

PRESS INFORMATION

Assistance functions for greater productivity and safety

Manuela Kessler | 24.02.2025 | Lohr am Main | PI 002/25

Bosch Rexroth expands BODAS ecosystem with CAS software for collision avoidance and kinematic position sensing KPS

- CAS: collision avoidance with radar, ultrasound and smart cameras
- KPS: kinematic position sensing as the basis for partial automation
- Customer benefits: more productivity, cost efficiency and safety



With a combination of radar, ultrasound and camera-based person detection, the new Collision Avoidance System (CAS) monitors the relevant danger zone, warns the driver if necessary or initiates a slowdown of the machine, including emergency braking. (Image source: Bosch Rexroth AG)

Bosch Rexroth is expanding its BODAS ecosystem in the field of Automation with two new solutions: The Collision Avoidance System (CAS) enables effective collision prevention through precise object detection and person detection using radar, ultrasound and smart cameras. The easily integrated solution can warn of impending collisions or automatically decelerate the vehicle to a standstill. With the basic solution platform for Kinematic Position Sensing (KPS), Bosch Rexroth is laying the foundation for further assistance functions such as a weighing function for loaders or a grading assistant for excavators.

With the modular software of the Collision Avoidance System (CAS) from Bosch Rexroth, applications with radar, ultrasound, smart cameras or a combination of these solutions can be realized in a relatively short development time. Excellent detection performance is achieved with all three components, even in difficult to navigate environments. Thanks to targeted monitoring of the relevant danger zone, the system scores with a very low false positive rate. A temporary muting function prevents interference in certain situations, e.g. when maneuvering in confined areas.

With radar, the CAS from Bosch Rexroth can detect up to 40 objects simultaneously, while near-field monitoring with ultrasound supports up to 12 sensors. In conjunction with smart cameras, the Collision Avoidance System also detects people and reliably distinguishes them from other objects. The CAS software is safety-compliant in accordance with ISO 13849 and supports the standardized interface for communication with drivetrains in accordance with ISO 21815. Communication with the drivetrain enables an automatic deceleration up to emergency braking. The Kinematic Positioning Sensing (KPS) solution platform uses inertial measurement units to precisely sense machine movements and thus forms the technical basis for partial automation using advanced assistance functions.

Both platforms - CAS and KPS - can be integrated easily in conjunction with other Rexroth BODAS components from the areas of travel drive and working hydraulics. This means that the

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model range can be quickly equipped with innovative assistance functions (Automation Level 1) and partial automation (Automation Level 2) in compliance with regulations.

Basic Information Bosch Rexroth

As one of the world's leading suppliers of drive and control technologies, Bosch Rexroth ensures efficient, powerful and safe movement in machines and systems of any size. The company bundles global application experience in the market segments of Mobile and Industrial Applications as well as Factory Automation. With its intelligent components, customized system solutions, engineering and services, Bosch Rexroth is creating the necessary environment for fully connected applications. Bosch Rexroth offers its customers hydraulics, electric drive and control technology, gear technology and linear motion and assembly technology, including software and interfaces to the Internet of Things. With locations in over 80 countries, around 33,800 associates generated sales revenue of 7.6 billion euros in 2023.

Basic Information Bosch

The Bosch Group is a leading global supplier of technology and services. It employs roughly 417,900 associates worldwide (as of December 31, 2024). According to preliminary figures, the company generated sales of 90.5 billion euros in 2024. Its operations are divided into four business sectors: Mobility, Industrial Technology, Consumer Goods, and Energy and Building Technology. With its business activities, the company aims to use technology to help shape universal trends such as automation, electrification, digitalization, connectivity, and an orientation to sustainability. In this context, Bosch's broad diversification across regions and industries strengthens its innovativeness and robustness. Bosch uses its proven expertise in sensor technology, software, and services to offer customers cross-domain solutions from a single source. It also applies its expertise in connectivity and artificial intelligence in order to develop and manufacture user-friendly, sustainable products. With technology that is "Invented for life," Bosch wants to help improve quality of life and conserve natural resources. The Bosch Group comprises Robert Bosch GmbH and its roughly 470 subsidiary and regional companies in over 60 countries. Including sales and service partners, Bosch's global manufacturing, engineering, and sales network covers nearly every country in the world. Bosch's innovative strength is key to the company's further development. At 136 locations across the globe, Bosch employs some 86,900 associates in research and development, of which nearly 48,000 are software engineers.

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