

## INDUSTRY 4.0 CASE STUDY

## ALNATURA LORSCH, GERMANY



## DIGITALIZATION IN EMERGING LOGISTICS

### CUSTOMER AND REQUIREMENTS

Alnatura Produktions- und Handels GmbH, headquartered in Bickenbach, Germany, distributes organic foods, personal care items and textiles. The producer, wholesaler and retailer carries approximately 6,000 items, has 2,700 employees and generated €762 million in revenue in fiscal year 2015/2016. Although it has been a successful player in the market for 30+ years, Alnatura had no warehouse logistics of its own to speak of until 2010. Previously, manufacturers delivered their products directly to the organic food pioneer's commercial partners and stores until this was no longer practical. At that point, Alnatura decided to build a logistics center in Lorsch in the German state of Hessen. Swisslog was the general contractor in charge of planning and implementation.

### SUSTAINABILITY AND CUTTING-EDGE TECHNOLOGY

Alnatura's logistics center skillfully combines originality with state-of-the-art sustainability and cutting-edge technology. It also includes digitalization solutions that pave the way for Industry 4.0. Swisslog asked Matthias Lindner, Alnatura's deputy director

of logistics, to share details about the new logistics center.

### INTERVIEW WITH MATTHIAS LINDNER



**Swisslog:** Mr. Lindner, Alnatura carries natural products like cereals, baked goods and organic drinks, to name just a few. All that sounds very down-to-earth. Where do digital solutions fit in?

**Lindner:** Just because we stand for natural products and a back-to-our-roots approach, it doesn't mean that we can't be progressive at the same time. In fact, Alnatura has always embraced new trends without putting our deep commitment to sustain-

able business practices at risk. We welcome digitalization, especially where efficiency is crucial. That applies not only to logistics but to our entire corporate structure as well.

**Swisslog:** Do you pursue a proactive digitalization strategy at Alnatura or have market changes prompted you to make the necessary changes?

**Lindner:** We do respond to market requirements, of course. For instance, we launched an online store several years ago as an extension of our brick-and mortar business. But we are also proactively developing digitalization solutions. We are trying to figure out how customers will want to shop and communicate with us in the future, what form this will take, and how we can make data transfers within our company even more efficient.

**Swisslog:** What does digitalization mean for your intralogistics operations and what progress have you made toward your strategic goals?

**Lindner:** Fortunately, our intralogistics system is relatively recent so we aren't weighed down with old baggage. From the start we have been able to create state-of-the-art structures and shape them according to our





Alnatura's high-bay warehouse: combining natural construction materials and sophisticated technology.

ideas and needs. In early 2010, we still relied on purely manual operations. However, in 2014 we commissioned an automated high-bay pallet warehouse, followed in 2017 by the installation of an automated miniload shuttle warehouse. Powerful software manages and controls everything. Every product movement is meticulously recorded, every process step digitally logged. Our workflow is paper-free from the beginning, assisted by scanners. Robotics helps us with palletizing, picking, and labeling.

degree of process reliability possible. That means seamless tracking, detailed root-cause analysis, for example if a pallet gets lost, as well as continuous productivity and performance metrics.

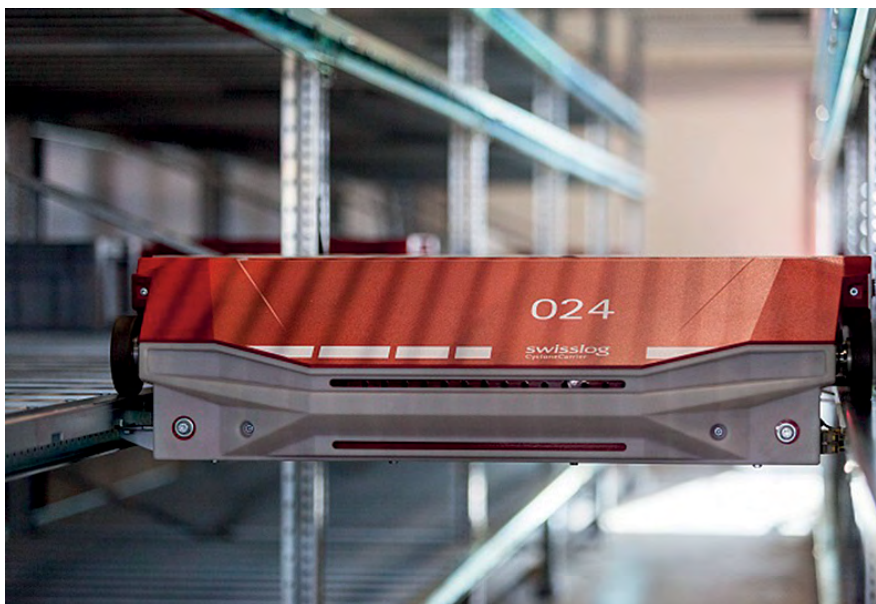
**Swisslog:** Given this high degree of automation and digitalization, Alnatura is obviously well on its way towards Industry 4.0. Has Swisslog helped you on this journey, and to what extent?

shuttle system's 3D visualization. Seeing the entire warehouse on the monitor is very helpful. Swisslog's digital expertise is superb, in our opinion, especially since KUKA, Swisslog's parent company, is taking intralogistics to the next level with its robotics capabilities.

**Swisslog:** Are you planning additional steps to further advance digitalization at Alnatura?

**Lindner:** Digitalization is not static; it is dynamic. We're definitely in favor of data-driven solutions wherever they can drive improvements. In the near term, for instance, we want to purchase a second picking robot for our pallet warehouse to help take the burden off our employees. We are also working on a cloud solution for communicating with our suppliers. We want to use this system to save past order data and resulting forecasts so we can determine the timing and quantity requirements for certain organic products. This data makes it easier for our suppliers to plan their own purchasing and inventory. Some foods are in short supply, for example hazelnuts and almonds. Being able to act with foresight helps us a great deal.

**Swisslog:** Thank you for taking the time to talk with us, Mr. Lindner!



The high-speed shuttles of the CycloneCarrier system travel at 4 m/s.

**Swisslog:** What are your overall goals?

**Lindner:** Our strategic goal is to identify optimization potential from the wealth and variety of data and then take appropriate measures. By and large, we want the highest

**Lindner:** Swisslog has a substantial stake in our digital structure. Swisslog implemented the high-bay pallet warehouse, the CycloneCarrier shuttle warehouse, and most of the controls. We are also the first customer to benefit from a new software service: the





An attention-getter: logistics in wood.

## SOLUTIONS

The Alnatura logistics facility in Lorsch consists of an automated high-bay warehouse (HBW) for pallets and a shuttle warehouse for light goods as well as adjoining peripherals such as conveyors, robotics, and material handling devices. State-of-the-art software systems enhanced with intelligent services handle control and monitoring functions.

### AUTOMATED HIGH-BAY WAREHOUSE

The automated high-bay warehouse was commissioned in 2014. It has 31,392 pallet locations on a footprint of 9,700 m<sup>2</sup> and is used primarily for dry goods, including cereal and convenience products. The HBW is built largely with ecologically certified wood. It has nine aisles and nine highly energy-efficient Swisslog Vectura stacker cranes. The Vectura stacker cranes are connected to a 420-meter Swisslog ProMove pallet conveyor system and a KUKA picking robot.

### CYCLONECARRIER WAREHOUSE

Alnatura stores low-volume items, especially health and beauty products, in a shuttle system: Swisslog's highly dynamic CycloneCarrier. Commissioned in 2017, the warehouse has 14,248 bin locations with two aisles and 19 rack levels. Three picking and two repacking stations as well as a shipping bin palletizing station are connected to the system. 32 shuttles traveling up to four meters per second can handle up to 800 in- and outfeeds per hour.

### SYNQ SOFTWARE

Management and control of Alnatura's automated intralogistics system is handled primarily by Swisslog's SynQ software. This innovative solution, an extension of Swisslog's proven warehouse management system, is a flexible platform that connects automation systems, robotics, people and processes. SynQ has a modular design, is

improved continually, and can be configured to meet the wishes and needs of any customer. The software can be deployed as an on-premise or cloud solution.



SynQ unites three digital feature packages: Collaboration Platform, Operational Services, and Intelligent Services. It is an expertly coordinated network that is highly versatile and autonomous. The SynQ features that Alnatura uses include a material flow controller and the SPOC (Single Point of Control) user interface in the automated high-bay pallet warehouse plus a warehouse management system with 3D visualization in the shuttle warehouse.

## FACTS AND FIGURES AT A GLANCE

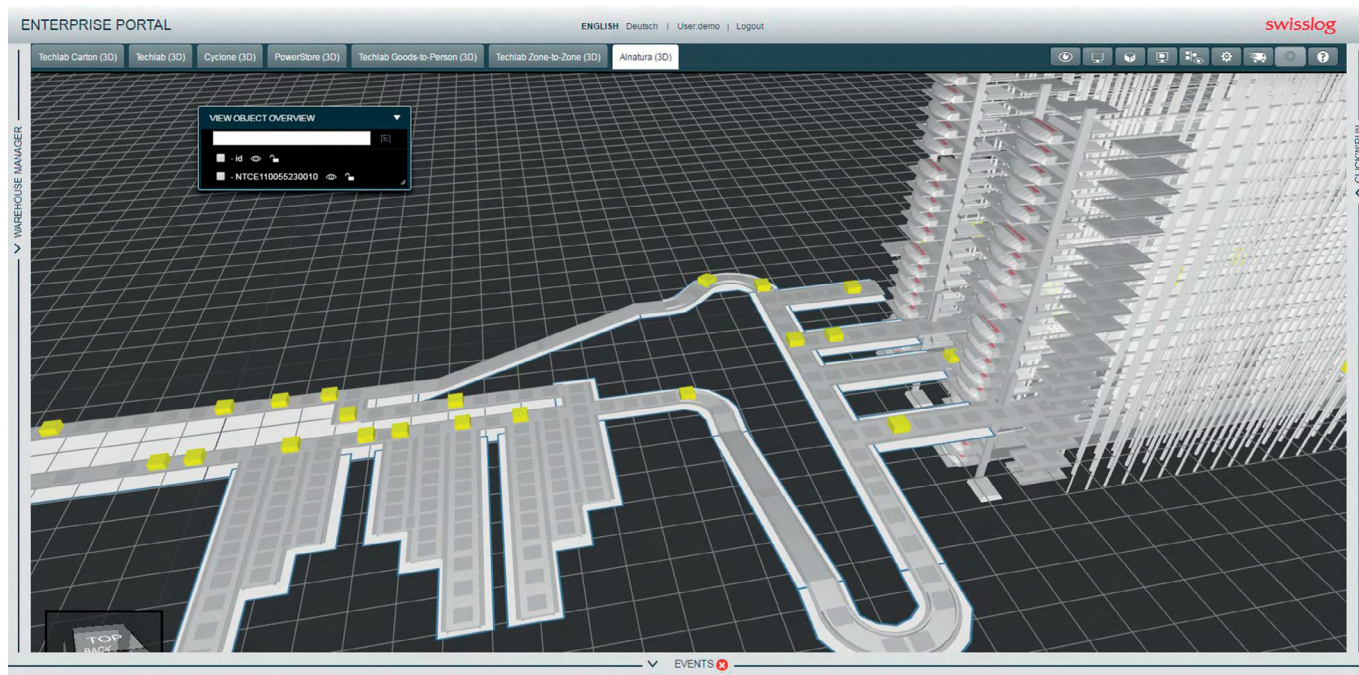
### Automated intralogistics systems at Alnatura

High-bay warehouse	31,392 pallet locations, 9 aisles with 9 Vectura stacker cranes Peripherals: 420 m ProMove pallet conveyor system
Shuttle warehouse	CycloneCarrier; 14,248 bin locations; 32 high-speed shuttles

### Digital solutions/Industry 4.0 applications

Management, Control	SynQ: MFC from Swisslog with SPOC user interface, warehouse management system from Swisslog
3D Visualization	Web application for 3-dimensional view of warehouse
Robotics	1 KUKA picking robot 2nd robot being planned

The CycloneCarrier system benefits from a new control component. In line with Industry 4.0, this enables individual machines to make their own decisions, meeting the criteria of decentralized intelligence and the Internet of Things. The SynQ control sets goals for the subsystems. Through direct communication between the machines – in Alnatura's case between the shuttles and the conveyor – operations can be adjusted and optimized to meet these goals. The result: trouble-free material flows and high performance levels.



The entire warehouse at a glance, zoom functionality included: Intelligence Service for 3D visualization.

## SINGLE POINT OF CONTROL (SPOC)

"The SPOC system features streamlined screens and reliable, intuitive operation," says Matthias Lindner, describing the features most important to him. The latest version of SPOC is used in the pallet warehouse. Aided by a uniform interface for software and control, which is also available in a web-based version, the visualization tool delivers clear monitoring views, reports for analyzing throughput data and energy consumption analyses. Other features include real-time display of material flows, fast troubleshooting and picking screens for efficient workflows. All views are two-dimensional.



SynQ is cloud-capable.

## 3D VISUALIZATION

Swisslog implemented 3D visualization in the CycloneCarrier warehouse as part of a model project in which the SynQ Intelligence Service was implemented for the first time under real-life conditions. A web application is used to create a spatial projection of the warehouse. The specific benefits: Three dimensions afford a much better view than two. Instead of displaying one warehouse level after another, the 3D software is able to show the entire system on just one screen. Zoom functions are available to enlarge individual sections.

The innovative 3D visualization makes detecting errors in the logistics system extremely easy and allows users to identify free storage locations at a glance. The visual concept ensures that even complex layouts and data analyses are presented to users in a simple way. This lives up to the promise of Industry 4.0 not only to optimize warehouse processes but also make everyday working conditions as easy and comfortable as possible for logistics employees.

## BENEFITS OF DIGITALIZATION FOR ALNATURA

- Maximum process reliability
- Seamless tracking of processes and detailed root-cause analysis
- Increased efficiency by identifying optimization potential
- Innovative 3D visualization
- Market-oriented and forward-looking

## SWISSLOG SERVICES

- General contractor for overall planning and implementation of high-bay pallet warehouse and shuttle warehouse, including software/management and control
- Commissioning and employee training, after-sales service