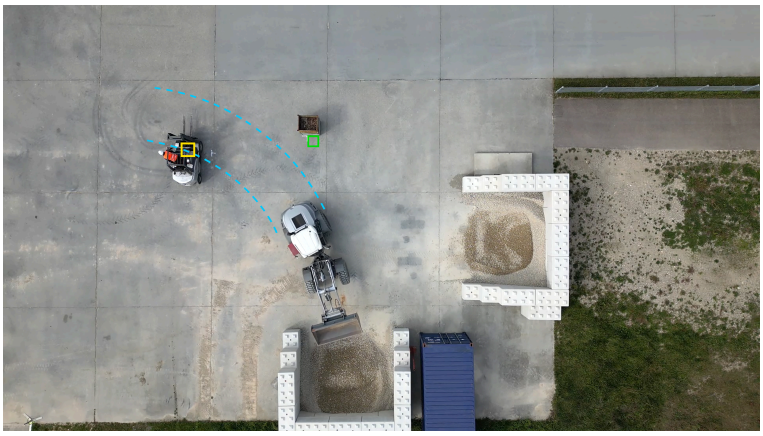
PRESS INFORMATION

Technology partner for innovative Off-Highway vehicles

Manuela Kessler | 24.02.2025 | Lohr am Main / Germany | PI 001/25

At bauma 2025, Bosch Rexroth demonstrates how electrified Off-Highway machines can become more productive and safer with scalable digital solution modules and how they can be developed faster, easier and more cost-effectively

- Efficient development: new hardware and software modules and tools
- Simple operation: collision avoidance and other assistance systems
- Sustainability: efficient operation for all drive types



Example collision avoidance. The CAS application software enhances the safety of mobile work machines and reduces development times for OEMs using proven hardware and software components from the BODAS Ecosystem by Bosch Rexroth. (Image source: Bosch Rexroth AG)

The demand for efficient, productive and easy-to-operate Off-Highway vehicles is increasing the complexity of machine development. Bosch Rexroth supports vehicle manufacturers in meeting these challenges with a comprehensive solution portfolio. At bauma 2025, the company presents new hardware and software modules for automation, electrification, connectivity and efficiency. The scalable and open-technology approach, including new hydraulic solutions from HydraForce, covers different machine sizes, drive types and objectives. This enables OEMs to equip themselves quickly and precisely with economical driving, assistance and work functions and thus set themselves apart from competition.
With Bosch Rexroth as a technology partner for the entire machine fleet, manufacturers can minimize development effort and focus more on machine and driving characteristics. Scalable solution modules relieve OEMs of time-consuming groundwork in order to design machines more efficiently, including functional safety and simplify operation. Financial risks are also avoided, as the solution modules take into account all relevant standards and regulations.

Efficient development

One example of simplification in engineering is validated software modules that can be freely modified as part of the Try it First concept. The new BODAS Studio development environment, based on a standardized, open software architecture with a wide range of integration options such as MATLAB and Simulink from MathWorks, saves time when generating code. Young and experienced experts receive qualified answers to development questions via the myBODAS collaboration platform, which also offers a comprehensive knowledge database with AI-supported search and free access to the BODAS software modules.
Software-defined vehicles require Over-The-Air (OTA) services to roll out updates and new functions. BODAS Connect meets this requirement with a solution for OTA mass updates that also includes UDS-compliant controllers in mixed E/E environments. The newly introduced RCU Lite Connectivity Device provides an economic entry to telematics.

Easy-to-operate machines
Semi-automated functions and advanced assistance systems enable greater safety and productivity on the construction site, even with less experienced operating personnel, for which Bosch Rexroth offers flexibly adaptable solution platforms. One example is the new Collision Avoidance System (CAS), which enables effective collision protection. The easily integrated CAS precisely detects objects and people using radar, ultrasound and smart cameras, warns of impending collisions or decelerates the vehicle until emergency braking. The Kinematic Position Sensing (KPS) in combination with multiple inertial sensors provide the technical basis for semi-automated functions such as weighing, virtual walls or grading on slopes.
More efficiency
Bosch Rexroth covers the entire chain of action from the joystick to the control system and sensors to the travel drive and working hydraulics. Across all drive types and machine sizes, the focus is on efficient solutions – for example drive systems and technologies as well as the eLION electrification portfolio, which now also covers the low-voltage range. The joint control platform eLION Power-and-Motion Control for low- and high-voltage on-board electrical systems ensures more efficient operation of electrified construction machinery in addition to cross-model synergy effects.
The enhanced EMP motor-generator series and the new compact MPR Performance Radial piston motor for small machines save valuable installation space, weight and energy. Also new is the modular RM Global valve platform which as a modular replacement for the well-known M4 valve, it covers the lower and medium flow range in a more flexible and efficient manner. The leading Onboard Electronics (OBE) in the agricultural sector have also been adapted for construction machinery.
The load and control valves from Rexroth Compact Hydraulics including the EDG, EDH, E-Valve and H-Valve series complement the innovative solutions from HydraForce, which was acquired in 2023. Highlights include the high-flow and energy-efficient Digital Boom Control Valve EHBL with the user-friendly HF-Impulse 2.0 programming tool and the oil condition sensor developed in collaboration with Tan Delta Systems. This sensor monitors fluid quality in real time, enabling proactive maintenance and helping to prevent unplanned downtime.
Bosch Rexroth at the bauma 2025: Hall A3, booth 327

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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