psb Best Practice

Kräuterhaus St. Bernhard
High-performance intralogistics system in e-commerce
psb intralogistics has extended the inhouse logistics system, operated by Kräuterhaus Sanct Bernhard. The existing miniload warehouse, with order picking stations, up to now the core of the system, has been extended by a vario.sprinter shuttle storage and rotapick high performance order picking systems. On the basis of the current orders in line, the system processes are permanently optimized by the psb selektron software. In this way, the degree of economic efficiency has been substantially increased.

At the company headquarters in Bad Ditzenbach (Stuttgart), Kräuterhaus Sanct Bernhard, with a company tradition of 112 years in business, develops and produces, with approx. 300 employees, a very large range of natural remedy, dietary supplements as well as bodycare products and cosmetics. Besides the two company-owned stores, the products are mainly sold via internet to customers in Germany and abroad.

Kräuterhaus has considerably enlarged its intralogistics system, in order to be able to meet the requirements of the positive order situation and the continuously growing product range. The basis for this extension was the existing system solution by psb, which includes a two-aisle automated miniload warehouse, connected with 16 order picking stations supplied by 800 static and dynamic flow racks, and a four-aisle replenishment pallet warehouse with integrated control system for VNAs.
In the highly dynamic vario.sprinter shuttle warehouse with 20 dedicated shuttles, the cartons can be stored up to three deep.
Forward-looking concept

Prior to the extension of the system, psb had created various scenarios, like, for instance, erect a new building or, as small-scale alternative, a third aisle in the miniload warehouse etc. In the planning phase, the status quo was thoroughly analysed. It became evident that the dynamic usage of further channels, with a related frequent change of articles, would have caused a bottleneck at the AS/RS stacker cranes – an inefficient situation. Apart from that, the continued positive business trend could not be accommodated with a third aisle.

Based on this knowledge, psb worked out the forward-looking concept: to downsize the pallet warehouse from four aisles to one aisle and to install on the attained space a one-aisle, 13 m tall vario.sprinter shuttle warehouse, plus three rotapick order picking stations. Furthermore, psb suggested to move the order start to that area as well, and to use two automatic carton erectors instead of one, as it was done up to that point. The feasibility of the new integrated and scalable technical solution, controlled by the psb selektron software, had been underpinned by an extensive simulation, carried out by psb, and finally been implemented. A particular challenge was to integrate the shuttle warehouse and the order picking systems on a very confined space.

Close connection

The shuttle warehouse, which can handle up to 750 double cycles in an hour, provides 10 140 locations for cartons. 20 vario.sprinter shuttles (dedicated to each level) store and retrieve the storage cartons (400 x 300 mm) lengthways up to three items deep. Among the highlights are the three tote lifts in the system: laterally integrated high-performance lifts, by which the warehouse supplies the rotapick with source totes, and takes them back again within very short time. Each lift has been designed for 250 double cycles per hour; separate

High-performance and flexible intralogistics system solution: shuttle-warehouse with more than 10 000 carton locations and directly connected high performance picking stations
transfer stations are established on each level. Through the lateral integration of the lifts and the associated short conveyor loops, the warehouse is closely connected with the picking stations. This patented solution, with short distances, could only be implemented by a shuttle system. Another key asset of this concept is the redundancy (system resilience) that could be achieved.

**High picking performance**

At Kräuterhaus the three rotapick high-performance picking systems are used to buffer source cartons. Each rotapick holds up to 60 cartons and provides these cartons to the employee to take out the goods. Although these stations are designed for the handling of A and B+ articles, the customer uses them also for picking heavy and large items, which should actually sit in the flow racks. Nevertheless, these items are supplied from the shuttle warehouse to the rotapick, because due to their dimensions and weight, they shall be picked first and put on the bottom of the shipping carton.

This configuration enables Kräuterhaus to pick up to 40 percent of the orders completely at the rotapick and forward them directly to the packaging area (20 packing stations). Orders, which have to be completed by other items, or which consist of C articles only, are picked at the stations of the original facility. At that point, these items are provided from the miniload warehouse in the flow racks and then transported to the packaging area as well.

In the rotapick units, up to 60 source totes are stored and provided in the required sequence.
**Time-saving replenishment concept**

Another key aspect of this solution is the ongoing sequence optimisation of all order picking jobs to be assigned to the *rotapick* devices, a task that is coordinated by the psb *selektron* system, which has been implemented in the course of the modernisation. Since the software knows which items are sitting in the rotapick, the order picking jobs are initiated in a time-saving manner, because re-storage and renewed retrieval of fast movers are mostly not necessary anymore. If articles still have to be exchanged, *selektron* first initiates those orders, which include the least involved items.

psb *selektron* controls the whole plant, including all original functionalities, complemented by *selektron* SCADA, which is in charge of system diagnosis, visualization and maintenance support as well as the operational control of the system.

The expansion volume also includes a special-purpose workstation for catalogs, sample sets and special supplements which is established right after the order start, plus return of empty cartons to order start, eight additional packing stations including their connection to the outbound goods area, and finally the conveyor systems between the shuttle warehouse and the miniload warehouse.

**Substantial increase in performance**

Through the integration of the dynamic shuttle warehouse and the three *rotapick* high performance order picking stations,
the economic efficiency was significantly increased. In view of the continuing positive business trend, for Kräuterhaus it is essential, that further expansion can still be accomplished. This is even more important since the company mainly sells its products in the e-commerce market, so that each order has to be shipped at the day of order intake. Therefore the system configuration was chosen in a way, that in the shuttle warehouse a second aisle can be established and that two more rotapick units can be installed during operation. This would allow to increase the transaction rate from currently 1,800 to 3,000 picks per hour and, accordingly, the shipping capacity from 600 to 1,000 cartons. Through the sophisticated psb solution, consisting of vario.sprinter shuttles and rotapick high performance picking stations, a cost-intensive new building, as it was already planned, could be avoided.

At 20 packing stations, the orders are prepared for shipment.
CREATING YOUR INTRALOGISTICS.