



BEST PRACTICE

api

→ High-performance intralogistics
in computer wholesale and retail

MULTI ACCESS WAREHOUSE

HIGH-PERFORMANCE INTRALOGISTICS



INCREASE IN EFFICIENCY AND FLEXIBILITY

INFORMATION +
VIDEO ON OUR
WEBSITE



CUSTOMER

api GmbH
Baesweiler | GER

SYSTEM

Distribution center with
128,000 tote locations,
222 *vario.sprinter* shuttles,
24 integrated tote lifts, 6
rotapick high performance
order picking systems,
58 combined workplaces
goods-in/packaging,
6 pick and pack work-
stations

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api GmbH is a distributor for hardware components, accessories and software. More than 20,000 customers from the IT retail and wholesale trade are supplied from a portfolio of 110,000 products each month. The company, founded in 1994, continues to record high growth rates and thus permanently faces new demands on its in-house logistics processes. The very positive corporate development finally led to the decision to reorganize the entire intralogistics. Eight separate warehouses located throughout the region had to be merged in order to increase the efficiency of the operations and to establish the basis for further growth through bundled automation.

For the expansion of its intralogistics to a highly-efficient facility, api defined particular project requirements, especially with regard to conveyor technology, warehousing and

order picking. The full-range supplier asked for maximum flexibility to be able to react to changing demands. Key criteria were redundancy, availability, 24-hour delivery, simple processes, well-planned workplace ergonomics, and increase in productivity through supporting automation.

Exceptional performance values and the high degree of flexibility were decisive factors for placing the order with psb intralogistics.

psb delivered the entire tote warehouse and tote conveyor system, a high number of workplaces for order picking, packaging, goods-in and out plus the warehouse management software with plant visualization.



rotapick order
picking system for
high-performance
zero-error order
picking



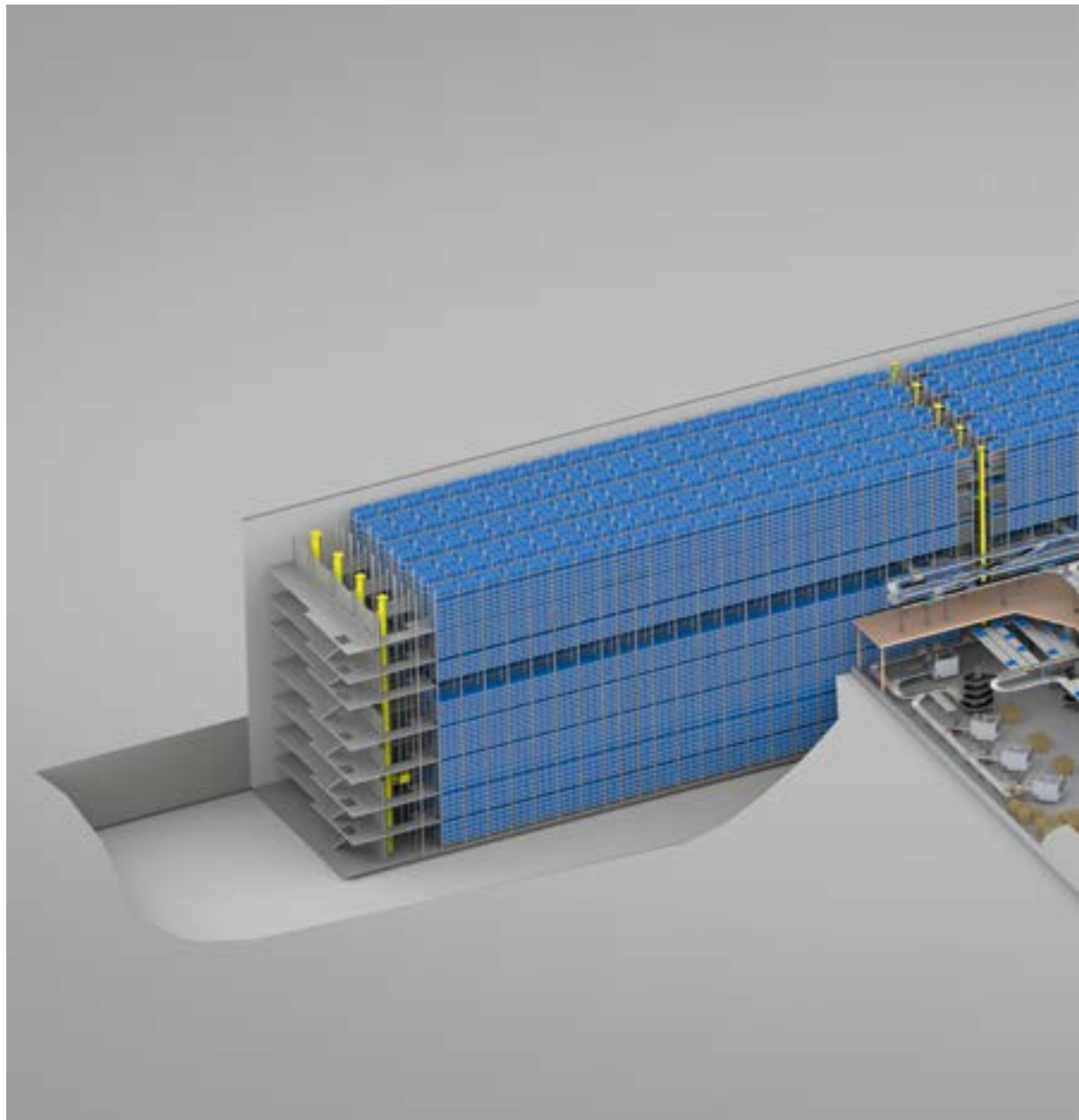
↑ 12,000 double cycles/h:
The output of the Multi Access Warehouse with
integrated tote lifts and conveyor technology

Warehouse concept with extraordinary performance values

The sophisticated specification of this project has been implemented with an exceptional warehouse concept: The patented Multi Access Warehouse from psb provides outstanding features in terms of performance and flexibility.

This psb solution differs from conventional warehouse configurations by the larger number of tote lifts, which can be installed in a space-saving manner at any position within the storage aisles. If a higher capacity is needed, their number can be easily increased. This way up to 3,000 double cycles per hour and aisle can be achieved, with simple scalability and higher redundancy.

In the warehouse block (24 m high, 145 m long) of the plant implemented for api there are four aisles, each divided into 50 levels. The totes are stored in and out by *vario.sprinter* shuttles developed by psb. In total, 222 *vario.sprinter* shuttles in two versions are utilized: standard shuttles plus *vario.sprinter flex* with width-adjustable gripper arms that allow to transport totes of 570 mm and 800 mm width.

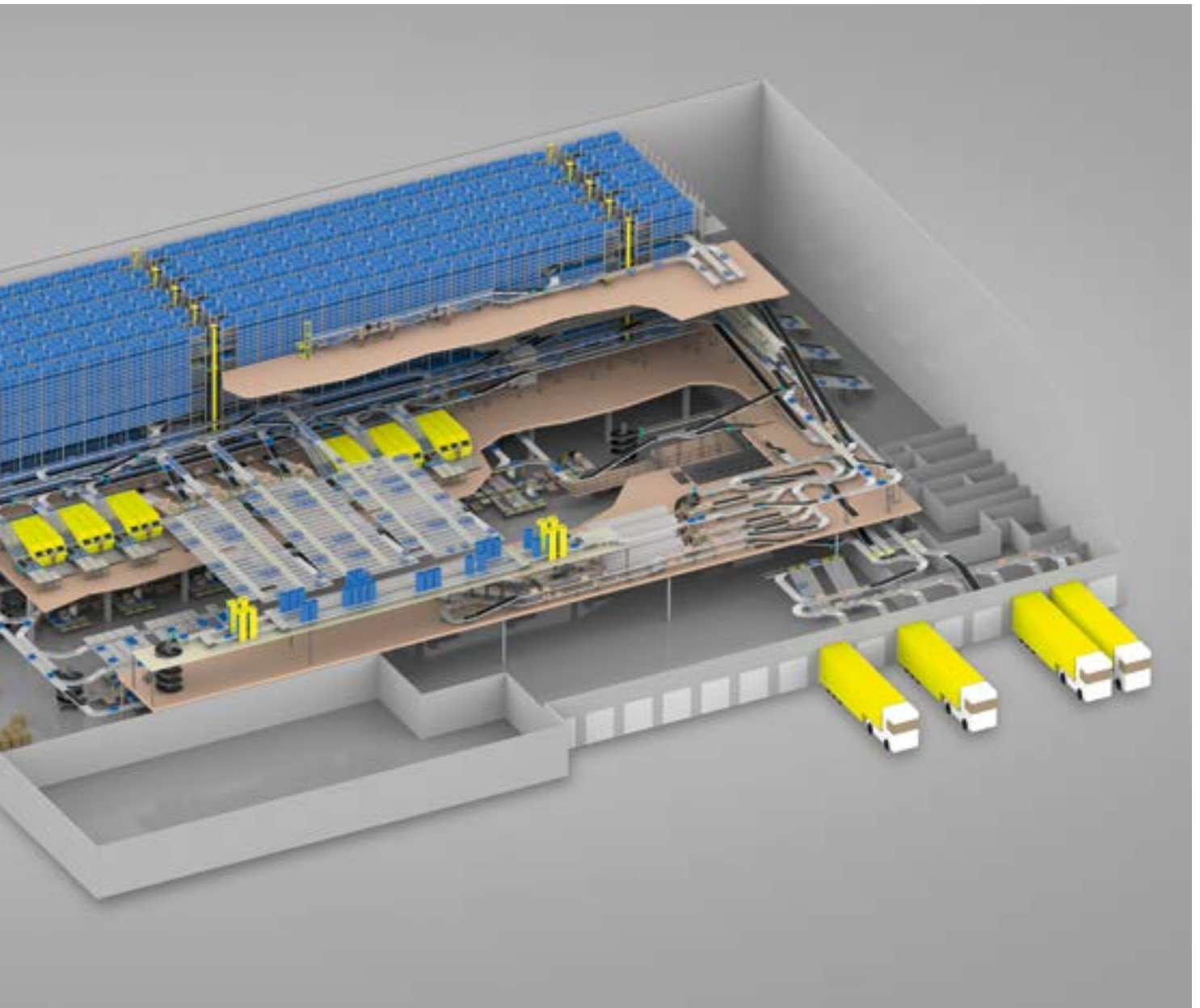


Powerful and flexible
distribution center
run by api GmbH

A dynamic shuttle management assigns the shuttles in each aisle to those areas where the highest performance is currently required, with up to two shuttles on each level.

The warehouse has been designed for 12,000 double cycles per hour. With double-deep storage of the totes of two different sizes, the system provides 128,000 tote locations. Corresponding to the three building levels, psb has installed the same number of levels with conveyor technology in the warehouse block, with six infeed/outfeed lanes for each aisle. Six integrated lifts per aisle transport the totes to the assigned warehouse level.

The number of installed LHU lifts and conveyors as interface to the warehouse significantly increases the redundancy and thus the availability of the stored merchandise. Each load handling unit (LHU) can be transferred to the lifts by several shuttles and transported out of the warehouse by connecting conveyors. Through an intelligent safety concept, the respective storage aisle largely can still be used also during maintenance access, even if individual levels or lifts are deactivated.



Efficient zero-error order picking

The orders are processed by two groups of three *rotapick* high-performance order picking systems each. These systems are connected with the warehouse by two separate loops to the infeed/outfeed lanes. The target totes are located inside the three *rotapick* disks, with each disk holding twelve totes. On a feeding lane, the source totes move laterally to the *rotapick* units, which are designed for 750 picking operations per hour. At that position the totes are sorted according to sequence and presented to the picker.

psb installed control points in the plant, so that picking errors are avoided and the orders are processed correctly. At the pick position the source totes are weighed before and after the picking process; weight deviations already from a few grams are detected. The totes are weighed also on the conveyor system and the data for the individual totes are transmitted to the warehouse management prior to storage. Through this accurate recording of data the correct weight of the contents of all totes is available. By means of the stored article data, deviations can be identified immediately and, if necessary, corrected.

COMBINED WORKPLACE **PACKAGING & FINAL CHECK**





← Control center with psb *selektron* WMS and *selektron* SCADA for controlling and monitoring the intralogistics system installation

The psb concept for api includes combined goods-in and packaging workplaces: at the beginning of the day almost all workplaces are used for goods-in processes. The closer the end of order entry or cut-off times, the more workplaces are used for packaging. The maximum shipping capacity of 58 combined workplaces is then 1,400 parcels per hour. By this double utilization and the smaller number of workplaces, psb reduces the required space and thus the implementation and operating expenses.

Scalability of Multi Access Warehouse

On account of the very high throughput requirements and the special dimensions of the load handling units specified by the customer, psb has significantly enhanced the conveyor technology components. Both order picking areas are supplied via two conveyor loops. The load is carried in totes (680 x 530 x 220/320 mm) which were designed by api especially for that purpose. These special containers are moved with a machine output of 2,900 LHUs in both loops.

In addition to this approach, a modified version of the conveyor system is operated for the mixed handling of special api containers and LHUs of 800 x 600 mm.

Thanks to the easy expansion of the Multi Access Warehouse, api can react most flexibly to the company's dynamic development. The storage capacity and the performance can be enhanced by simply adding further tote lifts. Already at the beginning of the project, the concept provided for an increase to up to 192,000 storage locations in the originally realised building.

The same applies to the adaptation of the storage capacity with six aisles and 48 lifts to 32,400 double cycles per hour. The order picking output, too, can be raised to 18,000 pos/h by adding 12 *rotapick* units, which is three times higher than the basic performance. A further option is to integrate an additional 90 packaging stations and fully automatic packaging machines.

CREATING YOUR
INTRALOGISTICS.

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