

CUSTOMER SUCCESS STORY

Manufacturing excellence meets automation expertise: HB-Maschinenbau relies on technology from OMRON

HB-Maschinenbau



Metten, Germany

Automated complex manual processes



Improved quality control



Scalable automation solution



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Key Benefits

1

Fully automated assembly line enhances efficiency by automating complex manufacturing processes for the construction sector.

2

Vision technology with robotics ensures quality control and reliability

3

Scalable automation solution for varied applications, with significant cost-performance benefits.

4

Replaced 20-30 manual workstations, enabling employees to focus on more value-adding and creative tasks

At a glance

HB-Maschinenbau and OMRON have teamed up to automate complex manufacturing processes for the construction industry, creating a fully automated assembly line.

The solution utilizes OMRON's robotics and vision technologies to improve the speed and accuracy of producing multiple product types.

The automated systems ensure that each product meets high standards before reaching the customer. By reducing the reliance on manual labor, the partnership not only boosts productivity but also allows employees to focus on more strategic tasks.



Complex production system for a customer in the construction sector uses robotics and vision technology from OMRON

Companies that want to rationalize and automate manual production processes from the ground up, need a holistic approach and perfectly coordinated technologies. It is not enough to start at just one point: “The various steps must interlock seamlessly. Automation expertise is very important,” says Stefan Lemberger, project manager in the automation design department at HB-Maschinenbau GmbH. The company from Metten in the Bavarian district of Deggendorf, is one of Germany's leading mechanical engineering companies and, as an all-in-one supplier, offers a wide range of services relating to individual part production, complete systems and special machines. When a renowned customer from the construction sector approached the HB-Maschinenbau team to automate various, sometimes highly complex manufacturing processes that had previously been outsourced, it was clear that robotics and technology from partner OMRON would be used: “We were particularly interested in proven quality, the smoothest possible integration and a good price-performance ratio. In the area of image processing, we paid attention to prefabricated solutions between image processing and robotics in order to save work.”

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The machine took around a year to develop and has been in productive use since mid-2023. The production parts are fed into the line as bulk material. The individual steps, which were previously mostly manual and are now carried out automatically. These include the separation of individual parts, various joining processes for small parts, laser marking, spraying (application of the dispensed grease), measuring, feeding, and processing of flexible parts (cords), packaging and labelling.



AC controller and smart cameras improve quality control

“Threading the cords required for the special parts, which had been done by hand for many years, was a challenge when planning the line,” Lemberger comments. “But together with OMRON, we were able to coordinate the processes well and thus increase efficiency and reliability.” Eight OMRON robots from the i4L and Viper series are in use. Image processing systems and vision technology are used for the intermediate and final inspections, including two robots equipped with AC controllers for image processing and two FHV7 Smart Camera systems as a standalone solution. These technologies ensure 100% quality control so that faulty parts are sorted out before they are installed. “We have already achieved great success here and prevented rejects from being produced,” says Lemberger. In one case, for example, the customer was supplied with inferior material. The machine consistently sorted out the faulty parts.

i4L and Viper: Top price-performance ratio meets reliability

The i4L is a compact SCARA robot that combines high performance with extremely low operating costs. It can handle high-speed, high-precision movements with payloads of up to 5 kilograms and can press up to 150N, or around 15 kilograms, which can support joining processes. Its compact design and flexible programming make it ideal for a wide range of robot applications. The Viper is an articulated arm robot for machining, assembly and material handling and offers six axes with a reach of up to 850 millimeters. Highly efficient, low-inertia harmonic drives and a lightweight arm ensure maximum acceleration for this robot. i4L and Viper

perform handling and joining tasks with a cycle time of nine seconds in the production line developed by HB-Maschinenbau. “The OMRON robots impress thanks to their top price-performance ratio, good payload and reliability,” says Lemberger. The Vipers are used where a different degree of freedom and range than with the SCARA robots is needed.

System operator responsible for filling and fault clearance

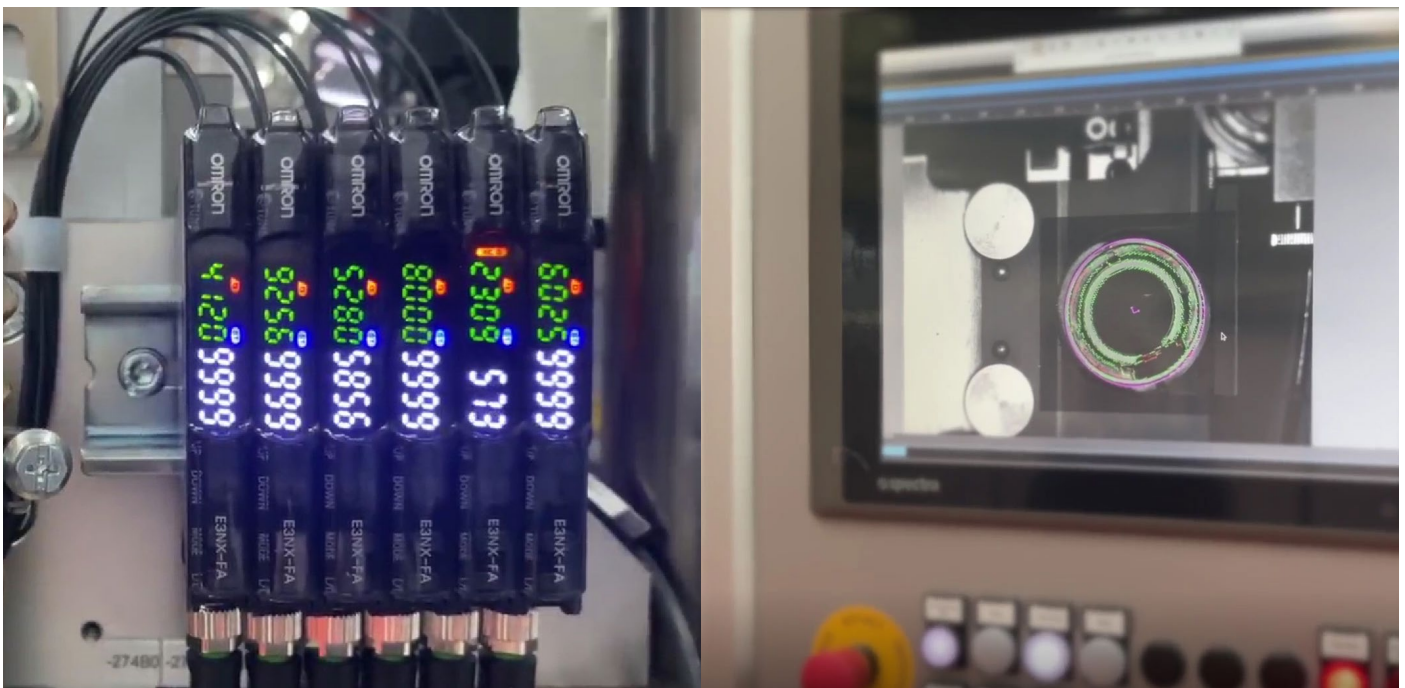
The covid pandemic was the decisive factor in the customer's decision to switch from manual to automated production. Lockdowns and the like prevented smooth production. In addition, the quantity was so large that automation was also worthwhile for the customer in terms of volume. “The new line replaces around 20 to 30 manual workstations. The parts were previously assembled by service providers outside the company,” reports Michael Reiner, who is responsible for electrical design and software at HB-Maschinenbau: “However, there is no question of replacing them, as the production line supports the employees so that they can devote themselves to more value-adding and creative tasks. New employees have even been hired for the new machine.” The system is currently running in two-shift operation with a system operator who is responsible for filling and refilling the automatic feed systems for the bulk parts. This employee is also responsible for troubleshooting the system. “Operating the system requires a certain amount of prior knowledge and training, but all in all the introductions went well and operations are now running smoothly,” says Lemberger. The short set-up times are also a positive aspect. In addition, all feed points are accessible from the outside, which makes inspection and maintenance easier.



Successful automation requires a reliable partnership

Today, the line assembles around one million parts per year, which equates to 350 to 400 parts per hour. The team at HB-Maschinenbau is particularly pleased with this project because very complex work processes can be mapped by machine and flexible parts can also be processed. "We have accommodated a lot of tricky assembly operations and there was very little space available.

The robots take on many important tasks – not just pick & place but very different processes," says Lemberger. Programming the OMRON technology is also very easy. "We have good and very competent contacts at OMRON," summarizes Michael Reiner. "In OMRON, we have an internationally active and long-established partner that we can rely on in terms of technology and expertise. All processes are perfectly coordinated and therefore smoother." This is extremely important for companies that are increasingly relying on automation.



About HB-Maschinenbau GmbH

HB-Maschinenbau is one of the leading mechanical engineering companies in Germany and offers a wide range of services as all-in-one supplier. From the production of individual parts to complete systems (build-to-print) and engineering support through its own innovative special machine construction (according to specifications – build-to-spec) as well as external production as outsourcing service provider, HB-Maschinenbau covers all stages of the value chain. The focus is on complex individual parts, assemblies and systems that require maximum precision and technological expertise. Through international production partners and subsidiaries, HB-Maschinenbau ensures that the same high quality and technological expertise is guaranteed worldwide. Further information: <https://www.hb-fein.de/>

About OMRON Corporation

OMRON Corporation is a global leader in the field of automation based on its core technology of "Sensing & Control + Think". OMRON's business fields range from industrial automation and electronic components to social systems, healthcare, and environmental solutions. Established in 1933, OMRON has about 29,000 employees worldwide, working to provide products and services in around 120 countries and regions. For more information, visit OMRON's website: <http://industrial.omron.eu>