

Palletizing robot handles beverage crates

Starting point / Task definition

Located in the town center of Dornbirn, Austria, the Mohren Brewery, with practically no land available for expansion, nevertheless had to make room for storage of an additional 7,000 crates. As a result, the area for crate handling had to be reduced even further. The task: to find a new solution for crate handling which would replace the existing layering palletizer, save space, and also provide greater cost-effectiveness.

Implementation / Solution



The company decided in favor of an extremely compact solution using two KR 180 PA robots. Thanks to its flexibility, this solution also leaves room for subsequent modification. Today the company's entire beer production, with the exception of the 35 percent which is put in kegs, is handled by the palletizing robots. Each of the robots can handle up to 36,000 bottles per hour.

The crates of full bottles are moved to the robot's pickup position by means of a chain conveyor. The KR 180 PA uses a hook gripper to reach into two of the lifting handles at the sides of each crate, picking up four crates at a time and setting them down on a europallet. Once the pallet is completely loaded, it is moved on the roller conveyor to a

corner-turning station, which also serves as a double pickup station for forklift trucks.

On the left side of the cell, the other robot uses a clamping gripper to depalletize the incoming empties, always depalletizing four crates at a time. The KR 180 PA can even lift the full crates which occasionally appear among the empties. If the clamping gripper closes too far because a crate is missing or damaged, the robot stops immediately. Furthermore, springs integrated into the gripper compensate for height differences caused by tolerances in the crates and pallets. If the deviation is too large, the robot is likewise stopped automatically. The KR 180 PA sets the empties on a slat-band chain leading to the upper floor of the brewery, where they are filled. The empty pallet is moved on a traversing carriage to the pallet magazine or the loading robot.

System components / Scope of supply

- :: Two KUKA KR 180 PA palletizing robots
- :: PC-based KUKA robot controller, including control panel with Windows interface
- :: Gripper systems
- :: Collision protection
- :: Robot programming
- :: Conveyor equipment for incoming and outgoing pallets
- :: Systems for raising and lowering the full or empty crates
- :: PLC which communicates with the robot controllers
- :: Sensor systems
- :: Safeguards
- :: Commissioning

Supplied by the KUKA systems partner RST Roboter-System-Technik GmbH, Barbing, Germany.



Number of report:
R 184

Industry:
Foodstuffs, beverages

Application:
Handling
Palletizing and order
picking

Product:
Robots
Palletizing robots
Controller
KR C (Robot Controller)

Implementation:
01.06.2001

Customer:
Mohrenbraeu, Dornbirn
Austria

Results / Success

:: Advantages of the “palletizing expert”

The KR 180 PA “palletizing expert” is a four-axis robot with a passive fifth axis, whose application-specific, FEM-optimized kinematic system guarantees particularly efficient palletizing processes. Its arm is made of carbon fiber composite material (CRP), which thanks to its smaller mass moment of inertia provides truly remarkable acceleration rates. The KR 180 PA can stack loads weighing up to 180 kg to heights of up to 3000 mm. It is also more economical to manufacture than a six-axis machine. Additional cost savings are achieved through the extensive use of standard components, as well as the ability to automate up to eight pallet stations using a single robot.

:: Flexibility for the future

In selecting this handling equipment, the Mohren Brewery took into consideration the range of different products they anticipated for the future. In conjunction with additional grippers and a tool changing station, the flexibility of jointed-arm robots could be used, for example, for palletizing trays.

:: Optimal use of floorspace

Because of the distance and depth of the KR 180 PA’s reach, and given the amount of floorspace available, there was no alternative but to use a system of comparable efficiency.

:: More consistent quality

The significant reduction in breakage provided by the KUKA robots’ more gentle handling means that the Mohren Brewery achieves more consistent quality than before.

:: Significantly lower noise levels

The sensitive set-down of the crates and quieter conveyor systems have led to a considerable and lasting reduction in noise levels.

:: Higher availability

Significantly higher availability means that the Mohren Brewery could lower its personnel costs.



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