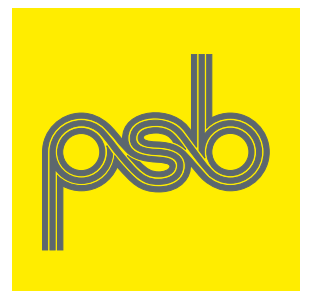




psb Best Practice

Aloys F. Dornbracht

Flexible solutions for
efficient production supply



CREATING YOUR
INTRALOGISTICS



Efficient production supply

Lean production logistics for variable batch sizes

Customer

Aloys F. Dornbracht GmbH + Co. KG
Iserlohn | GER

System

Automated production warehouse with attached production supply, multi-aisle automatic small parts warehouse, conveyors, *selektron WMS*, *selektron MFC*, *selektron SCADA*

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Aloys F. Dornbracht GmbH & Co. KG produces premium fittings, accessories and overall solutions for the water zones in bathrooms and kitchens. For the »modular« factory, at the company's headquarters in Iserlohn/Germany, psb developed and implemented a flexible integrated intralogistics system solution.

Design criteria

For reasons of reorganisation, Dornbracht decided on introducing a so-called »structure enhancement model«: physically and organisationally separated individual areas are combined on a modular basis. This procedure is standard in both, single piece production and assembly of »exotics«, and serial production. The requirements were: automated processes, and reliable production supply by various small parts warehouse facilities.

The solution

The production area is supplied with small parts out of the warehouse in the »exotics« assembly. By that, the new logistics demands associated with the growing diversity of offered products can be met. Order picking is carried out directly at the small parts warehouse, or at a conventional order picking station respectively, depending on batch size and kind of product.



Order picking for the production in small batch sizes

As part of the project »establishment of assembly supply logistics for serial production«, self-manufactured surface units and purchased items are stored centrally, in a multi-aisle small parts warehouse (more than 26,000 locations).

The high performance achieved in the warehouse allows for the optimum supply of the individual production areas (inbound and outbound goods, galvanisation and polishing). Subsequently, 26 assembly workstations in production are provided automatically by transport carts. Conventional picking of single items is also possible. Consumables are organised via the Kanban principle. The overall system solution has been designed with long-term sustainability in mind, thus utilising ultra-modern energy recovery modules.

Both, the IT concept and the control concept have been designed with a high degree of modularity. The structure enhancers, as functional units, are mapped as PLC functions. The psb selektron software system controls the individual warehouse areas and organises the production supply. All processes are visualised by *selektron* SCADA.



High-performance warehouse and production buffer



Increased performance and flexibility

Loading of supply trains in automated order picking stations

Customer

Aloys F. Dornbracht
GmbH + Co. KG
Iserlohn | GER

System

Automated loading
station, automated un-
loading station, conveyor
technology, sorter lanes,
precision scale

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Dornbracht again has chosen psb intralogistics as partner to enhance the company's assembly supply operations. The psb solution includes an order picking station, tailored transport carts for supply trains (tugger trains), which are automatically loaded and unloaded by the station, and an intelligent software control system.

During the tour of the factory, Dr. Michael Ott, Head of Materials Management and Logistics at Aloys F. Dornbracht GmbH & Co. KG, stops in front of the order picking station. This station is utilised to provide the assembly area with parts taken out of an automated small parts storage. »Due to growing throughput volumes, causing bottlenecks at our two manual order picking workstations in front of the small parts warehouse, we decided to optimise our assembly supply logistics.« On the basis of the requirements specified by Dornbracht, a concept was developed in close cooperation between both companies. One part of the solution is the automated order picking station with integrated loading and unloading station. The other part consists of transport carts with racks for bins; these carts are connected to form tugger trains.

Constant picking performance

With this station, Dornbracht could increase the flexibility of the assembly supply and speed up the supply procedure. In addition, the order control process became more transparent. Operations at the manual picking workplaces were reduced, so that a third shift could be saved, which at other times had been inevitable.

The material to be picked includes all items, which from their size fit into the transport and storage bins of the small parts warehouse. The material is taken out of the warehouse (installed 2010 by psb intralogistics) and is either transported to the manual order picking workplaces, or to the station respectively. At the station, all items of a manufacturing order are consolidated. If requested, the control combines the transport carts via a logic working according to the assembly area instead of orders. In this case, the bins are – in contrast to the usual practice – not led back, and the software deducts the entire contents.

The station presorts the bins automatically to six sorting lanes. Each buffer lane has a capacity for nine bins; by block discharge they move at short intervals to the loading station. If the material for one production order is complete, the station pushes the bins (three rows above each other) onto one of the transport carts. By locating pads and the high dimensional accuracy of the transport carts, psb intralogistics ensures that the carts can be loaded and unloaded automatically and that the bins do not slip out at the sides.



Avoiding idle times

In supply trains, the loaded carts are brought to the respective destinations. Dr. Ott explains the processes: »Since we handle the bins via the station with their entire contents, we are in a position to replace defective parts directly at the assembly line. We enter the additionally removed quantity and are able to continue working right away, without having to order new material first. By avoiding idle times and additional deliveries, we could further increase our productivity«.

The employee at the station has a view on all processes. This includes the orders, which are displayed by the system on a screen, and their assignment to the assembly lines. He connects the identified transport carts coming out of the station to supply trains with max. five carts. These carts have been particularly adapted to the needs of Dornbracht.

Transport carts for very narrow curves

Dr. Ott points to the supply train, which on its tours also collects empty carts. »The transport carts, featuring a high directional stability, are designed for very narrow curves and turning radii. In addition, the carts, which are equipped with two casters, can be moved longitudinally and sideways, and rotate smoothly. The concept was developed and optimised in close cooperation between Dornbracht and psb«.

If in the assembly area all required items have been removed, the empty bins are pulled from the carts and stacked at the station. Bins with a residual stock remain on the cart, which by the pulling vehicle is guided back to the station. At this point, the logistics worker transfers the bins to the conveyor system.

On the upstream buffer lanes the material is automatically sorted according to orders and sequence.



In the order picking station the supply train carts are loaded in fully automated operation.

The carts move to an automated unloading device, which identifies the bins and pushes them to the return track leading to the small parts storage.

By a weighing process, the station synchronises the quantities. In case of weight discrepancies, the respective bin is automatically moved to one of the manual picking workplaces for a check and possibly required quantity corrections. If bins with the same contents were on the cart already before the supply of the assembly area, the system considers the bins, which are no longer available, as removed from the cart. The stock management also includes material stocks in the assembly lines. The software does not set such material as zero stock; the respective quantity is deducted according to the stock list of the assembly order.

Designed for the future

Besides the conclusive concept, the long-term good cooperation of both companies was an important criteria to decide in favour of psb as partner in the project. Another major point is the end-to-end connection to the small parts storage, which was supplied by psb as well. The pilot operation of the order picking station, which was implemented according to schedule, was launched in March 2014. Meanwhile, 50 percent of the assembly stations are connected to the order picking station.

While Dr. Ott looks at the order list, he explains the advantages of the station. »We are now in a position to decide whether an order shall be handled via the station, or the order picking workstations respectively.

Further advantages are the constant picking performance, an enhanced assembly supply and the availability of the station of nearly 100 percent«. In addition, the order control today is more transparent. A high flexibility in the decision which assembly line to connect is another plus factor. And finally, the output, with the same number of staff, is much higher.

»This station is designed for the future, especially since presently the capacity utilisation is at 60 percent. Insofar, we can use the station as reserve capacity in the strong sales months in autumn. And besides, it is possible to extend it, for instance by a second conveyor system level«.

The transport carts, with a high degree of directional stability, have been designed for very narrow curves; they can be moved longitudinally and sideways.





CREATING YOUR **INTRALOGISTICS.**