

White Paper

# Upheaval in Beverage Logistics







# The pitfalls of automation

**In the beverage industry, the increasing variety of articles and containers combined with declining batch sizes is causing companies to rearrange logistical processes. Manual storage of beer, water, and soft drinks is increasingly being replaced by high-performance automated solutions, which must meet specific industry requirements.**

All three sectors deal with large-volume units with relatively low product value. These must be loaded and transported as efficiently and economically as possible. It is necessary to account for the traceability of each batch as well as the first-in-first-out principle (FIFO). Another important factor is product expiration dates. In the case of multiple sequential deliveries, companies must store products according to their expiration dates. Food retailers reject batches that, according to their expiration dates, are older than pallets delivered earlier.

## Challenges in the beverage industry



Lack of standard container types and sizes



Time-consuming handling of empties



Sequencing up to 500 full and mixed pallets per hour



Ensuring batches are traceable



# Typical scenario becoming the exception

Today's sheer volume of goods has led to a huge demand for storage space and loading facilities. On average, each pallet holds 40 cases and a truck holds 34 pallets – that means approximately 1,360 cases per load. Traditionally, these quantities were loaded from block storage using multi-pallet handlers, capable of transporting up to 6 pallets. With this example, loading or unloading a complete truck takes 10 to 15 minutes.

The German beverage market is saturated, and companies primarily achieve growth by squeezing out competitors. On the one hand, this leads to price wars. On the other hand, it leads to an increasing number of product variations servicing different niches and trying to stand out from competitors.

# Block storage has fewer advantages

Once the total quantity is distributed across more and more products and variants, manual storage approaches its limits. This applies especially to block storage with forklift trucks which are prevalent in the beverage industry. The number of blocks, the associated space requirement, and the trip times increase dramatically. This means that this simple storage method loses its practical and economic advantages.

Adding to these difficulties is that, for several years now, the industry trend in the drinks sector has moved towards rear loading and unloading. More and more, trucks that arrive at manufacturers' depots do not feature special-purpose trailers. Rear loading means an additional work step as the multi-pallet handlers can no longer place the pallets in their final position. It is not possible to drive onto the trailer surface because of the multi-pallet handler weight. Instead, hand or electric pallet trucks must be used, which can lift a maximum of three pallets in a row.

# Components of an automated warehouse

-  A high-bay warehouse provides ample storage space
-  SRMs or shuttle systems ensure fast storage and retrieval
-  Buffer storage sequences full loads in goods issue
-  Conveying systems and control software link individual stations







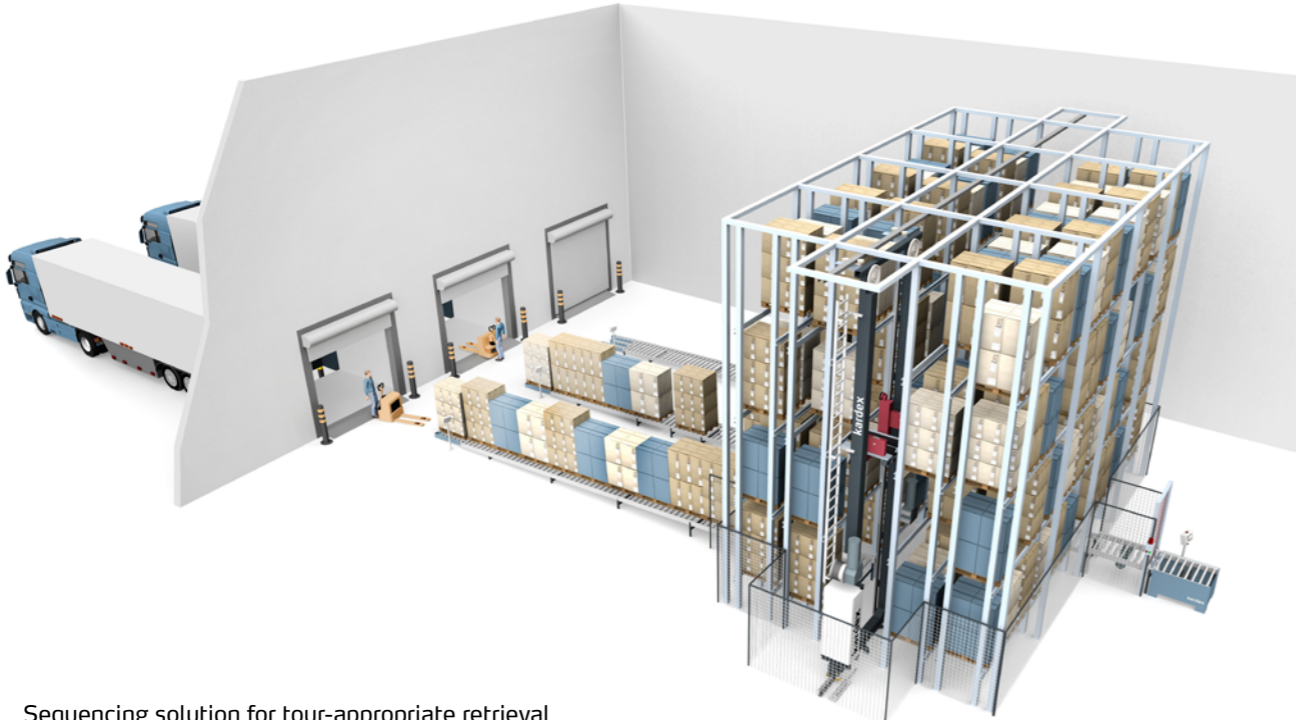
Goods issue buffer for seasonal peaks

# The move towards mixed pallets

In the case of mixed loads, the pallets must be arranged in the correct sequence. This means that, for rear loading, the beverages must be sequenced in goods issue. In many cases, the capacity required is between 400 and 500 pallets per hour, staged appropriately for each tour, and this also includes mixed pallets. With regard to mixed pallets: There is a clear trend toward orders from retailers where mixed pallets of containers must be picked. Due to the many different container types and shapes such as cases, barrels, and six-packs, this process is complicated to automate.

## Trends in beverage logistic

-  Block storage has become less sufficient
-  Rear loading supersedes side loading
-  Mixed pallets supersede single-product pallets
-  The variety of articles and containers grow






Sequencing solution for tour-appropriate retrieval

# Modular building-block solutions offer advantages

In the beverage industry, if several of these aspects are present at the same time, the material flows between goods receipt, warehouse, production, and shipping cannot be managed without automation.

## Automated warehouse requirement

-  Storage of large quantities in short time
-  Cost advantages compared to manual block storage
-  Tour-relevant sequencing in accordance with the FIFO principle

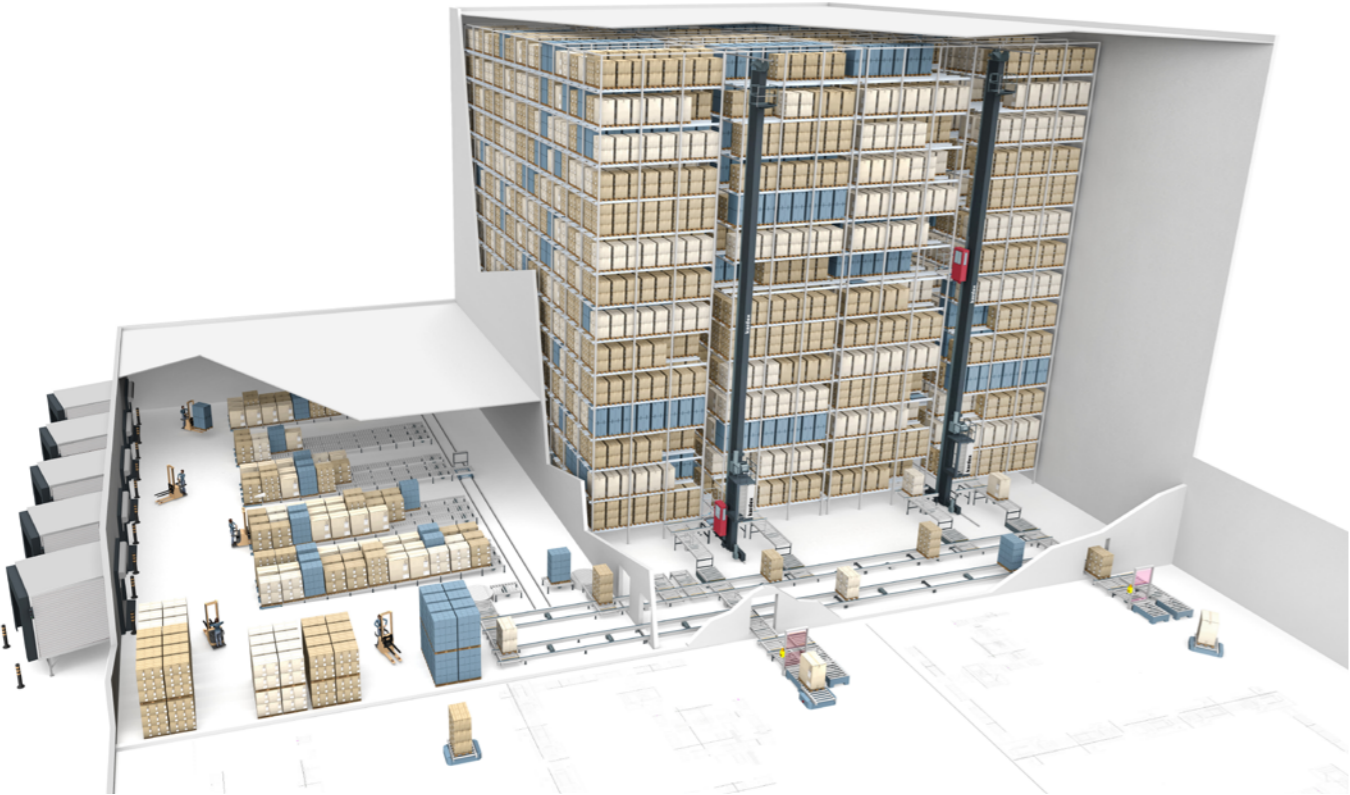
Companies best meet these demands by deploying multiple coordinated modules specially developed and optimized for the beverage industry.

Manufacturers, such as Kardex Mlog, offer a complete portfolio that illustrates the various automation options available. Based in the southwest of Germany, the company has executed numerous projects in the beverage industry. They have 50+ years of experience in planning, implementing and maintaining fully automated logistics solutions.

# FIFO despite channel storage

Depending on volume and performance requirements, the optimal solution for compact storage of pallets may be automated channel storage where shuttles and storage and retrieval machines approach the racking from two sides. In channel storage, operation from two sides is the prerequisite for compliance with the FIFO principle. For this purpose, Kardex developed the Kardex MMove shuttle system, which moves independently and safely throughout the entire warehouse. For example, in combination with a storage and retrieval machine, it can be deployed in a channel storage facility or multiple-deep storage. Users operate multiple Kardex MMoves in a single aisle and the Kardex MMove independently switches from one aisle to another. The energy supply is provided by powerful energy storage devices (Powercaps), which enable trips of 350 meters and more when fully loaded. The braking process is used for energy feedback. The vehicle communicates with its environment and provides information on current orders and statuses.

In addition to Kardex MMove, Kardex offers the complete conveying system, specially adapted for the beverage industry. The sensors, for example, have metal casings to protect against damage and breakage from falling cases. Just like the conveying systems, the storage and retrieval machines are developed in-house by Kardex. The Kardex MTwin is an all-wheel-drive, double-mast machine offering high performance for large volumes in minimal time. The single-mast Kardex MSingle A, in contrast, is deployed when smaller volumes require high performance.



Goods issue buffer for seasonal peaks

# Industry differences



# 80% higher performance

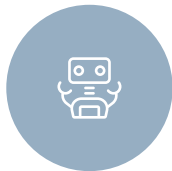
Kardex developed the Kardex MSequence specifically for sequencing in goods issue. It is a dynamic buffer and sequencing solution designed for maximum storage and retrieval performance. The Kardex MSequence offers 80% higher performance compared to conventional SRM solutions. This automated pallet buffer enables double-deep storage and, compared to conventional pallet storage, achieves a space savings of 66%.

Independent of components and suppliers, another important aspect to consider when automating beverage logistics is the quality of the deployed load carriers. Due to the high number of pallets moving, it is not always possible to remove older and damaged units from the system. After all, each Euro pallet that must be removed and repaired leads to an extra costs of 2 to 3 euros. In order for the total stock of pallets to be suitable for automation, approximately 5 to 7% of them must be regularly removed from the system. The key factor here is the material stress and the resulting sag evident in the pallets.

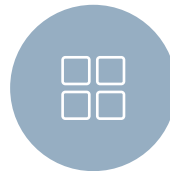
## Timely checks to avoid manual sorting

Individual automation components must be prepared to handle this pallet discrepancy. Even with a sag factor of up to 20 mm, the pallets must travel trouble-free on the conveying system. However, special pallet-checking equipment must be integrated into the material flow to detect problem pallets. Kardex is a pioneer in this area and offers appropriate solutions. These include, in particular, the Kardex MMove shuttle. SRMs are also specially optimized to handle this task. Warehouses integrate pallet inspection equipment into the conveying technology in order to inspect pallets before they are loaded. If this step was to take place after loading, substandard pallets would have to be removed manually at great expense and effort, and then assembled on a new load carrier.

## Supplier selection checklist



Future-proof technology and a diverse portfolio



Modular solution components



Alternatives to new construction presented



Various options to improve performance



Broad range of solutions