

White Paper

# Intralogistics for Dairy Plants







# Solutions for a fast moving market

Since the removal of EU milk quotas in 2015, dairy plants' economic viability depends now more than ever on their organic growth and on efficient processes in fresh food logistics. The trend is towards greater production and storage capacities at central locations to meet retailers' high expectations regarding flexibility and delivery capabilities. Clearly, in the dairy products segment, high-performance intralogistics is a key competitive factor.

In view of this situation, many progressive dairy plants are facing major investment decisions. Following years of expansion, they are now looking to bring back the previously outsourced processes to external service providers due to a lack of capacity. Shorter transportation routes and leaner processes lead to rapid amortization, optimized delivery capabilities, and a more sustainable footprint. However, extending logistics facilities or constructing greenfield installations require a specific know-how and understanding of the dairy industry.

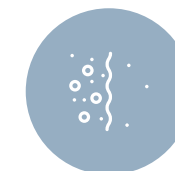
## Dairy industry features



Mass production of impact-sensitive and temperature-sensitive goods



Significant growth in product variants and container sizes



Strict HACCP hygiene standards



## Dramatically changed sales structures

The high expectations placed on logistics are further increasing as a result of threatening pandemics. The year 2020 demonstrated clearly that logistics structures must be prepared to cope with pathogens such as corona. The virus dramatically changed the sales structures for milk products. The situation included panic buying, which accelerated demands for long-life milk and other long-life dairy products (source: Milch Politikreport, September 2020).

A further consequence of the pandemic was the shift from out-of-home consumption to food retailers. These businesses were overwhelmed with demands for milk, butter, cheese, cream, and fresh milk products. In contrast, demands for bulk-consumer container products collapsed almost overnight.

In this situation, the value of automated intralogistics systems, which can react to changing customer requirements at the press of a button, become evident. Future-proof logistical solutions integrate seamlessly into temperature-controlled processes, extend when desired, and adapt quickly to new framework conditions. At the same time, new plants optimize personnel assignment, space and energy requirements, and fire protection.

## Much more than milk

Automated solutions ensure demand-oriented supply of the production lines 24/7 with raw, auxiliary, operating, and supplementary materials. They also provide the disposal, storage, and picking of finished products. The products here are not exclusively milk, but also include higher margin derivative products such as yogurts, mixed milk beverages, and cheeses.

The core of the required solution is typically an automated high-bay warehouse which, depending on the sizing requirements, features two, three, or more aisles. It contains a 4°C refrigerated area for finished products. Users may also add a warm storage segment for raw, auxiliary, and operating materials at 15–20°C. The finished products frequently emerge from three-shift production on different load units (Euro pallets, CHEP pallets, disposable pallets) and are stored here next to trade goods that are moved directly from goods receipt to the high-bay warehouse.

## Mixed pallets on the increase

Picking goods is carried out dynamically direct from the conveying system for A goods or from floor or rack storage spaces for B and C goods. As a result of the growing number of product variants and the variety of mixed milk beverages, picking of mixed pallets has become much more prevalent over the past 20 years. This means that a paperless picking procedure, which avoids errors and reduces picking costs, is critical.

Over time, picking with hand scanners and various voice and light-activated picking systems have proven their value as they provide significant support to employees and greatly improve workplace ergonomics. Picked and completed pallets are placed on the conveying system and they either enter the high-bay warehouse for intermediate storage or are transported directly to the staging area for dispatch. In the staging area, the pallets are wrapped in foil and a shipping label is attached.



Mixed pallet formation under continuous closed cold chain

# 50 years of experience

Manufacturers such as Kardex Mlog offer a complete portfolio making it possible to view the various automation options available. Based in the southwest of Germany, Kardex has managed multiple projects for businesses in the dairy industry and boasts more than 50 years of experience in planning, implementing and maintaining fully automated logistics solutions.

The details reveal the dairy industry's particular features. For example, individual pallets must be accelerated and slowed down very gently on an SRM to avoid stacked yogurt trays falling off. Many dairy plants do not stretch wrap their pallets when storing them to make subsequent picking more convenient. This gentle transport requirement can be met, for example, using controlled motors and stopping plates, which effectively prevent goods from slipping.

# Challenges for intralogistics in the dairy industry



Temperature zones in the storage, picking, and goods issue areas



Batch management and tracing



Fresh products with expiration dates result in short storage times



More frequent deliveries resulting from smaller customer orders

# Securing long-term availability

Regardless of the method used, it is impossible to prevent individual products from falling to the floor 100% of the time. When this occurs, it is important tools are in place to quickly and efficiently clean the high-bay warehouse aisles. Design features such as the high mounting of electronic components including power rails facilitate such cleaning operations. They also allow for cleaning of the aisles using high-pressure hoses without bringing the entire power supply of the warehouse to a standstill.

In cases where accidents and disruptions occur, it is advisable to always have access to an expert service partner to ensure the logistics plant's long-term availability and cost-effectiveness. For this reason, it is important to develop a customized service concept for the high-bay warehouse at an early stage.

An effective intralogistics system can only work if the installed hardware is closely linked to the information technology. Modular software systems are most appropriate, and these can be extended and adapted at any time if the need arises, and they can be integrated seamlessly with the ERP system in use.

# Intelligent energy management

With the MLOG Control Center MCC, users control material flow and warehouse management processes quickly and efficiently. From manual block storage through interface networking with intelligent partner systems, right up to automated intralogistics systems with connection to production lines and driverless vehicles, intelligent energy management for the SRMs, and modern plant visualization, the MCC modules offer flexible solutions for warehouse management.

Thanks to the high level of flexibility and the range of configuration options, the various modules can be combined according to requirements. This enables the MCC to meet future demands placed on a modern intralogistics system. Based on proven modules and functions, the system also caters for individual adjustments to meet specific customer requirements.

## Picking process challenges in the dairy industry



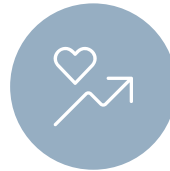
Trend towards mixed pallets containing containers and individual products



Growing variety of articles and containers



Just-in-sequence staging of pallets for each tour for loading



High standards for workstation ergonomics

When selecting the right supplier, in addition to their product range, value for money, and service competence, it is also important to find a partner with the optimal scale. Most medium-sized and cooperative dairy companies opt for suppliers they can communicate with on an equal footing.

Designated contact partners are also important as are the sustainability and durability of the solution. This is where full-service suppliers excel—companies who manufacture solutions based on customer requirements, ensure a seamless interaction of all components, and provide long-term availability of spareparts. Qualities such as durability, robustness, and reliability are all critical. These can be verified, for example, by the material strength of steel SRMs.

It is not always necessary to construct a new plant or extend existing facilities. Following an on-site analysis, a reputable supplier will point out various options to improve performance. These should include optimizing organizational and warehouse processes, introducing new picking methods, adding new storage areas, refurbishing controls, and upgrading software/hardware.