Open solution for heterogeneous fleets

Bosch Rexroth simplifies the automation of intralogistics with the VDA 5050 interface in fleet management and autonomous vehicles

Autonomous, mobile robots such as the ACTIVE Shuttle from Bosch Rexroth and the A-MATE® FreeLift from K.Hartwall can take on joint transport tasks in intralogistics under the VDA 5050-capable ACTIVE Fleet Manager. (Image source: Bosch Rexroth AG)

The ACTIVE Fleet Manager (AFM) from Bosch Rexroth seamlessly integrates the autonomous mobile robots (AMR) ACTIVE Shuttle and A-MATE® FreeLift from K.Hartwall into joint transport tasks via the standard VDA 5050 interface. This means that users can cover the in-house range of transport tasks from small load carriers to larger and heavier loads up to 1,000 kg using consistently coordinated automation. K.Hartwall, a globally established provider of automated guided vehicle systems (AGVs) and mobile robots with around 1,500 customers, uses the ROKIT Locator localization software and the ROKIT Navigator navigation software from Bosch Rexroth in its A-MATE® FreeLift.

Skilled labor shortages, transparency, and increased efficiency of in-house transport are currently the greatest challenges in the intralogistics of production facilities, fulfillment centers in e-commerce and wholesale. Users are increasingly relying on the combination of AMR and AGVs from different manufacturers to cover the variety of transport tasks. By doing so, they are leveraging the advantages of automation to the max. On the other hand, the increased traffic volume requires continuous transparency and centralized management through fleet management to ensure an optimal flow of traffic. Bosch Rexroth relies on the open standard interface VDA 5050.

Easier engineering and fast commissioning

The automation specialist simplifies the installation and operation of these solutions with modular software for localization, motion planning, and fleet management. Based on modern software architecture and open standards, the software modules shorten the time to market for new concepts and speed up commissioning for end users. Manufacturers such as K.Hartwall are already using these advantages and opening up new degrees of freedom for the tailored automation of intralogistics.

The ROKIT Locator localization software supports all commercially available laser scanners, vehicle types, and IPC. It fits easily into new and existing vehicle concepts. The software independently maps natural environments (natural feature navigation) without additional

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guidance. The ROKIT Locator automatically detects any changes in the surroundings in real time, updates the map, and communicates the changes to the other vehicles in the fleet.

Maximum openness with the ROKIT Navigator

The ROKIT Navigator navigation software, which is available on the market for the first time, takes over the motion planning of mobile robots. The modular architecture based on the VDA 5050 open interface offers maximum flexibility and ensures full interoperability. The navigation software enables maneuvering in a confined space as well as fast and high-precision docking on target objects, such as material loading and unloading stations or charging stations. It automatically detects any changes in the surroundings, such as temporarily parked obstacles, and decides, based on the situation, whether the vehicle moves round this obstacle or stops, and reports the interruption in its journey. The ROKIT Navigator is compatible with all common vehicle kinematics and complements modern localization solutions such as the ROKIT Locator. The VDA 5050 interface enables all vehicles in a fleet equipped with this to access a common, constantly updated localization map. The common software stack reduces the complexity of day-to-day operations and simplifies maintenance and future fleet expansion.

ACTIVE Fleet Manager orchestrates all transport tasks

As a bridge between the vehicles and higher level systems, the VDA 5050-capable ACTIVE Fleet Manager (AFM) from Bosch Rexroth efficiently orchestrates all transport tasks with ACTIVE Shuttle as well as the first mobile robots from third-party vendors. The A-MATE® FreeLift by K.Hartwall is equipped with decentralized intelligence and is fully integrated functionally. Users of the AFM adapt routes, route points, and orders to the current requirements on the intuitive user interface without any programming. All vehicles therefore use a common navigation map within the AFM. The ACTIVE Fleet Manager standardizes the operation of the AMRs used, such as the ACTIVE Shuttle and A-MATE® FreeLift. No additional training per vehicle type is required for the fleet management software. Users can therefore map all transport tasks consistently under one system: from the material transport of small load carriers (quarter pallets) to the transport of pallets.

There are no project costs when implementing intralogistics automation with AFM, ACTIVE Shuttle, and AGVs or AMR from third-party vendors that are configured to this. Compared to other systems on the market, this results in significantly lower project costs for installation and application changes.

Bosch Rexroth meets the legal requirements for IT security for all software solutions and thus offers protection against unauthorized access to sensitive data or cyber attacks. ROKIT Locator, ROKIT Navigator, and ACTIVE Fleet Manager integrate seamlessly into NIS-2 compliant security architectures.

At LogiMAT in Stuttgart, K.Hartwall will demonstrate the seamless coordination of its new autonomous mobile robot (AMR) A-MATE® Lite and the A-MATE® FreeLift with the ACTIVE Shuttle using Bosch Rexroth software modules in Hall 8, Stand 8B65. Bosch Rexroth will be presenting its intralogistics portfolio in Hall 8, Stand 8B47.

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.

Press Contact

Please get in touch with our Press Contact

Manuela Kessler
Spokesperson
technology topics
+49 9352 184145
Manuela.Kessler@boschrexroth.de