

CASE STUDY

ALNATURA LORSCH, GERMANY



IN HARMONY WITH NATURE: A MODEL HOLISTIC LOGISTICS CONCEPT

CUSTOMER AND REQUIREMENTS

Alnatura Produktions- und Handels GmbH headquartered in Bickenbach, Germany takes holistic thinking and behavior very seriously. Established in the 1980s as a brand that values sustainability, Alnatura represents organic foods, cosmetics and textiles. 6,000 organic products – from apple juice to zwieback – are available in the Alnatura online store, from selected retail partners and in over 120 company-owned supermarkets in Germany and throughout Europe. A partner network of nearly 2,900 employees working in close alliance with numerous certified organic farmers and producers forms the backbone of the business.

"Profit is not the purpose but the result of meaningful action," states Alnatura founder and CEO Prof. Dr. Götz E. Rehn, underscoring the ethics of his company which does things differently. "It is acting in a way that benefits the earth instead of harming it and focusing on human beings." Consumers appreciate

this concept and have helped Alnatura achieve steady growth over the years. Net sales totaling 762 million euros (2015/2016 fiscal year) and a number of business awards speak for themselves. In 2014 and 2016 alone, Alnatura won the German Sustainability Award, the B.A.U.M Environmental Award and the Golden Sugar Hat and was voted "Germany's Favorite Food Brand" and "Germany's Best Employer."

ATTENTION-GRABBING WAREHOUSE

Some of the products carried by the full-range organic retailer are distributed by regional wholesalers and organic farmers and bakers, but the majority is shipped centrally from its distribution center in Lorsch. Located in the German state of Hessen, just like the company headquarters, Lorsch has been an important logistics site for Alnatura for many years. To accommodate its steady growth, Alnatura decided to expand its operations there.

In 2012, Alnatura made the decision to build

a high-bay pallet warehouse for dry goods. Completed in 2014, the project grabbed attention from the start: Built entirely from wood, it was touted as the largest wooden high-bay warehouse in the world. Two years later, it became necessary to expand the small parts logistics operations. This was followed by construction of a shuttle system with state-of-the-art management and control capabilities, which went live in 2017.

FUTURE-PROOF

Swisslog was in charge of the overall planning and implementation. In line with Alnatura's ethical principles, Swisslog implemented a concept that combines future-proof technologies with ecological requirements. Heinz Ennen, CEO of Swisslog GmbH in Dortmund, states: "The Alnatura project encompassed not only the warehouse and conveyor technology but also its software architecture. Milestones included the construction itself as well as a sophisticated energy concept." This reflects the organic retailer's desire to be a model of sustainability.



Constructed in line with ecological principles, the high-bay warehouse can accommodate 31,392 pallets.

THE SOLUTION

The Alnatura logistics project in Lorsch includes an automated high-bay pallet warehouse and a shuttle warehouse for light goods. Each intralogistics installation is autonomous and controlled by a separate warehouse management system. The wood construction of the high-bay warehouse and the state-of-art technology in the shuttle warehouse make this project groundbreaking and unique. For the first time ever, Swisslog incorporated 3D visualization into the management and control system.

AUTOMATED HIGH-BAY WAREHOUSE

The automated high-bay warehouse (HBW) holds more than 2,900 different organic products from Alnatura, mostly durable goods such as grains, pastas, convenience products, spices and cooking oils. The 9,700 m² facility has 31,392 pallet locations. The nine-aisle HBW is equipped with nine low-consumption and energy efficient Swisslog Vectura stacker cranes. Pallets are stored two deep. The Vectura stacker cranes are connected to a 420-meter ProMove pallet conveyor system from Swisslog and other peripherals.

ALL-WOOD CONSTRUCTION

The high-bay warehouse is not constructed of steel, as would be typical, but of wood sourced from sustainably managed forests

Approximately 5,000 m³ of PEFC-certified (Programme for the Endorsement of Forest Certification Schemes) spruce and larch lumber from Germany, Austria and the Czech Republic were used. The silo-like building is an eight-story structure with 65,570 linear meters of shelf supports, a height of 19 meters and a length of 118 meters. The facade is also made of certified larch wood.

ENVIRONMENTALLY FRIENDLY

In spite of a rack height of 19 meters, the impressive building rises only 17 meters from its surroundings. The reason: The base slab was sunk 2.5 meters into the soil. This has a radiating effect on the entire base area, with the generally constant soil temperature of 10°C helping to offset above-ground temperature fluctuations in winter and summer. Because of this effect combined with good insulation, the warehouse does not need any additional heating or cooling. Only an attached building has an air-to-water heat exchanger for cooling while the adjacent office building uses geothermal heating. Solar panels on the roof complete the environmentally friendly design along with 3,800 m² of surrounding green space and rainwater infiltration areas.

The WM 6 warehouse management system from Swisslog controls the automated high-bay warehouse. Digital functions can be added if needed (upgrade to the SynQ level) to meet Industry 4.0 requirements.

DYNAMIC SHUTTLE WAREHOUSE

Small-volume, durable items, especially health and beauty products, are stored in bins in a shuttle system. Alnatura opted for the innovative CycloneCarrier introduced by Swisslog in 2016.

The warehouse has 14,248 storage locations, with two aisles and 19 rack levels. Three picking and two repacking stations as well as a shipping bin palletizing station are installed at the periphery. 32 high-speed shuttles traveling at up to four meters per second can handle up to 800 in- and outfeeds per hour. "We are happy to finally have a highly dynamic shuttle solution," says Matthias Lindner, Department Head for Logistics Service at Alnatura. "CycloneCarrier is the heart and growth engine of our logistics service."

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**Matthias Lindner, Department Head
Logistics service at Alnatura**





CycloneCarrier in use: The high-speed shuttle travels at up to 4 m/s

WAREHOUSE MANAGEMENT WITH SYNQ

Just like in the high-bay warehouse, a Swisslog solution is used for automated

control of the CycloneCarrier system – in this case SynQ. Launched by Swisslog in 2017, this software platform offers extensive warehouse management and control capabilities. SynQ is modular in design and provides predictive intelligent warehouse

management. If desired, intelligence services can be added to the standard warehouse management functionality. These smart services in line with Industry 4.0 increase the operating efficiency and comfort of automated warehouses.

FACTS AND FIGURES AT A GLANCE

Automated high-bay pallet warehouse

Year of commissioning	2014
Capacity	31 392 storage locations for Euro pallets, double depth, 9 aisles, 9 Vectura stacker cranes
Special rack structure	constructed of 5,000 m ³ of PEFC-certified spruce and larch lumber, 8 levels, 65,570 linear meters of shelf supports
Periphery	ProMove pallet conveyor system, 1 picking robot
Max. throughput	205 infeeds and 193 outfeeds per hour

CycloneCarrier Warehouse

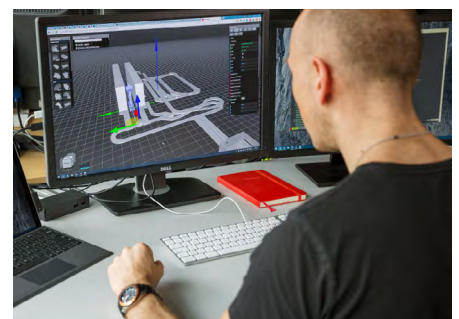
Year of commissioning	2017
Capacity	14,248 storage locations for bins, double depth, 2 aisles, 32 shuttles
Periphery	3 picking workstations, 2 repacking workstations, 1 palletizing station
Max. throughput	800 in- and outfeeds per hour
Speed shuttle max.	4 m/s

Software

Warehouse Management System	Swisslog WM 6 und SynQ
User interface	SPOC (Single Point of Control)
Add-on module	3D visualization

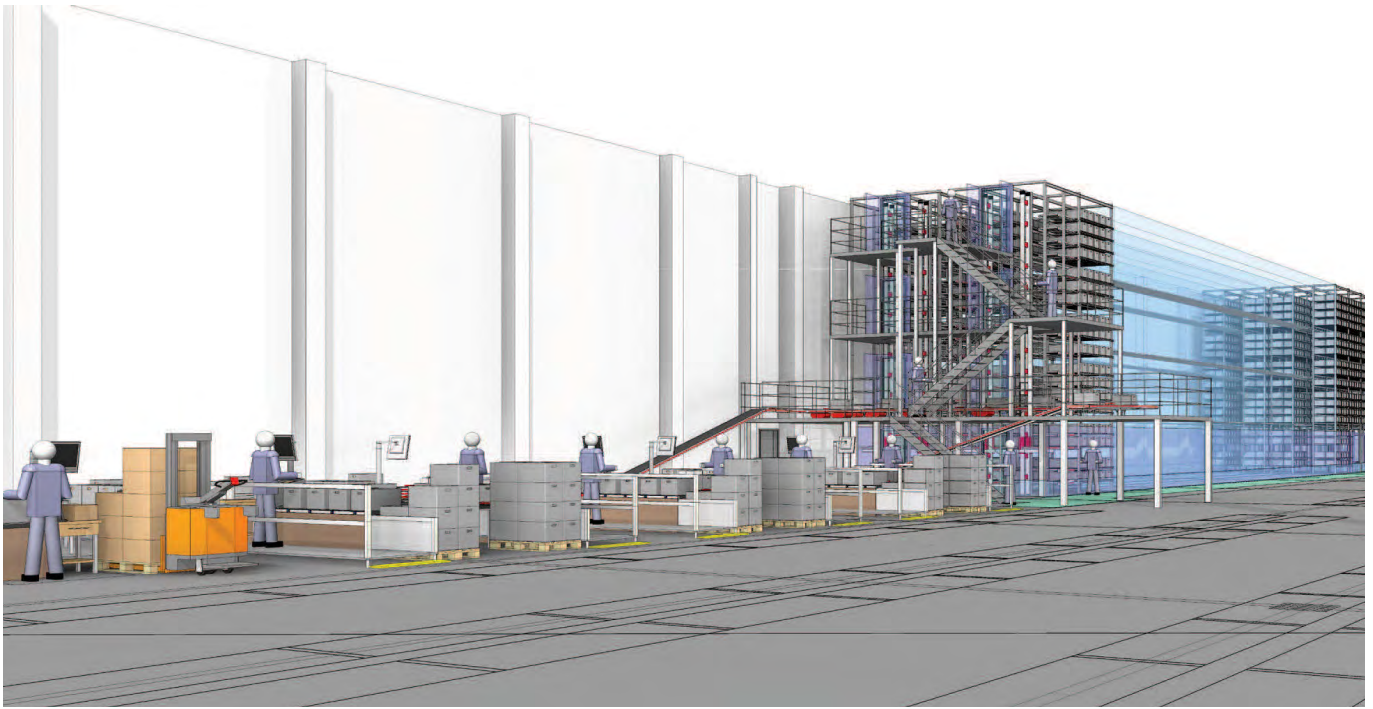
3D VISUALIZATION

For Alnatura, Swisslog implemented the 3D visualization intelligence service – a three-dimensional screen representation of the CycloneCarrier warehouse based on a specially developed web application. It supports viewing and monitoring the warehouse and its material flows in real time. "What makes 3D visualization so special is an even better view of the warehouse," explains Swisslog software engineer Oliver Rickert, IT project manager for the Alnatura installation. "Instead of displaying one warehouse level after another in 2D, the 3D software can show



Spatial representation of the warehouse.

the entire system on just one screen. Zoom functions are available to enlarge individual sections." This makes detecting errors easier and allows users to identify free storage locations.



CycloneCarrier system: Space for small parts articles in bins

SUMMARY AND OUTLOOK

"Swisslog delivered solid planning for our logistics system and built it quickly and reliably," sums up Alnatura expert Matthias Lindner. "The system allows an efficient flow of goods from receiving, storage and picking to shipping and delivery to our stores." Supplemented by state-of-the-art software components, Alnatura is well equipped to handle future challenges. Capacity can

easily be expanded at any time – both in terms of technology and software, such as additional Industry 4.0 applications. Comprehensive data collection makes targeted predictive maintenance truly possible, saving resources and protecting the environment. The organic retailer's motto applies not only to its products, but also to its logistics operations:

"Alnatura – good for people and the earth."



Alnatura's high-bay warehouse in Lorsch is built from certified wood.

BENEFITS

- Future-proof material flow technologies consistent with ecological requirements
- Sophisticated overall intralogistics and construction concept
- Energy-optimized and sustainable
- Highly dynamic solution with expansion options to move toward Industry 4.0

SWISSLOG SERVICES

- System design, engineering, simulation, implementation and integration of an HBW as well as a CycloneCarrier warehouse
- Warehouse management and system visualisation, incl. 3D
- User training, after-sales service, maintenance and support