Case Study Westheimer Brewery February 2018

The Gräflich zu Stolberg'sche Westheimer Brauerei relies on Kawasaki robots in its bottling plant.

Automation of a Traditional German Brewery: Kawasaki Robots Move into Westheimer Brewery in Sauerland

In the summer of 2017, the Westheimer Brewery, with its 150 years of tradition, decided to use a palletizing robot from Kawasaki. With more than 1,200 crates per hour, a central element of the process chain was successfully automated in a very short time - the use of further robots is already planned.

The Gräflich zu Stolberg'sche Westheimer Brauerei, founded in 1862, is a private brewery with more than 150 years of tradition. From Marsberg in the Sauerland region, typical regional beer specialities are produced and prepared for distribution within the region and for international export. In order to remain competitive in an increasingly diversified market, the company has been using Kawasaki Robotics robots to gradually automate their production since August 2017.

Until 2017, mainly older mechanical and pneumatic solutions were in use at the Westheimer Brewery, some of them more than 30 years old. Production takes place on two interconnected levels - the handling of empty bottles and the final product is carried out on the lower level, bottle filling on the upper level. In the brewery, which has been extended and rebuilt for over 150 years, the available space is a central challenge. The previous, older palletizing system in particular required a considerable amount of space and was also susceptible to faults. For master brewer Jörg Tolzmann, it quickly became clear: "The modernization and automation of the plant must begin here. In the long term, the entire infrastructure of the bottling plant will be renewed and optimised."

Robot of choice: Kawasaki CP500L

Tolzmann and his maintenance manager Thomas Juckenath became aware of Kawasaki Robotics during a visit to the Hanover Fair in 2017 while searching for solutions and examining options. After a detailed consultation - especially on site in Marsberg - the decision to purchase the new CP500L robot exhibited at the trade fair was already made in June. The compact palletizing robot has a payload of 500 kg and a maximum speed of 900 cycles per hour. With a reach of 3,255 mm, a palletizing height of 2,200 mm and a net weight of only 1,650 kg, it is the most powerful robot in its class.

In addition to the speed, precision and compact design of the robot, the independent loading of the machine and the Cubic-S safety system were also key selling points. A new chain gripper for the same purpose would have been much more program-heavy and more susceptible to faults.

Fast installation: New palletizing system ready for operation in less than two months

A concrete base was cast and the cabling was laid through its interior. The expert for automation technology and Kawasaki integrator Schröder Engineering Team in cooperation with Mr. Juckenath took over the programming of the system. Together with Kawasaki Robotics, they were involved in every step of the installation. After two weeks of fine-tuning and a comprehensive safety check, the plant went into operation in August 2017. Tolzmann was pleasantly surprised: "I know from other companies that comparable plants were not ready to start even after eight months. Here, everything was ready in less than two months. We were also able to remain within our budget without any problems."

The mechanical transport between the two levels was replaced by a conveyor belt path that allows crates to be loaded and unloaded directly from and to the palletizing robot. The empty bottles are first fed into an automatic sorting machine at the entrance of the plant and then cleaned and rinsed. After the bottles have been filled, they are checked individually and then placed in crates. Among other things, this step is to be automated in the long term with a pick and place robot. A light barrier system along the conveyor system enables fast and effective communication of the entire system. Thanks to precise coordination with the existing infrastructure, the CP500L robot fits exactly into the existing capacity spectrum.

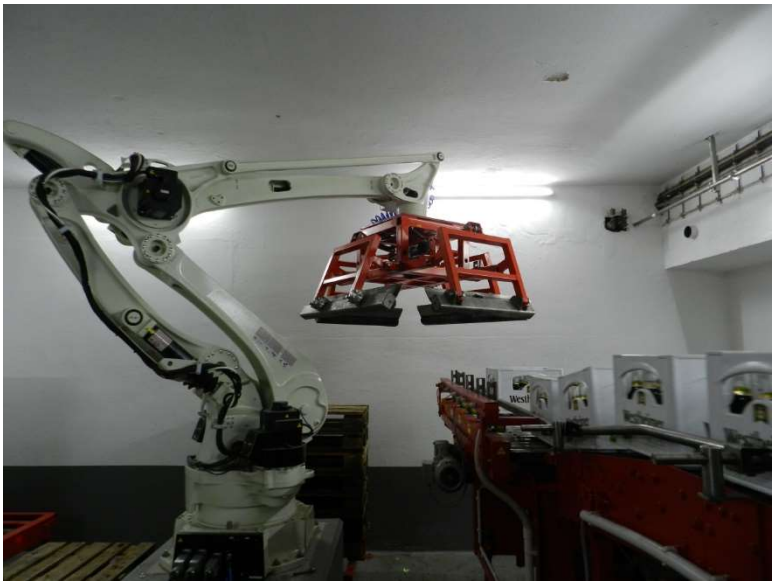
1,200 crates per hour are handled - further increase is possible.

The Kawasaki robot already enables more than 600 empty and full crates to be handled per hour - and there is even more potential, says Jörg Tolzmann: "For optimum coordination with our

older machines, we are not yet able to cope with the speed of the robot. After the modernization of our conveyor system, the robot will be up to 25 percent faster."

Thanks to its integrated control system, the robot enables effective crate handling utilizing a single machine in a small space. The Cubic-S-based safety system also functions reliably and easily: As soon as the door to the robotic cell is opened, the power is switched off and employees can enter the system without hesitation. A one-week training course at Kawasaki Robotics taught Jörg Tolzmann and Thomas Juckenath the basics of operating the robot - Schröder provides additional external support.

Decisive factors: Product diversification and demographic change



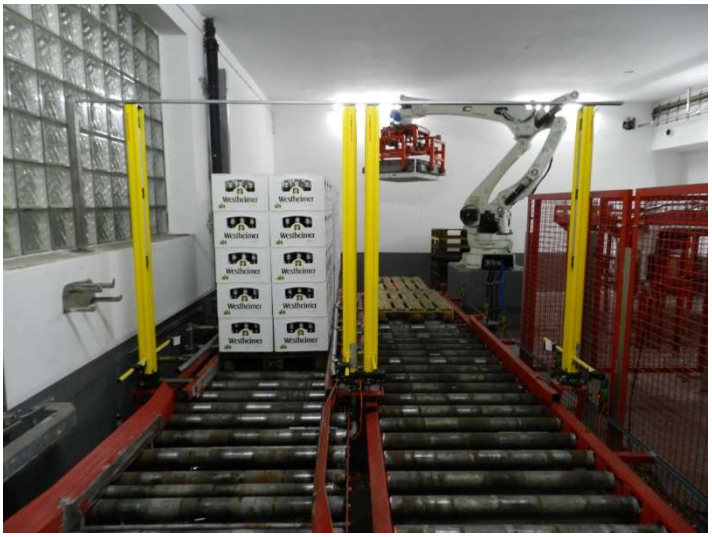
The Kawasaki robot CP500L processes more than 1,200 crates per hour.

A central challenge - both for the Westheimer Brewery and throughout the industry: Qualified employees are becoming increasingly rare. The number of applicants in the region is already declining continuously, for example for training positions or the company vehicle fleet. In addition, physical strain on older employees must be reduced. But the Westheimer Brewery is responding proactively to demographic change: with modern training concepts and the early integration of robots, the company is successfully counteracting this development - proving to be an attractive employer and relieving the strain on employees.

The production volume of the Westheimer Brewery has remained at a constant level for years, but the increasing product diversification has become a decisive factor. The system must be flexible and adaptable to new productions. The new palletizing system makes this possible: an automatic crate is connected to the magazine, where the right packers for the robot are always available. This flexibility not only saves time, but also enables significantly higher and consistent product quality.

According to Tolzmann, the diversification of the market goes hand in hand with significantly higher control needs: "In the 1970s, 1980s and 1990s the question in breweries was simple: barrel or bottle? Today, we change production four times a day on average - precise planning and flexibility are essential."

Organic Beer, Craft Beer and Co.: More flexibility in production through automation



Full flexibility: The system can be adapted to new productions in the shortest possible time.

The Westheimer Brewery works in a one-shift operation, and special orders - such as organic beer - are added at regular intervals. The high degree of flexibility is also a great advantage when it comes to external orders: The Westheimer Brewery supports not only other breweries from their large network, including bottling operations, but also the numerous craft beer labels and start-ups that have shaped the beer market in recent years.

From Jörg Tolzmann's experience, the automation of the brewery market is still at an early stage - despite some pioneers. Although trade fairs such as drinktec show a clear trend towards robots, light barriers, pneumatic motors and mechanical solutions are still common in most breweries. Many of the Westheimer Brewery's suppliers also do not yet rely on robot-based automation. “The companies know their old machines and the necessary maintenance. But we know from our own experience: Thinking outside the box quickly pays off”, explains Tolzmann

The new CP500L robot is just the beginning in the Westheim brewery: In the long term, many more machines are to be replaced by robots and numerous work steps automated. Jörg Tolzmann and his team continue to plan to combine traditional brewing art with modern bottling and production processes.