

PRESS INFORMATION

Comprehensive electrical portfolio for mobile machines with a wide range of services

Manuela Kessler | 24.02.2025 | Lohr am Main | PI 004/25

With the expanded eLION portfolio from Bosch Rexroth, Off-highway machines are now even more powerful

- New 96-volt portfolio with powerful motors and inverters
- EMP1 motors with up to 50 % higher power density
- Standardized software platform for all voltage classes



The Rexroth portfolio expands with the new 96-volt powerful motors and inverters, the high voltage EMP1 motors with an impressive power density and a unified software platform for all voltage classes. (Image source: Bosch Rexroth AG)

Bosch Rexroth is expanding its eLION electrification range to include Off-Highway machines with 96-volt electrical architectures. The corresponding portfolio of inverters and motors, including the new EML1 series, is designed for compact and powerful construction machines. The eLION Power-and-Motion Control software platform, which is standardized among all voltage classes, creates numerous synergy effects across the entire model range. In the high-voltage range, the newly developed EMP1 motors with up to 50 % higher power density save valuable installation space and enable productivity increases on construction sites and fields as well as in forestry, logistics and municipal applications.

Electrification in the Off-Highway market is progressing across all machine sizes. Many manufacturers are starting the transformation with compact 96-volt machines. With the additional portfolio for this voltage class, Bosch Rexroth is creating the basis for efficient electrification of the entire machine fleet through standardized interfaces, various Off-Highway vehicle functions and concepts for functional safety.

The 96-volt portfolio for compact and powerful Off-Highway machines such as wheel loaders or telehandlers also includes the new EML1 permanent magnet motor series. With four lengths and variants for direct connection to pumps or gearboxes, this opens a wide range of applications. There are also three compact, water-cooled inverters from the EDL1 series in the power range from 25 to 45 kW nominal power with CAN J1939 communication, UDS diagnostic protocol and fully integrated functional safety based on ISO13849. The combination of EML1 motors and EDL1 inverters enables a peak power output of 80 kW.

The eLION Power-and-Motion Control software platform reduces the complexity of electrification, optimizes machine performance and achieves an operating feel comparable to conventional drives. This is achieved through three software modules: Power Control (PCL) for HV Coordination and Communication, as well as Electrical Safety and Power Management. In addition, the software modules eDA eLION and eOC eLION ensure an application-optimized

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driving function and highly efficient work functions with low-noise hydraulic operation. The market launch is planned for the end of 2025, with initial pilot projects already underway. As part of its scalable eLION high-voltage portfolio, Bosch Rexroth presents the new EMP1 motor series, which provides up to 50 % more power in the same installation space thanks to an optimized electromagnetic design. This makes drive solutions even more compact and lighter. Available in five lengths in the continuous power range from 30 to 175 kW, the high-speed motors are equally suitable for electrification of the drive train, as a generator and as a pump drive for hydraulic work functions thanks to various winding configurations. The consistently high performance across the entire speed range optimally supports all drive types, increases machine efficiency and extends battery life.

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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