

CASE STUDY

ZÜGER FRISCHKÄSE AG






Higher throughput: Vertical conveyors improve the storage and retrieval performance of the three automated fresh products, frozen products, and packaging warehouses


Mozzarella keeps rolling on the road to success: For the fourth time now, supply chain automation specialist Westfalia Logistics Solutions Switzerland AG has added a large-scale extension to the intralogistics of the company Züger Frischkäse AG in Oberbüren, Switzerland. Through extension of the fresh products warehouse, the retrieval capacity of the overall system has been increased by 150 to a total of 400 pallets per hour while 700 pallet rack posi-

tions have been added to the storage capacity. The complex automated warehouse system now provides a total of 7,600 rack positions for pallets and paloxes and combines a fresh goods, frozen storage, and packaging warehouse. The long-established family company, Switzerland's fifth-largest milk processor, currently has 280 staff and uses advanced technology to secure a daily throughput of approx. 2,000 unit loads.

i

Project information

-  Food industry
Dairy & cheese manufacturer
-  Oberbüren, Switzerland
-  2021
-  7,600 storage spaces
-  4 storage and retrieval machine
-  Satellite® storage system
-  Pallets, paloxes
-  115x15x11 m (cold storage),
30x24x11 m (frozen storage),
40x34x11 m (packaging storage)

 Savanna.NET®,
TERRA WORKSTATIONS

COOPERATION – THE VOICE OF THE CUSTOMER

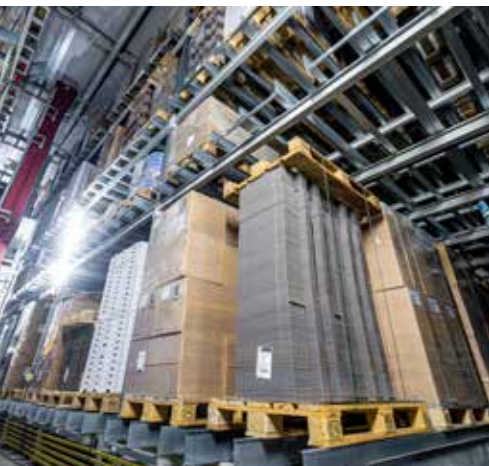
"The long-standing collaboration with Westfalia and consistent use experienced staff have proven highly effective," says Silvan Egger, project manager at Züger Frischkäse AG: "Specialist domain expertise has ensured that we got the solution that is best for us. This includes highly simplified spare parts store and consistent component availability. We have been able to smoothly integrate the new plant into our legacy system." Westfalia is a highly specialized SME with very competent employees. The company maintains a high level of manufacturing. It does not merely rely on suppliers but manufactures its own equipment; its storage and retrieval machines are robust and durable. In terms of control technology, all solutions are developed and implemented in-house together with us."



CHALLENGE

At Züger Frischkäse AG, the company know-how of cheese production is passed on within the family. The great-great grandfather of the current owners Christof and Markus Züger was already a passionate cheesemaker back in 1850. Their father, Edwin Züger, decided to manufacture the then still less-known soft cheese products instead of traditional cheese varieties. The first Züger mozzarella was ready for the market in 1984. Soft cheese products still enjoy great popularity. Therefore, both the volume and the diversity of products keep growing.

Apart from mozzarella, the company makes butter, soft cheese, mascarpone, ricotta and curds, feta-style cheese, cottage cheese, and cheese for grilling and frying. "We are also continuing to expand our line of vegan products," says Christof Züger. "The launch of the novelty Züger MozzaVella will be followed by vegan alternatives to mascarpone, salad cheese, and cottage cheese." Therefore, the automated intralogistics system has had to keep pace and undergo several extensions since 2010 – the last one in 2021.



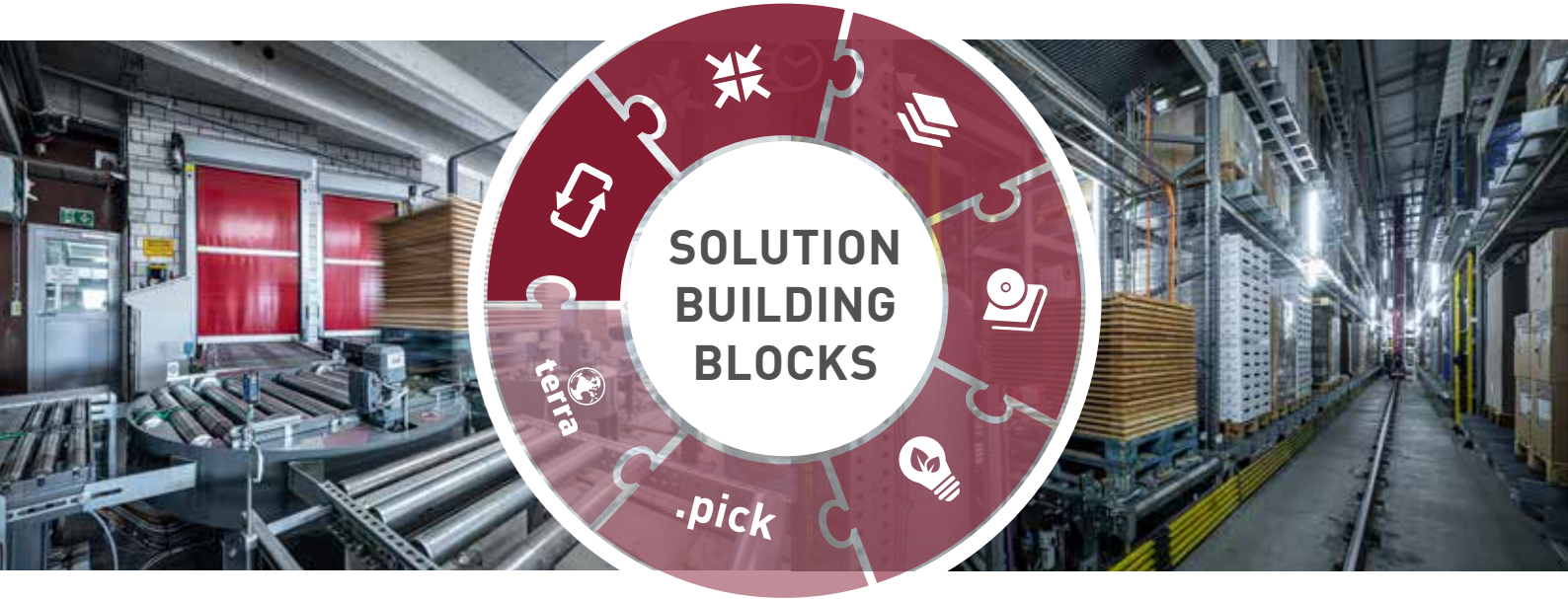
PROJECT GOALS

- > Increasing retrieval performance to logistically move the growing number of products across the facility
- > Improving storage of items coming in from production and packaging lines
- > Providing efficient and flexible storage capacity, e.g., for packaging material, in preparation of rising prices, raw material shortages, availability, and longer delivery times
- > Using the extension for additional storage capacity
- > Creating data security for warehouse management and to eliminate errors
- > The aim is for all three integrated warehouses (cold, frozen, and packaging storage) to benefit from the extension



SOLUTION

In 2010, 2012, and 2014 Westfalia planned and implemented a fresh food warehouse with 2,500 pallet rack positions, a frozen goods warehouse with 1,400 rack positions, and a packaging with 3,000 rack positions. A total of four storage and retrieval machines ensure daily throughput of approx. 2,000 load units. The storage system uses the limited space available on what used to be the roof of the building. In 2021, two vertical conveyors were added to the six existing ones in order to increase the retrieval performance by 150 to 400 pallets per hour. The extension provides an additional 700 cold storage spaces.



FLEXIBLE INTEGRATION OF ALL FLOORS

Two new single-column vertical conveyors have been integrated with additional conveyor technology on five floors. The lifts are equipped with roller conveyors on turntables. That way, depending on the floor level, load units can be picked up and delivered both from the front and from the side. The vertical conveyors move at a speed of up to 90 m per minute over a lift height of 24.5 m, moving between storage on the fifth floor and the basement containing block storage facilities. Fire doors separate the adjacent wells from the five connected floors. They increase retrieval and storage performance and speed up packaging infeed.



COMPACT STORAGE SYSTEM IMPLEMENTED ON THE ROOF

The unusual layout is reflected in the high number of vertical conveyors. All three warehouses have been built on what used to be the roof of the building. Because of the limited space conditions, storage technology using the Satellite® load handling device was mandatory since this technology can be fit even into very limited floor space. The intralogistics processes have been automated and since 2010 all temperature zones have been successfully commissioned at one client site. Westfalia has analyzed the entire storage, picking, and shipping process so that the overall design allows for cost-efficient future extensions.



MULTI-DEEP STORAGE, MAXIMUM SPACE UTILIZATION

Satellite® technology allows particularly dense storage. With 18 storage spaces in a row, the storage channels in Züger's packaging warehouse are among the deepest Westfalia has ever implemented. In these channels, the Satellite® moves up to 25.6 m away from the storage and retrieval machine. These channels are highly suitable for single-variety items or items which need to be accessed only with medium frequency but use around 95 percent of the space for storage.



CUSTOMIZED COMPONENTS INCLUDING SOFTWARE AND PLC

The system is designed for wooden and plastic Euro pallets, for plastic paloxes and for unit loads measuring up to 1.30 m in width, 0.90 m in depth and 1.80 m in height. In cold and frozen storage, pallets can weigh up to one ton while the packaging material units can reach a weight of up to 250 kg each. Westfalia has integrated all components which form part of its storage systems, including its proprietary Programmable Logic Controller (PLC) and its Satellite® key technology; including roller beds, roller conveyors, chain conveyors, turntables and two transfer cars which supply the pick location on the first floor.



USING LESS VEHICLES MEANS LESS ENERGY CONSUMPTION AND LOWER MAINTENANCE COSTS

Each of the four storage and retrieval machines (SRM) is equipped with the Chain Satellite® load handling device and transports approx. 60 pallets per hour in double-cycle operation moving between 7,600 storage spaces. In order to double the access frequency, two SRMs run on a single rail. Each warehouse manages with one aisle. The low number of vehicles reduces energy consumption thanks to the lower base load in standby mode. With fewer individual components, maintenance requirements are also reduced.



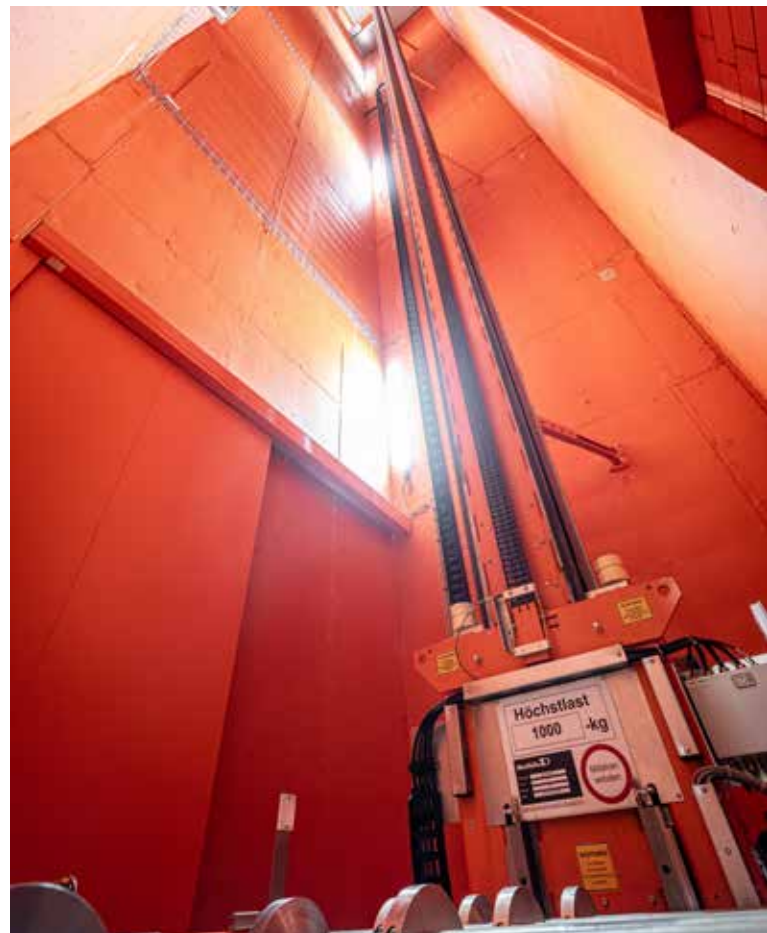
SOFTWARE CONTROLLING AND MANAGING THE STORAGE SYSTEM

Westfalia's warehouse execution system Savanna.NET® generates up to 8,000 transport orders per day at this facility. The system combines warehouse management and warehouse controlling, i.e., it administers storage spaces and warehouse stock and at the same time controls the flow of material with all project-specific features such as two SRMs on one rail or one vertical conveyor with two load handling devices on top of each other. It exchanges data with the CSB host system, fills and empties a rapid cooling zone, and supplies a pick zone and all three warehouses.



WORKSTATIONS AND CONTROLS FOR ERROR-FREE PROCESSES

Twenty TERRA WORKSTATIONS are located at feeding points throughout the entire facility. In addition, the system has been upgraded with six control scanners connected to Savanna® and the ERP system. This excludes the risk of data skews between warehouse management and material flow computer, a time-consuming error analysis is no longer necessary.



Conclusion

"The step-by-step expansion of the automated storage system on highly limited floor space drives forward the development of the company," says Silvan Egger. "Although the first warehouse was implemented as long back as 2010, we have been able to upgrade it, convert it, and bring it up to date.

This expandability has great advantages for us. The current addition of two vertical conveyors allows to massively increase our productivity. Especially in logistics, trucks no longer have to wait for their pallets."