

Automated high-bay warehouse with tailor-made material handling technology for Mayr-Melnhof Holz in Leoben.

The Mayr-Melnhof Holz Group with its head office in Leoben, founded in 1850, is one of the European market leaders in sawn timber and wood processing with around 2.000 employees at seven locations.

Being the economic engine of the timber industry, market leader in the glued-laminated timber segment and driving force in the advance of cross-laminated timber - the increasingly popular building and construction material - the long-established company relies on advanced, efficient solutions for the expansion and modernisation of its plants.

At the Leoben site, the headquarter of the corporate group, a modern, cutting-edge intralogistics solution with an automated, 3-aisle high-bay warehouse with conveyor systems, packaging and shipping zones will be deployed.

HÖRMANN Logistik developed a sophisticated concept based on the specifications of the planning specialist Xvise. On this basis, HÖRMANN Logistik was awarded general contractor for delivery of this custom intralogistics solution.

The concept

The new high-bay warehouse (HRL) as well as the logistics and loading hall are built on a plot of land right next to the production halls. The conveyor system moves the timber packages from the sorting and planing plant to the high-bay warehouse. The three-aisle high-bay warehouse serves for intermediate storage and order-related retrieval of the timber packages. The next step is the sequence- and tour-specific compilation, packaging and stacking. A transfer cart transports the packages to the staging lanes next to the trailers in the loading hall.

Flexible and gentle material flow with innovative modular belt conveyor technology

The loading units are bundled lumber packages with dimensions of up to 5.2 m long, 1.27 m wide and 1.30 m high, weighing up to 3,200 kg. HÖRMANN Logistik uses innovative modular belt conveyor technology with integrated rollers for packages with and without squared timber for safe and material-friendly transport of the packages. All packages are subject to weight and contour checks when they are taken over from the sorting and planing line.

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The timber packages from the sorting and planing plant pass through the inspection and go to the pre-zone of the high-bay warehouse. Packages are positioned in the centre of the stacker crane, enter the warehouse at the storage spur according to their length. The camera-based compartment fine positioning enables the storage-retrieval machine (SRM) to approach the storage channel with pinpoint accuracy. The two satellite vehicles of the SRM lift the package, move it out synchronously and place it on the assigned storage location of the triple-deep racking compartments. To avoid empty runs, the HiLIS Warehouse Management System immediately assigns a retrieval order to the SRM controller.

Order-based sequencing and gantry robot station for stacks of three and four parcels

Retrieval of the timber packages from the warehouse is executed according to accurate sequencing and routing algorithms. The conveyor system accommodates additional buffering capacities for further sorting flexibility. A robot places squared timbers under the package. After that strapping, foil wrapping and stacking is performed according to customers' requirements.

One robot station may produce one stacked load unit at a time, consisting of up to four packages (two side by side and two on top of each other) for truck loading. For packages without squared timbers, at this point it is also possible to insert intermediate timbers for safe stack formation. A transfer cart brings the stacks to one of five staging lanes, where a full wagonload lot can be staged at a time. Semi-automatic loading cranes at the staging lanes pick up the stacks with forks and lift them onto the trailer.

On the adjacent side, the high-bay warehouse has retrieval stacks in each aisle for internal package supply. In this process the system retrieves sawn timber packages and feeds them to the cross laminated timber plant by means of another transfer cart.

Intelligent intralogistics strategies with Warehouse Management System HiLIS

Warehouse management, plant control and plant visualisation use HÖRMANN's proven logistics Warehouse Management System HiLIS, communicating with the customer's systems via flexible interfaces. For order-related retrieval, HiLIS receives customer orders from the ERP system, including detailed stock information. HiLIS creates optimized proposals for the trailer load, subject to item numbers, package dimensions, trailer loading schemes and boundaries, loading weight and loading period. The Mayr-Melnhof Holz operational staff has the possibility to review, confirm and modify this proposal. HiLIS then determines the retrieval sequence, packaging and stacking programs as well as the transport to the truck loading staging lanes. After successful loading, a HiLIS confirmation message flags the lane ready for the next loading job.

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Facts

HÖRMANN Logistik's scope of supply includes steel rack construction, roof and wall cladding, stacker cranes, KLATT conveyor technology, fire doors, high-speed doors, robots, package stackers, strapping machines, automatic sawing machines, labellers, inkjet labelling, loading crane and the HiLIS warehouse management system including PLC system control and visualisation.

- Three-aisle high-bay channel warehouse
- 3 two-mast SRMs, equipped with two synchronous satellite vehicles
- Overall dimensions warehouse: 125 x 33 x 35 m (L x W x H)
- Storage capacity approx. 7.623 storage positions
- Storage and retrieval performance: min. 62/71 packages/h
- 24/7 operating time

Assembly will start in October 2021, commissioning is scheduled for December 2022.

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