

PRESS INFORMATION

A software platform for all voltage classes

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The eLION portfolio from Bosch Rexroth simplifies and accelerates the electrification of agricultural machines

- Power management, drive train, and work functions seamlessly aligned
- Functional safety already integrated in accordance with standards
- New high-voltage motor series EMP1: up to 50 % more power in the same installation space



The Rexroth eLION software portfolio with the modules Electric power control EPC, EDA and Pump drive control PDC and the new high-voltage motor series EMP1 with significantly increased power density. (Image source: Bosch Rexroth AG)

Standardization and scalability of all essential software modules accelerate and simplify the electrification of off-highway machines across all machine and voltage classes, from 96 V up to the high-voltage range. This saves machine manufacturer the high effort of developing their own control software. The eLION Power and Motion Control Platform from Bosch Rexroth includes the application software Electric power control EPC for power management, EDA for the drive train, and Pump drive control PDC for the efficient execution of work functions. Additionally, the new Rexroth high-voltage motor series EMP1 increases power density and provides up to 50 % more power in the same installation space.

The eLION software portfolio controls the power train of agricultural machines. It communicates via standardized interfaces with the battery and thermal management systems from various manufacturers. The integrated Power Management optimizes the functionalities and availability of vehicles.

A particular challenge for OEMs is the electrical safety when designing new, electrified concepts. The Electric power control EPC monitors the interlock circuit and integrates the insulation monitor. Optionally, it reads the corresponding status values via secure CAN communication. Furthermore, the eLION software portfolio meets the requirements for functional safety of EN ISO 13849, ISO 19014-4, and ISO 25119 at the system level.

Drive train with familiar operating feel

EDA controls the traction drive and enables a wide variety of functions, such as speed-based driving as well as torque- and power-related driving via the accelerator pedal. Upon request, OEMs can also precisely replicate the familiar operating feel of a hydrostatic drive. The software is structured in such a way that a Safety Monitor reliably separates safety-critical functions from other functions. This reduces the engineering effort for developing custom standard functions. Bosch Rexroth provides the EDA software package for testing and validation purposes.

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Manufacturers can easily integrate and test their own adjustments thanks to the flexibility of the software modules.

System solutions for long working days in the field

The application software Pump drive control PDC controls the work functions. Beyond the software, this integrates the inverter, the motors, and the pumps with electronic control. In addition to pump control, the software platform offers a variety of functions for energy-efficient and low-noise operation.

The eLION software portfolio complements Bosch Rexroth with efficient drive components and thus covers all voltage classes without additional engineering effort. In addition to the 96-volt portfolio for compact off-highway machines, the manufacturer expands the system solutions in the high-voltage range with the new EMP1 motor series. It provides significantly more power in the same installation space. Available in five lengths, the high-speed motors cover a continuous power range from 30 to 175 kW, with consistently high performance and efficiency across the entire speed range. This expands the eLION high-voltage portfolio with a scalable motor platform for highly efficient pump drives, traction, and generator applications. The power density is significantly increased, offering considerably higher tractive effort and lower gear ratios. The combination of the eLION software portfolio with the scalable high-voltage motors increases the energy efficiency of electrified concepts. For battery-powered machines, reducing energy consumption is crucial for lower component costs and longer autonomy times. The latter is particularly important for agricultural machines as they have to work as long as possible on one battery charge in the available time windows for field work without charging interruptions. The eLION Power and Motion Control Platform has been shortlisted for the Agritechnica System & Components Trophy 2025.

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 32,600 associates generated sales revenue of 6.5 billion euros in 2024.

Basic Information Bosch

The Bosch Group is a leading global supplier of technology and services. It employs roughly 418,000 associates worldwide (as of December 31, 2024). The company generated sales of 90.3 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 490 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 87,000 associates in research and development.

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