



JOBREPORT 30



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KÖHL FEATURES

- Conveyor system with wrapper & vertical conveyor
- Inhouse cantilever bearing
- Storage & retrieval machines
- High-speed door; FAA
- Mechanical assembly
- E-Installation
- Automation & Visualization
- Interface coordination with WMS
- Safety technology
- Commissioning
- Documentation

New loading hall for PRÜM Türenwerk

Fully automated storage and retrieval of pallets with product-specific transport technology.

As general contractor KÖHL Maschinenbau implemented all requirements for automated storage and retrieval of pallets with commissioned doors, frames and other components. An in-house cantilever warehouse with approx. 730 storage spaces was created in the 2,100 sqm loading hall. The existing production hall and the high-bay warehouse were connected with a platform and the conveyor system for storage and retrieval was realized on two levels.

The transport of doors requires a product-specific, robust conveyor system. Before storage, the pallets must be wrapped with foil and additionally subjected to a contour check. If the pallet does not comply with the specifications, it is recognized as unsuitable and rejected. In addition, the capacity of the conveyor system was optimized to handle the daily loading capacity of up to 25 trucks.



Inhouse storage system 4 aisles & 4 floors for multiple loading sizes

With the new storage system in the loading hall, the storage capacity was almost doubled. The storage and retrieval machines used are designed as single-mast constructions. The storage and retrieval system has 4 aisles in different widths and 4 levels in different heights.



■ One of 4 aisles to the storage system

PRODUCT SPECIFIC SOLUTIONS



Rotary arm winding machine incl. cover sheet dispenser and contour control

If the pallet is placed in the middle of the wrapping machine, it is wrapped with foil according to the entered wrapping parameters. Up to 99 different wrapping programs can be stored. After the wrapping process the foil is welded and the pallet is carried out.



The maximum height and width of the pallets are measured by light grids during the process. The contour inspection is located both before and after the wrapping machine. If the results of both inspection points differs strongly or if the dimensions do not match the storage system, the pallet is marked as NIO and sorted out by the conveyor system.

Elevator

The massive elevator connects the storage of the system with each other. The precisely guided lifting frame is equipped with a chain conveyor.

The two circulating lifting chains are driven by a frequency-controlled gear motor. Initiators are used for monitoring, e.g. to determine the stopping point, delays and chain tension. In addition, the gap control prevents the lifting drive from moving off when the load is overhanging.

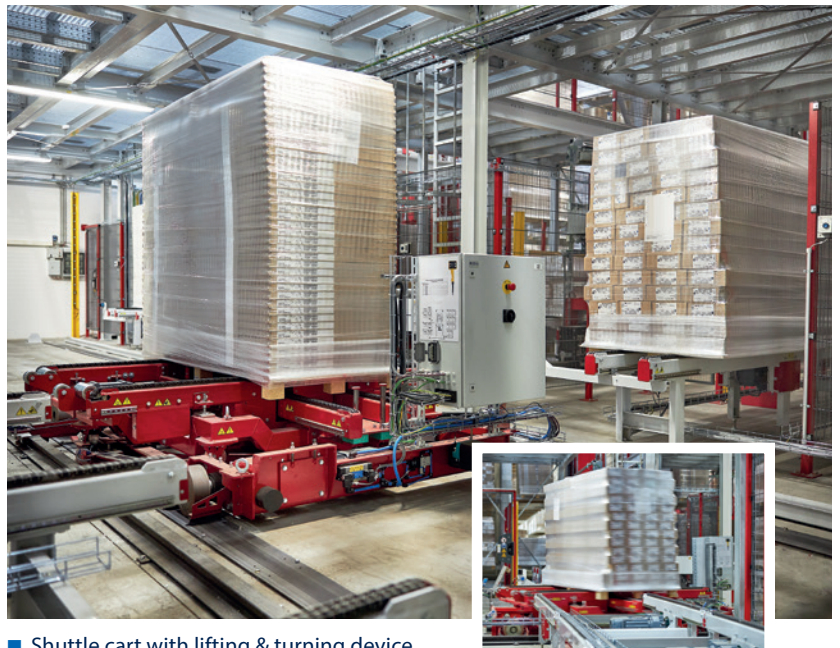


■ Elevator connects the levels

Shuttle cart

To distribute the pallets and to cover longer distances, rail-guided shuttle carts are used, which automatically pick up and remove the pallets and therefore perform a sorting and distribution function.

The conveyor system positions the loading unit on the shuttle cart and transports it to the specified shipping line after the gap control system has issued a release message. A lifting and rotating unit is used for retrieval, which rotates the pallets on the shuttle cart according to the direction of removal.



■ Shuttle cart with lifting & turning device

Chain & plastic link conveyor system

A large part of the transport system consists of proven chain conveyors. In order to meet the special requirements for the very varied product dimensions and for transport safety, plastic link belts were installed in the area of the wrapper.





Automation & Visualization

Recording, visualization and reporting for maximum transparency

KÖHL automation handles the transport orders from the customer's ERP system and coordinates them. Visualization makes it possible to track the system status and the products at any time.

The needed pallets are transported automatically by the RGB's and the conveyor system to the defined storage or pickup locations. According to the indicated shipping orders, the pallets are manually removed with forklifts and loaded into the trucks.

KÖHL Maschinenbau is the specialist for efficient process automation. The following services were provided:

- Circuit diagram creation with EPLAN P8
- Programming in S7 with KÖHL modules
- Visualization of sensors & actors
- Visualization of Alerts & Notifications
- Visualization of manual operation of actors
- Production data acquisition & provision for further analysis
- Interfaces to higher-level material flow & WMS

- Fault recording and reporting to higher-level WMS
- On-site commissioning
- Training during commissioning

This customer-oriented, flexible solution connects the processes from production to picking and delivery and increases the performance of the plant.



- Forklifts remove the commissioned pallets according to the shipping order.

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