

Robert Bosch Elektronik, Salzgitter (Germany)

# Retrofit project in three steps



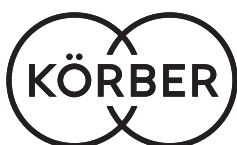
Over two years, Körber's step-by-step implementation of a comprehensive modernization project has updated the intralogistics in the production and distribution warehouse of Robert Bosch Elektronik, with operations ongoing. The plant, which is almost thirty years old, now boasts the same efficiency as a comparable new installation. Performance was immediately boosted by 60 percent.

#### Customer

Robert Bosch Elektronik GmbH is one of around 440 subsidiary and regional companies belonging to Robert Bosch GmbH. At its Salzgitter site, the company produces primarily electronic control devices for the management of diesel and petrol engines as well as gearbox controls, diesel theft-prevention systems, rotation angle sensors and the automatic proximity control system that is being integrated by vehicle manufacturers all over the world.

#### Features and benefits

- 5-aisle small parts warehouse with 10,640 storing positions
- 5-aisle high-bay warehouse with 2,800 storing positions
- **Step 1:** Control restoration of the small parts warehouse and tray-handling technology
- **Step 2:** Modernization of the pallet warehouse
- **Step 3:** Mechanical conversion of the tray-handling technology and control restoration



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## Special features / Benefits

When it comes to optimizing intralogistics, a firm needn't necessarily opt for the ultimate, big solution of building a new warehouse. Often the building structures and core elements of the warehouse technology already in place are sufficient as a basis from which to boost the efficiency of intralogistics by means of a retrofit project, with the implementation of modern IT and control technology to optimize processes.

The modernization during ongoing operation is always a big challenge. The modernization of the tray handling technology proved particularly challenging. Three picking stations have now been supplied, amongst other areas, from the small parts warehouse as part of a "goods to employee" process. The time taken for dismantling and implementation had to be kept to a minimum and extensive system availability ensured following the installation of the new materials handling technology.

In order to guarantee this, the entire materials-handling technology was set up twice. Initially Körber installed the system, which is put together in modular fashion according to the building-block principle, as a test loop in an adjoining building. This way, the controls for the components, the belt speed, the lifting positions and the sensors could all be adjusted and calibrated, and the processes could be tested before the system was installed in the warehouse - and subsequently activated without losing time. In order to boost security for the customer and/or reduce risk, additional emergency goods removal conveyors were set up at the opposite end of each aisle of shelves, which also had to be fully integrated into K.Motion WCS and K.Sight PMS-V.

In the end, the technicians required just one long weekend, from Friday evening until early Monday, to dismantle the materials-handling system in the picking zone of the Bosch warehouse and replace it with new handling technology. At the same time, the goods removal section of the small parts warehouse was expanded, the three picking stations linked up to the materials-handling technology and protective barriers set up for the system.



### Customer requirements

Engine control devices and battery systems roll off the line of the Bosch factory continuously. On top of this, this main plant supports Bosch factories in the business division of vehicle technology all over the world. Salzgitter is therefore home not only to production, but also to several centers of competence, prototype construction and a testing workshop. Any limitation or

interruption in supplies for production for the purposes of rebuilding the warehouse was simply out of the question. The decision makers at Bosch therefore decided on a comprehensive modernization project, which was to be realized in three construction phases and while operations remained ongoing.

### Solution

In an initial step, Körber modernized the five-aisle automated small parts warehouse. This offers 2,800 tray slots for finished goods, circuit boards and printed circuit boards that can be used as required for made-to-order production.

During the retrofit, the powertrains and transmission were replaced, along with the running and conductor rails and the guide rails of the hoist on the storage and retrieval vehicle. In addition, in two aisles the bay heights were adjusted to fit with current requirements. In connection with this, sensor technology was integrated and the corresponding storage and retrieval vehicle lifting heights adjusted.

In the second phase of the project, Körber modernized





the five-aisle high-bay warehouse to virtually the same extent. This houses the pallet-based raw goods to supply production (aisles 1 and 2) as well as finished products. Alongside the upgrading of the storage and retrieval vehicle's hardware and control technology, all load-handling devices were fitted with a camera system that allows the control center to see what is going on in the aisles at all times. On top of this, in two of the aisles for finished products, pallet shelves were removed, providing space for the installation of an additional new pallet level on both sides of the aisle. It proved particularly challenging to realize the project during ongoing operations in the third stage of the project, when it came to modernizing the materials-handling technology. Körber therefore implemented a special realization concept here. Since it was possible to incorporate the existing mechanics in essence without dismantling it, the pallet handling technology in the goods in and goods out sections was tackled first. Subsequently, the even more challenging tray conveying technology was modernized. Once the conversion work had been completed, the system could commence full operation at the touch of a button.

#### Integrated components

For direct control over the system components from Bosch's leading warehouse management system SAP LES/WM, Körber modernized the warehouse control system K.Motion WCS, (which has been in use for years, at the same time as the first two subprojects, and linked it with the new subordinate S7 controls. In parallel to this, the updates in the K.Sight PMS-V visualization system installed at Bosch Elektronik were integrated. During the first project phase, the retrieval vehicle



was fitted with new stationary and mobile switchboards and given modern S7 steering, and the communication was converted from bit-bars to fast telegram traffic. During the modernization of the pallet handling technology, Körber converted the carriages as well as the integrated scales, scanners, contour controls and the connected picking stations to high-performance S7 controls. During this stage too, the K.Motion WCS warehouse management system was simultaneously updated accordingly. In order to boost security for the customer and/or reduce risk during the installation of the tray handling technology, additional emergency goods removal conveyors were set up at the opposite end of each aisle of shelves, which likewise had to be fully integrated into K.Motion WCS and K.Sight PMS-V. Finally, the new system was integrated into the K.Sight PMS-V visualization system on the IT side and then linked up to the K.Motion WCS warehouse management system via a TCP-IP coupling. Here too, the K.Motion WCS warehouse management system was modernized accordingly and adapted to the new materials-handling technology.





## Facts and figures

### Industry

Automotive

### 1. Construction phase

Control restoration of the small parts warehouse and trayhandling technology (Changeover to S7-400)

### 2. Construction phase

Modernization of the pallet warehouse (control + installation of additional pallet level)

### 3. Construction phase

Mechanical conversion of the tray-handling technology and control restoration GS2 + GS3

### General contractor scope of delivery

- Switchboards (stationary and mobile) / SRM
- Extension WinCC
- Camera system

### Modernization / automation renewal

- SRMs
- Tray conveyor system
- Powertrains + transmission
- Guide rails of the hoist
- Distance measuring system
- Running + conductor rails
- Hand-operated with touch panels

### Small parts warehouse

L x W x H	28 m x 16 m x 11 m
Load units	metal tray with Bosch cont.
Storing positions	10,640
Weight	max. 100 kg
Type of storage	single-depth
Aisles / SRM	5 aisles / 5 SRMs
Load handling device:	chains-draw-thrust technique

### High bay warehouse

L x W x H	32 m x 22 m x 11 m
Load units	Euro pallets (wood) / pallet cages / metal pallet
Storing positions	2,800
Weight	max. 500 kg
Type of storage	single-depth
Aisles / SRM	5 aisles / 5 SRMs
Load handling device	Telescoping table
K.Motion WCS connection	TCP-IP coupling for controlling the SRMs
(SAP-System)	

### Körber Supply Chain Automation

Our impartial consultants will advise on, and help you select, the right automation solution for your organization. We have our own range of competitive products, but we are equally willing to procure and implement other products if they are better suited to your needs.

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