



**Realisation of an automated pallet warehouse for TAB Batteries in Slovenia.**  
**Optimised efficiency and productivity.**



**Project:**

TAB Batteries, Slovenia

**Industry:**

Manufacture of batteries and accumulators

**Task:**

Planning and realisation of an automated pallet warehouse

**Project duration:**

03.2011 - 04.2012

**Services:**

- Two-aisle, double-deep self-supporting high-bay warehouse for pallets
- 9,906 pallet locations
- 2 stacker cranes
- Pallet conveyor systems
- Control technology
- Jungheinrich Warehouse Management System

**Most important results:**

- Optimised efficiency and productivity
- Reduced error rate in intralogistics processes
- Easier operation for the warehouse staff

**Batteries and accumulators from the Slovenian mountains**

TAB d.d. is producing a wide range of lead acid flooded batteries and was established in 1965 as a subsidiary of the Lead Mine Mežica Holding. In this region the mining of lead and its further processing has a history of more

than 350 years. For the first 15 years TAB was a licenced partner of battery producer Tudor of Sweden. Nowadays, TAB is producing a wide range of lead acid flooded batteries in two modern factories with approximately 700 employees. Overall, TAB produced 3.5 Million batteries in 2011 in different brands.

**Professional project management**

In 2011, TAB Batteries built with our support a new pallet high-bay warehouse at its site in Črna na Koroškem in Meža valley close to the Austrian border. In this project, we provided the racking system, two stacker cranes, a transfer car, the further materials handling system, control technology and the complete software and IT for the warehouse. After the contract signing it took about twelve months until the handover to TAB.

**Two-aisle high-bay warehouse with a capacity of 10,000 pallets**

The 29 Metre self-supporting high-bay warehouse has 9,906 double-deep pallet locations in two aisles. A pallet conveyor system connects the new high-bay warehouse with the goods receipt and dispatch area.

## The Requirement

### Increased efficiency in the material flow alongside with an increasing production volume

Main target of this project was to create more storage capacity in order to allow an increase in production volumes. The finished product is stored in the newly created warehouse before its shipping. During this project an optimizing of the internal and external material flow took place simultaneously. For the transport and storage of the finished batteries three different loading devices are used: Euro-pallets, pallets for totes (1,130 x 820 mm) and special industrial pallets with a maximum lifting capacity of 1,600 kg. The latter must be stored in separate shelf bays, due to their high weight.

## The Solution

### Intelligent transportation control and warehouse management

After pallets receipt an automatic sizing and weight control occurs right behind the feeder station of the conveyor system. Pallets which are not suitable for storage are transported to a station for non-manageable pallets. If the size and weight check is correct, the Jungheinrich WMS allocates a suitable shelf with sufficient height and capacity. From here the integrated WMS material flow computer takes over control of all movements. The pallet is conveyed to a transfer point. From there, a transfer car distributes the pallets to the two storage aisles. The single-mast stacker cranes are equipped with double-deep telescopic forks and provide a specific performance of 33 double cycles per hour. Retrieved pallets are conveyed to the transfer car and transported by it to the conveyor system in the shipping area. To ensure maximum availability and accessibility of the goods, all items are intelligently distributed across the two aisles by the Jungheinrich WMS.

## Customer statement

### Increased productivity by optimised logistics processes

From the beginning we had a clear picture of the requirements for our new high-bay warehouse," explains Martin Rebula, Technical manager at TAB. "For the planning and implementation of this project, we chose Jungheinrich AG from a number of logistics companies. An important criterion for this choice was that Jungheinrich not only offered us the desired solution but also showed us additional options for process optimisation. Although the project was carried out under high time pressure during running operation, the cooperation with the Jungheinrich project managers was characterised by professionalism, flexibility and fairness. In every project phase Jungheinrich quickly found very good solutions for occurring problems."



Martin Rebula. Technical manager TAB Batteries, Slovenia.

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