

# Modules cleverly combined: WAVE

**Compact and flexible shuttle warehouse for large-volume goods on Euro pallets.**

**If large-volume goods, e.g. furniture and white goods, are to be stored on Euro and industrial pallets in a space-saving manner and a high throughput is required for automated storage and retrieval, the innovative solution concept of Volume Lagersysteme GmbH is an alternative for warehouse operators. The modular WAVE shuttle system can be integrated to fit both existing and new logistics halls.**

Limited capacities, lack of resources and constantly rising operating costs are forcing companies to put their warehouse logistics to the test. Highly compact systems are in demand, with which the hall volume can be utilized in the best possible way, both in new buildings and in existing properties. Against this background, Volume Lagersysteme GmbH has brought a completely new, fully automatic and always scalable shuttle system for pallets to market maturity.

The patented proprietary development of the start-up from Dresden combines the compactness of channel warehouses with the flexibility of shuttle warehouses. With increased storage space density, this system solution requires up to 40% less space and consumes less energy compared to wide aisle/narrow aisle warehouses and warehouses with storage and retrieval machines (SRM). At the same time, the performance is comparable to that of a RBG automatic warehouse, and in contrast to the channel warehouse of common design, individual access to each pallet is possible.

Volume WAVE can be used as an order picking warehouse, a replenishment warehouse or a sequence buffer. Central system components are transfer carriages (ferry) at the head of the rack, which accommodate the shuttle vehicles (rover), docking stations and conveyor technology for transfer to the lifters. The shuttle carriages can also be used to temporarily create temporary aisles for individual access, which can be closed again directly. This means that the parking spaces are also easily accessible for service personnel, who can intervene ad hoc if problems arise and restore the availability of the plant.

**High availability and individually adaptable throughput performance.**

For Mikhail Voloskov, founder and managing director of Volume Lagersysteme GmbH, the high degree of space utilization of the system, which couples shuttles with the principles of a mobile racking system, is a particularly convincing argument: "The high storage density is also an advantage when companies want to be close to their customers in conurbations and shorten transport times. A large-scale high-bay warehouse far away in less densely populated regions is not necessary. Instead, smaller buildings are simply erected in the midst of well-developed infrastructure without having to reduce the number of storage spaces. The higher land or even rental prices are thus compensated."

The freely configurable pallet shuttle system can also be integrated into existing properties with heights between 4 m and 40 m. Load heights of up to 2.5 m are possible, with weights of up to 1,200 kg. Once installed, the number of lifts and shuttle vehicles can be successively increased as business volumes increase and adapted to new performance requirements. For example, when using two lifts and one shuttle per level, it is already possible to generate a throughput rate of 210 pallets per hour. With four lifts and two shuttles per level, this performance increases to 380 units per hour. Drives, lifts and shuttles are equipped with an energy recovery system, and intelligent sensors continuously monitor the environment so that collisions are ruled out.

### **Completely new, solid design principle.**

Also in view of the experience gained in pandemic times, automation will become increasingly prevalent in the area of storage, order picking and goods provision. Personnel-intensive processes in the course of order processing, which are associated with long walking distances and high search efforts, are eliminated. Consistently high performance is achieved, which is not impaired by mishandling, downtime and waiting times. A 100% delivery capability and adherence to delivery dates are also of immense importance, especially for companies that are expanding their sales channels to include e-commerce offerings that have to function according to the rules of "same or next day delivery".

"Without wanting to chase a trend, we originally looked for a niche where there was a demonstrable need for action," Mikhail Voloskov reports further. "Intralogistics components have been continuously developed in terms of performance, but the number of actual innovation achievements is manageable. Volume WAVE, on the other hand, is completely new due to its space-saving design principle based on channel storage and innovative cart technology. While channel storage systems for the compacted stocking of containers have long been the norm, it is now also possible to stock pallets as compactly as never before and provide them in an automated manner."

### **Ideal also for existing buildings and near metropolitan areas.**

Voloskov and his team of developers were also driven by the idea of finding an answer to the question of how a fully automated warehouse could be efficiently integrated and operated in metropolitan areas, where ideally not a single centimeter of space should be wasted due to land and rent prices. The keyword here is urban warehouse or micro-fulfillment - a concept that is being examined in particular by retailers who would like to provide their fulfillment services in the immediate geographical vicinity of the customer in order to further improve the user experience. However, the focus was also on logistics service providers who have largely exhausted their capacities and are confronted with the challenge of serving growing customer requirements within existing and thus limited infrastructures. There were often limits to this, especially at the pallet level, as precisely fitting solutions were not available on the market.

With the Volume WAVE, it is possible to handle even large-volume goods, such as furniture, white goods and parts from DIY stores and garden centers, automatically on pallets in a comparatively small area. Freed-up space in the inventory can be put to productive use elsewhere. Another interesting feature, especially for online retailers, is that the WAVE system can also be used as a sequence buffer to prepare goods for tours overnight for the next day. In the case of the "urban warehouse", the e-commerce motto "ordered today, delivered tomorrow" is also supported by the fact that there are no longer any long transport routes over the last mile. In the end, the stationary business in the vicinity also benefits from accelerated delivery.

### **Modular, preconfigured assemblies and in-house testing.**

The system can also pay for itself in new buildings, whether on greenfield sites or in metropolitan areas: Operators save space and reduce operating costs without having to compromise on capacity and performance. In addition, the dimensions of the system can be adapted to the business development of a company at any time. The consistent use of modular design and the fact that most of the components are manufactured in-house shortens the implementation project time. Functional reliability and speed during commissioning are ensured by pre-assembled modules and preliminary tests at Volume Lagersysteme's headquarters in Dresden. There, the Volume WAVE can be viewed and inspected in live operation.



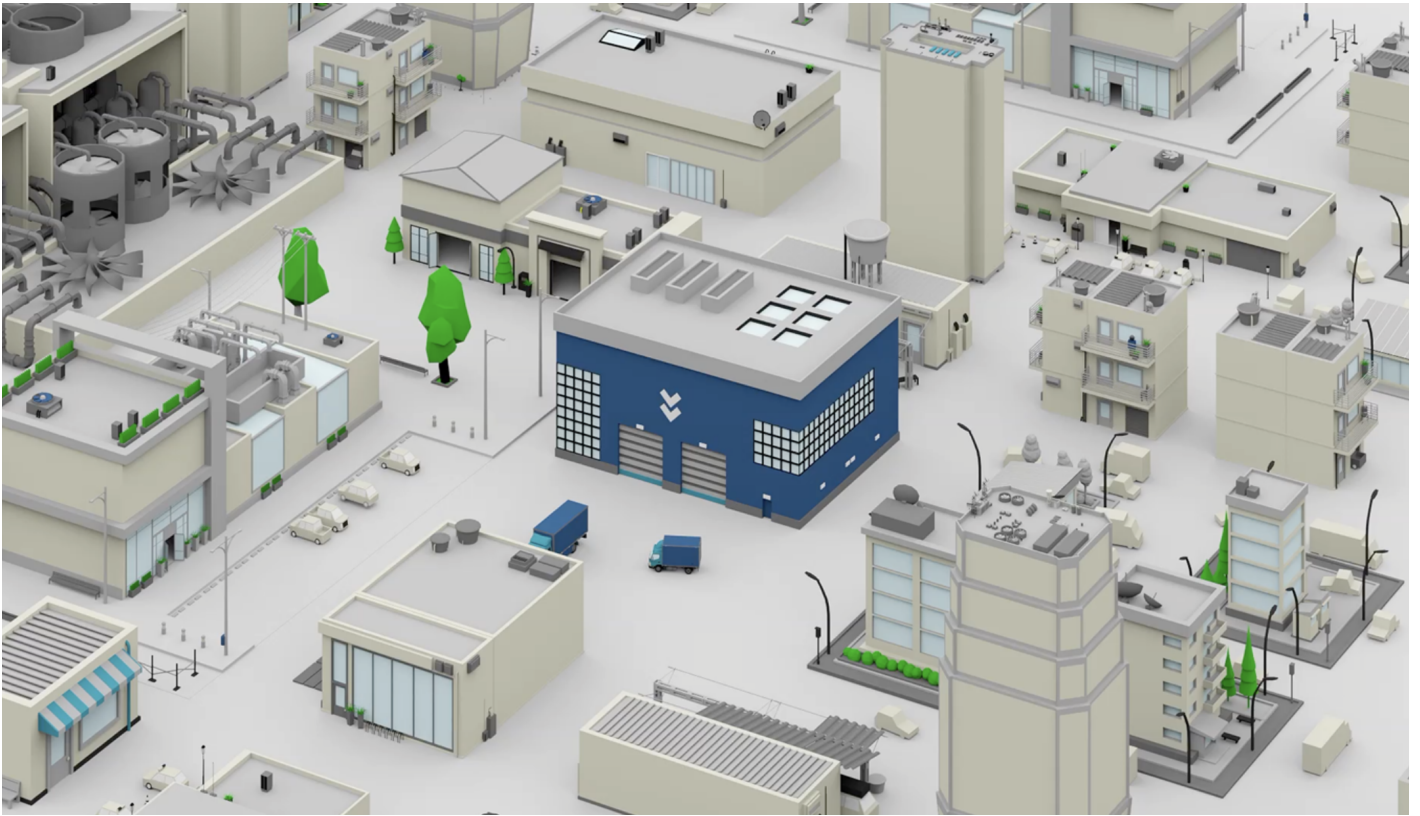
The core element of WAVE is a rail-guided shuttle, which - equipped with a gripper system - stores and retrieves the pallets (see also illustration of the operating principle under [www.youtube.com/watch?v=x5fkJfUKwY4](http://www.youtube.com/watch?v=x5fkJfUKwY4))



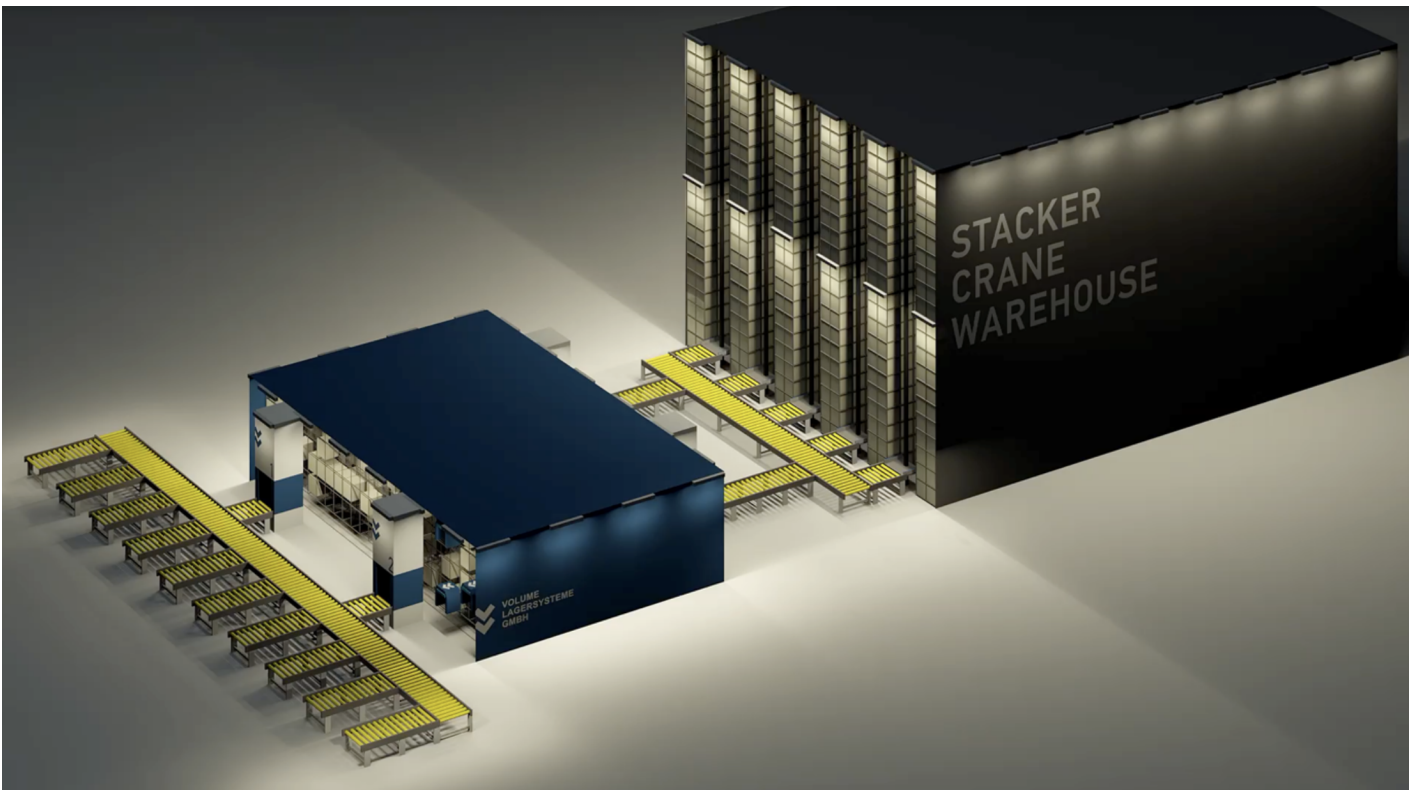
With the aid of the transfer carriage (r.) at the head of the rack, the picked-up shuttle (l.) is positioned and can then enter the channel directly



When picking up the load carriers, the gripper arms lower and swivel by 90 % under the pallet



Example of use „Urban Warehouse“



Example of use „Sequence Buffer“