

Modernization Rail Freight Infrastructure, Intralogistics, Freight Traffic and Transport Technology

Integrated Supply Chains, Cargo Handling, Lead Time Optimization

The main key performance indicators in intralogistics are efficient lead and circulation times, including reduction of transportation costs for B2B Partners and clients. To achieve the highest performance levels, logistic hubs and manufacturing centers rely on smooth connections and workflows with the interconnected transport infrastructure, e.g., rail freight trains, wagons, and trucks. In addition, internal workforce, material flows, and warehouse processes, including information technology systems, need to be managed.

Intralogistics Hubs, Warehouse-Management-Systems, Autonomous Guided Vehicles

Delivered merchandise and goods are recorded in logistics centers using a Warehouse Management System (WMS). Assigned to defined storage locations of networked warehouses, e.g., packages, containers, and pallets are transported internally via conveyor systems, storage, or retrieval devices. Logistics centers can have different types of manual or automated material transportation systems. Driverless transport vehicles, also called Autonomous Guided Vehicles (AGVs.), can drive safely within logistic buildings using an AI-based route guidance system. Continuous operation of AGVs on a 24/7 basis can generate cost advantages and faster lead and circulation times.

Cargo Handling, Standardized Merchandise, Unloading and loading robots

Cargo handling of containers can contain monotonous loading and unloading processes with non-ergonomic, health-impairing effects on employees. Highly automated cargo-handling robots offer advantages, e.g., continuous 24/7 operation and handling of up to 800 packages/ h with package weights up to 35kg. Robots can capture data and information on their surroundings, physical position, package patterns, and type of merchandise using integrated sensors. Subsequently, programmed gripping processes can be activated, as well as interconnected conveyors downstream. Using IoT/Cloud technologies, cargo-handling robots can communicate with AGVs and accelerate material flows. Achieved tasks by the cargo-handling robot can be mapped in the WMS for further optimization.

Cargo Handling, Heavy Duty Goods, Automated Mobile Robots

Heavy-load carrying machines available today are, e.g., pallet jacks, gantry cranes (RTGs), and transport platforms (AGVs) for container movement with varying automation levels operating 24/7 at container ports or rail terminals. Digital-operated robots capable of material handling processes are also used in the automotive sector, e.g., metal products and vehicle component loading via magnetizable gripping systems. Further robotic solutions for industry-specific rail freight applications are in development.

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