleration sensor, as well as pressure and temperature sensors. What makes the SMP290 special is its high level of integration and extremely low power consumption, which enables an operating lifespan of up to ten years.

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The greatest potential, however, lies in bidirectional wireless communication. “The Bluetooth functionality not only improves efficiency but also safety throughout the entire lifetime of the sensor,” explains Peter Wolfangel, member of the board of management of Bosch Mobility Electronics and responsible for development. The Bluetooth connection enables secure communication between the sensor and the vehicle. The software on the sensor can be updated quickly and easily via over-the-air updates, ensuring that the sensor remains up to date throughout its entire life cycle.

The SMP290 offers both technical and commercial advantages at several levels of the value chain: as a component for system integrators, it saves space and energy. As part of the vehicle architecture, it enables vehicle manufacturers to exploit synergies with other BLE systems. In addition, the Bluetooth capability facilitates user-friendly applications, such as convenient tire pressure monitoring directly via smartphone.

Reduced vehicle complexity thanks to smart system architecture

Many technological advances in vehicles improve the safety and comfort of road users. At the same time, however, they also make vehicles more complex. Bosch aims to leverage synergies and simplify components and vehicle architectures, as Peter Wolfangel explains: “The SMP290 is designed as an integrated system and can therefore make optimum use of synergies within a vehicle’s hardware and software.” The sensor can share communication modules with other components, such as keyless access systems, thereby preventing redundancies and complicated cabling. “This contributes to a more efficient and leaner design that benefits the vehicle throughout its entire life cycle,” says Wolfangel.

Award nomination highlights innovation level

For three decades, the “Best of Sensors Awards” have already been recognizing technologies, executives, and companies that are actively shaping the future of sensor technology, connectivity, and automation. The SMP290 sensor from Bosch is one of five innovations nominated in the “Best Automotive & Mobility Solution” category. “We are delighted that the SMP290 is among the nominees, as it is a solution that will improve the energy efficiency and safety of all types of vehicles,” Wolfangel underlines. The decision will be announced live at Sensors Converge 2025 on Wednesday, June 25, at the Santa Clara Convention Center in California.

Press photos and infocharts are available on the Bosch Media Service at www.bosch-press.com.

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