

CUSTOMER SUCCESS STORY

MPA Technology GmbH automates intralogistics for a precision engineering company with OMRON robotics

MPA Technology GmbH

South Westphalia,
Germany



Improved
efficiency



Reduced
workload



Seamless
integration



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Key Benefits

1

Optimized material flow – Automated transport of crates reduces delays and improves efficiency.

2

Reduced manual work – Employees no longer need to transport materials manually, cutting down on physical strain.

3

Scalable solution – The AMR fleet can be expanded based on production needs.

4

Seamless system integration – The solution connects with existing MES and SAP systems for smooth operations.

5

Precision and reliability – AMRs ensure accurate crate positioning, minimizing errors and enhancing safety.

At a glance

MPA Technology GmbH has collaborated with a leading precision engineering company to enhance their intralogistics processes using OMRON's LD-90 autonomous mobile robots (AMRs).

The project integrates a Kardex shelving system, AMRs, and MPA roller conveyors to streamline material transport and reduce manual handling. A customized stacking and unstacking solution ensures the smooth movement of small load carriers (KLTs), improving operational efficiency.

The system eliminates long walking distances for employees, supports order management via an intuitive interface, and allows for easy expansion of the AMR fleet. This approach optimizes production flow while freeing employees for higher-value tasks.



Complex and delicate components used in industries like electrical engineering and medical technology require meticulous handling and expert processes. In manufacturing and intralogistics, processes and technologies must be finetuned down to the smallest detail. OMRON Solution Partner [MPA Technology GmbH](#) specializes in the development and construction of such special-purpose machines. Based in South Westphalia, Germany, MPA is collaborating with a renowned international precision engineering company on a smart factory project. This initiative integrates a [Kardex shelving system](#), OMRON's [LD-90 autonomous mobile robots \(AMRs\)](#), and MPA roller conveyors to optimize material flow.

Solid planning supports project success

The project demonstrates the wide-ranging advantages that automation can offer to companies across various industries. It also highlights the synergies that emerge when experts from different fields and organizations collaborate to streamline intralogistics processes and reduce the physical workload for employees.

As part of a site expansion, MPA Technology GmbH was commissioned to collaborate with the client company to establish a smart factory, set to become operational by the end of 2025.

"Due to the size and complexity of the project, we have spent several months planning and testing how best to interlink processes, identify suitable technologies, and improve overall operational efficiency. Following an initial planning phase and process simulation using a digital twin, we moved into the development stage. This provided greater planning certainty," explains Nico Graneist, Key Account Manager at MPA Technology.

He adds: *"We engaged with the customer right from the start to discuss all requirements in detail, visualize key processes, make initial adjustments, and then begin building the solution. This thorough approach is crucial for ensuring reliable planning, which ultimately underpins the project's success."*

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Innovative box stacker enables the transport of four KLTs

The customer's primary requirement was to optimize the handling of standard small load carriers (KLTs), which hold materials such as raw materials or tools needed by employees for production on the line. Other key considerations included ensuring the safe and clean transport of materials in the boxes and providing support for employees, freeing up their time for other tasks.

The KLTs come in various heights and have a base area of 400 x 600 millimeters. In the new solution, order-related materials are retrieved from the Kardex system via the MES system using a pull principle. MPA's innovative solution, 'MPA-MICS' (Mobile Information Control System), allows employees to request components directly at their workplace. A hexagonal column designed by MPA provides access to the MES system via a touch display, featuring a dashboard that is intentionally simple and user-friendly.

OMRON's LD-90 robots handle the transport of the KLTs. Kardex VBM boxes are retrieved individually from the Kardex system and transferred via a roller conveyor, the MPA Roller Conveyor. *"Since we need several boxes*

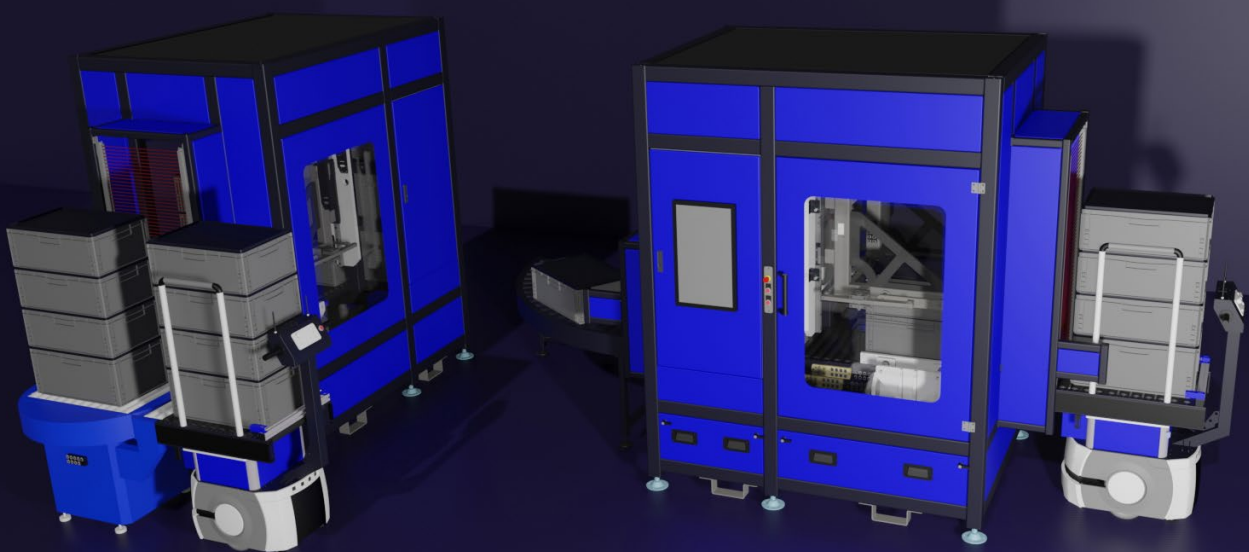
at once for operations, we developed a special box stacker and destacker capable of stacking four boxes of different heights. These stacks can then be transported together to various delivery stations by the LD-90 using a custom add-on," explains Nico Graneist.

How the automated material and crate transport system works

KLTs are ordered via an operating terminal at each station, allowing employees to request the materials they need from the Kardex system. The crate stacker is used to stack up to four KLTs, which are then transferred to the LD-90 mobile robot via a roller conveyor.

The LD-90 robot has a transport capacity of up to 90 kilograms and a maximum speed of 1.35 meters per second. It delivers the crates to stations equipped with two roller conveyors. Finished parts are also placed on a roller conveyor in stacks of four boxes. At the box unstacker, the crates are separated and transferred to the storage rack system.

Additionally, several subsequent manufacturing and inspection processes at the customer's site have been automated, further streamlining operations.





Long distances and manual tasks are eliminated

In the new smart factory, order papers no longer need to be written or distributed, significantly reducing manual tasks and eliminating long distances for employees. “Previously, they had to cover up to 300 meters each way with a trolley—fetching material, transporting it to the machine, and then returning it later,” explains Nico Graneist. *“This time can now be used for more value-adding and creative tasks.”*

Currently, the project customer is using five LD-90 mobile robots, but the fleet can easily be expanded as needed. The OMRON AMRs operate over an area of approximately 5,000 square meters. Each robot completes around 50 trips of varying lengths daily—tasks that employees previously had to perform manually.

The Precision Drive function allows the robot to position itself very accurately in front of the conveyor belt. Additionally, it supports gentle start-up and braking processes, which is crucial when transporting fragile and expensive materials.

AMRs excel in flexibility and efficiency

Why was the LD-90 chosen? “We have already collaborated with OMRON on various projects. The communication is cooperative and on equal footing. Additionally, the LD robots were a perfect match for our requirements—or more importantly, the requirements of our customer,” explains Marcel Burk, Head of Business Development at MPA Technology GmbH. Whenever questions arise, OMRON employees are readily available to provide prompt assistance.

“The LD-90 also enables the simultaneous transport of four KLTs. Thanks to its ergonomic base height, it is much more efficient to set up this device at an ergonomic height compared to other AMRs. This also impacts ROI: if we could transport only one or two boxes at a time, we would need significantly more robots,” adds Nico Graneist.

The LD-90’s precision is another standout feature. *“The Precision Drive function allows the robot to position itself very accurately in front of the conveyor belt. Additionally, it supports gentle start-up and braking processes, which is crucial when transporting fragile and expensive materials,”* Graneist emphasizes.

AMRs in modern manufacturing

Autonomous mobile robots (AMRs) are becoming increasingly common in modern companies, as they significantly boost productivity in manufacturing and logistics. Mobile robots increase throughput, reduce errors, improve material traceability, and free up employees to focus on tasks requiring complex human skills.

Unlike conventional driverless transport systems, AMRs adapt to the spatial conditions of a plant without requiring costly infrastructure modifications. "In logistics and other areas of modern manufacturing,

automation is indispensable. That's why technologies like mobile robotics are becoming increasingly important," says Burk.

The need for automation is also driven by the difficulty of finding employees for repetitive tasks, especially in shift work. "Automation is essential for future-oriented companies like our customers. If you want to safely enable humans and machines to work together in shared spaces, you need solutions like OMRON's LD robots, which operate reliably even without magnetic strips," Burk concludes.



Brief description of the project

OMRON partner MPA Technology has implemented smart factory processes based on a Kardex shelving system, MPA roller conveyors and OMRON LD-90 AMRs for a major international company in the precision engineering sector. In addition to the AMR fleet, the solution consists of a stacking and an unstacking system for small load carriers (KLTs). The crate stacker is positioned in front of the rack system outlet. The crates are discharged individually and then stacked in stacks of four. These are then transferred to the AMR, which transports them to the production station where they are needed. After processing, the employee places the stack on a roller conveyor for the AMR to pick up. The stack of boxes is transferred to the destacker, which separates the boxes and feeds them into the storage rack system for storage.

Communication workflow:

Employees initiate orders through an operator terminal connected to SAP at their station. The order details are forwarded to the OMRON fleet manager and the AMR via several interfaces. The AMR, in turn, passes this information to the PLC through additional network interfaces. The goods are picked and staged at the appropriate pick-up location.

Project facts:

Robot used: OMRON LD-90

Fleet size: 5 systems

Structure used: MPA roller conveyor

Covered area: 5000m²

Trips per AMR per day: 50



MPA TECHNOLOGY

About MPA Technology GmbH

Since its foundation in 2011, MPA Technology GmbH has grown steadily and now employs more than 50 people at two locations. The company's core competence lies in the design, construction and servicing of special-purpose machines that cover all areas of automation technology. Starting with the automated feeding of individual components, through to their assembly and testing, and on to order picking and packaging, MPA Technology delivers integrated solutions that efficiently reduce operating costs while maximising process reliability. The experts at MPA Technology are on hand to advise customers from day one of their project, working closely with them to develop a concept that meets their specific needs and creating a detailed design of the company-specific system before construction begins. Further information: <https://mpa-tec.com/>

OMRON

About OMRON Corporation

OMRON Corporation is a leading automation company with its core competencies in Sensing & Control + Think technology. OMRON is engaged in a wide range of businesses including industrial automation, healthcare, social systems, device & module solutions. Established in 1933, OMRON has about 28,000 employees worldwide, working to provide products and services in more than 130 countries, contributing to the creation of a better society. For more information, please visit <http://industrial.omron.eu>