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Bosch Rexroth at the LogiMAT: holistic automation solutions for mobile robots

Manuela Kessler | 11.03.2025 | Lohr am Main / Germany | PI 015/25



At LogiMAT, Bosch Rexroth will be showcasing open, flexible automation solutions for automated guided vehicles (AGV) and autonomous mobile robots (AMR). (Image source: Bosch Rexroth AG)

The great need in the warehouse automation and intralogistics sector for more efficient, flexible and cost-effective processes is increasing the demand for automation solutions for mobile robots. At LogiMAT 2025, Bosch Rexroth will be showing in hall 8, booth 8B47, how these process optimizations can be implemented with a holistic, open automation portfolio. With a complete kit of modular hardware and software solutions, Bosch Rexroth supports the development of future-proof autonomous mobile robots (AMR) and automated guided vehicles (AGV).

“The world of intralogistics is literally spinning faster and faster. Requirements such as same-day delivery demand high-performance automation. Mobile robots are an essential element. This requires open, modular components that can be seamlessly integrated into a system depending on requirements and applications,” says Mark Grötzinger, Head of Business Development Warehouse Automation and Intralogistics at Bosch Rexroth.

Solution sets as a complete package for the automation of mobile robots

At LogiMAT, Bosch Rexroth will be presenting holistic automation solutions for AGVs and AMR. The core element is the automation system ctrlX AUTOMATION, which combines hardware, software and special apps for robotics. In conjunction with the robotics kit ROKIT, manufacturers and system integrators have a high degree of freedom at various levels, from the functional expansion of individual vehicles to central fleet and device management.

The laser-based localization software ROKIT Locator for determining the position of the vehicle in real time and the VDA 5050-compliant ROKIT Navigator for precise motion planning of mobile robots can be flexibly integrated into third-party solutions either as an app for ctrlX OS or as a Docker container. As a highly integrated drive unit, the ROKIT motor can also be put into

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operation quickly and easily via Plug and Drive. Thanks to certified functional safety through FSoE (FailSafe over EtherCAT) protocol, it meets all the necessary safety requirements in accordance with Performance Level PLd and Safety Integrity Level SIL2.

With ctrlX AUTOMATION, Bosch Rexroth offers solution sets tailored to mobile robotics, which include the open control platform ctrlX CORE and the compact ctrlX DRIVE on the hardware side. The safety solution ctrlX SAFETY provides a high level of safety. It can be used as a drive-integrated SafeMotion solution in the drive ctrlX DRIVE or as a complete control system ctrlX SAFETY. All vehicles in a fleet can be managed via the ctrlX Device Portal. The safe and open operating system ctrlX OS with connected ecosystem offers users access to special robotics apps, including apps from third-party providers.

The automation system ctrlX AUTOMATION also enables the integration of ROS 2 solutions into an industrial platform. The ctrlX Data Layer provides secure and managed access to the RT and NRT data available on the control unit. This means that ROS 2 applications have direct access to all system data without having to go through the PLC. This further reduces the programming effort for mobile robots and enables new functions to be implemented quickly.

Precise lifting mechanism for smooth and exact positioning

The lifting mechanism of the electromechanical cylinders (EMC) enables the load to be lifted and set down gently and positioned precisely in autonomous mobile robots. Thanks to its lubrication interval of up to 100,000 km, the low-maintenance electromechanical actuator is an economical and resource-saving solution. Profiled rail systems and screw drives from the linear motion technology portfolio are also used in mobile robots. They are used in the automatic fork cross adjustment of a mobile robot to pick up different types of pallets.

“Bosch Rexroth offers a broad portfolio of components for the automation of mobile robots. The solutions are openly designed and can be easily combined with each other. Development, commissioning and engineering of AGVs and AMRs are simplified and accelerated. This enables manufacturers to meet the growing demand for fast time-to-market in a holistic manner,” explains Mark Grötzinger.

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

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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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