

Branch Reference

Automotive - Just-in-Sequence



The Customer

Imperial has been offering competent solutions for all commodity and data flows along the supply chain. Services encompass partial and complete loads as well as JIT shipments.



The Requirements

Just as many other automotive groups, Europe's largest automobile brand as well continues to outsource the supply of production and spare parts to certified partner companies. In close cooperation with the partner companies and as interface between manufacturer and supplier Imperial takes over the supply of the desired cable harnesses for cockpit and engine compartment to the assembly area. These cable harnesses must be supplied to the assembly lines in the correct order, without interruptions and in a fully automated manner.



IMPERIAL 

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Return of empty containers and repacking stations

The Solution

Anyone who wants to supply round the clock 420 cable harnesses per hour to 210 cars of different type needs to have a highly redundant solution that is in large parts fully automated and well-thought-out. The Klinkhammer planning specialists deliberately decided to do without robots and go for sequencers (one each per assembly line) and container stackers. Here, an intelligent system layout is of vital importance in which all parts are interacting optimally. Even with regard to technology, Klinkhammer abstained from complexity in favor of a fail-safe operation. To a large extent, standard components are used which can be replaced quickly and without any problems. In a hall with a floor print of 100 x 100 meters there are two automated small parts storage blocks featuring 54,400 container storage locations and 11 automated storage and retrieval cranes, conveyors, storage and retrieval stations.

Whereas block #1 of the automated small parts warehouse (40,800 container storage locations) collects the cable harnesses and buffers them until they are called for pre-assembly, block #2 of the automated small parts warehouse (13,600 container storage locations) stores the highly available parts in towers. Here, the corresponding cable harnesses for the passenger compartment and the engine compartment are "married" per type and sequence, but accommodated in own containers. By continuously comparing the data from production with the parts stored and available a constant supply of the four assembly lines can be guaranteed. Another chief attraction is the fully automa-

ted, just-in-sequence loading and unloading of the trucks with cable harnesses which is already in the sequence of the planned production.

Advantages for the Customer

With the logistic solution realized by Klinkhammer the just-in-time/just-in-sequence supply of the module and final assembly lines reaches a new dimension of quality. Imperial is able to further streamline the processes and to score with an even higher reliability.

Data and Facts

Transported material:

- Containers: 800x600x220 bzw. 320mm
- Large load carriers: 1,200x1,000x900mm
- Euro pallet 1,200x800x1,800m

Storage capacity automated small parts warehouse 1:
40,800 container storage locations

Storage capacity automated small parts warehouse 2:
13,600 container storage locations

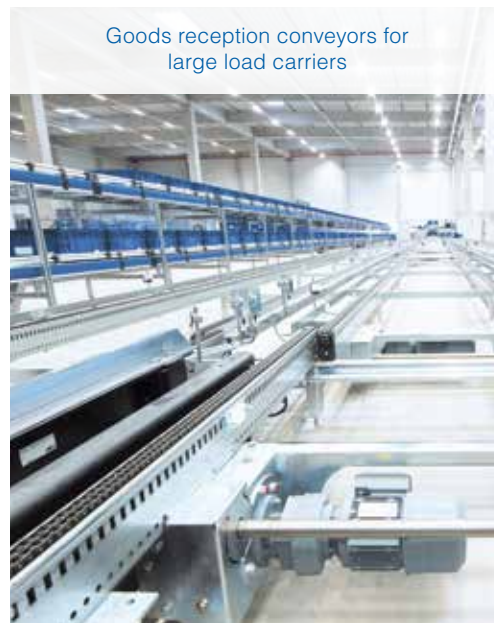
Components:

- 11 automatic storage and retrieval cranes (performance: 50 double-cycles/h each)
- 5 sequencers (performance 125 double-cycles/h each)
- 7 container stacking machines (performance 600 containers/h each)
- 2 palletizers, 1 depalletizer • 2 label dispensers
- 4 repacking stations

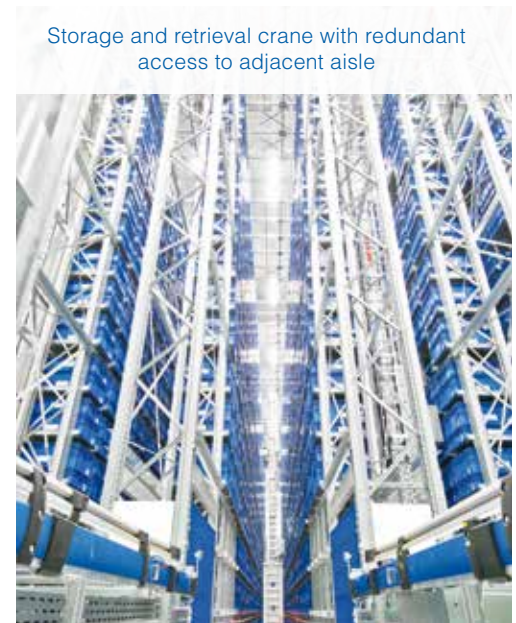
Overall system performance: delivery of 420 cable harnesses/h



Five Sequencer



Goods reception conveyors for large load carriers



Storage and retrieval crane with redundant access to adjacent aisle