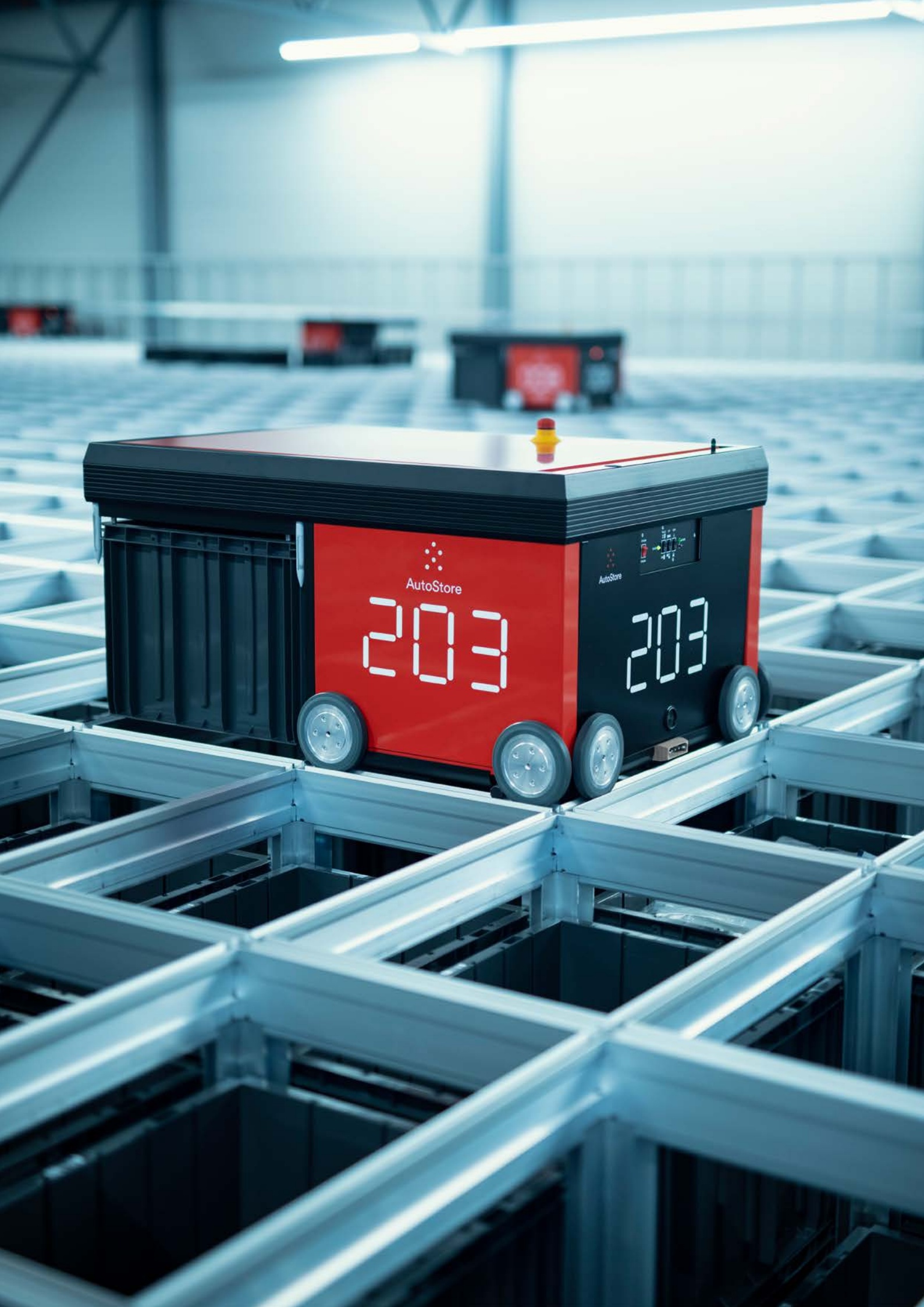Solution Guide

# Scalable Warehouse Technology

kardex

Keeping up with customer demands

How to manage seasonal peaks is a question that stumps so many warehouses. When storing and handling small parts in an industry that changes by the second, it is difficult to efficiently manage inventory without the proper technology in place. Often businesses need to scale up or down in a minute's notice causing great havoc and chaos internally – and ultimately impacting the overall customer experience.

As a global AutoStore partner, Kardex offers a high-performance, space-saving storage and picking solution for small parts orders that utilizes autonomous robots to adapt operations to fit the current situation. Whether it is a seasonal peak or new product launch, AutoStore can increase warehouse performance 10 times without hiring additional staff.

Scalable technology is essential for warehouses today. Micro-fulfillment centers and businesses that depend on fast delivery significantly benefit from modular systems that can adapt and expand without interrupting business or causing downtime.
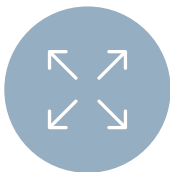
Scalable

Future-proof

Flexible

Fast

How AutoStore works

Autonomous high-speed robots store and move goods. They work quickly, efficiently and re-charge automatically.

An aluminum cubic grid holds vertically stacked storage bins while providing tracks for the robots to drive on. The autonomous high-speed robots continuously pick up the bins, rearrange them and present them at goods-in and order picking workstations. The robots work 24/7 and will charge themselves automatically when needed. They optimize energy usage by operating with or without lighting and avoid excessive charging.

As customer demands increase, inventory fluctuates, and overall business escalates, users can adjust the modular system. Without interrupting daily operations, they can add more bins, robots, and workstations, and expand the grid.
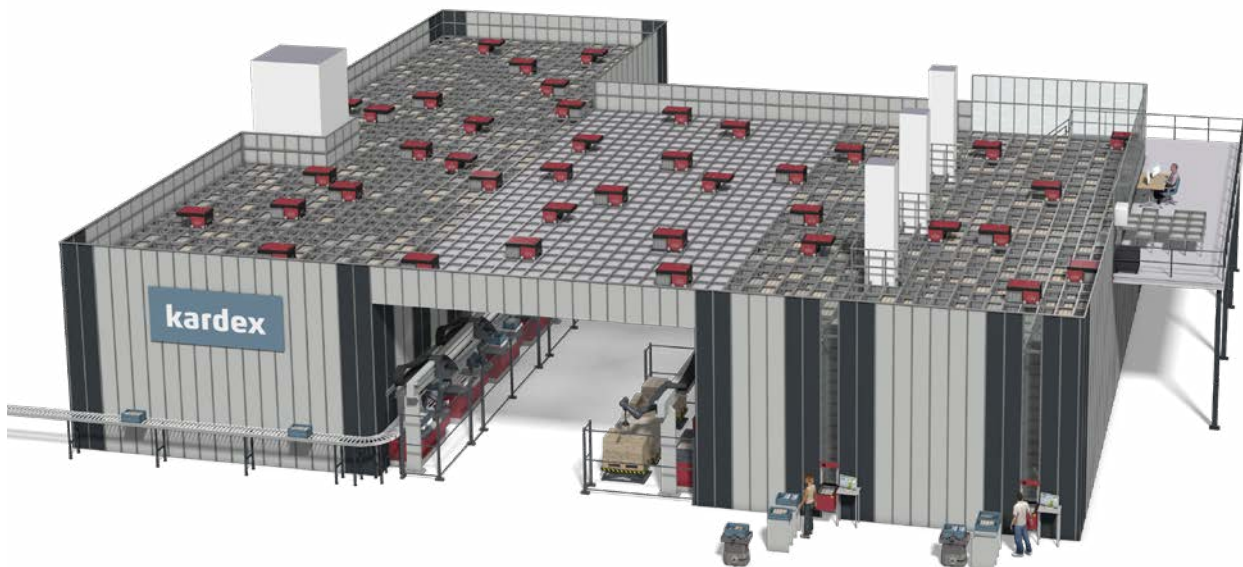
AutoStore components

AutoStore features a flexible and modular design – one system with five components.

Grid

An aluminum grid serves as the basic AutoStore structure. The grid is modular, lightweight and flexible. Users can install it to fit their specific warehouse size and shape and expand or change it as needed. Every grid is unique, as Kardex customizes every installation – it can be built around various obstacles or customized to fit unusual-shaped facilities.

The grid neatly holds the bins in place and guides the robots as they travel across the rails in different directions.

Robots

AutoStore robots travel along the aluminum grid with loads of up to 30 kilograms. Communicating wirelessly with a control system, they use lifting belts and a gripper plate to retrieve required bins from the grid. With energy efficiency as a top priority, AutoStore provides several unique features for the robots including:

- The ability to operate around the clock regardless of lighting
- Continuous adaption to ensure faster picking times (fast movers stored on top and slow movers stacked over)
- Automatic recharging capabilities programmed for exactly the right moment – not too early and not too late
- A self-diagnosis/preventive maintenance system that provides an average uptime of 99.6%. In the event that one robot breaks done, another one takes over its tasks

Bins

A high-density AutoStore bin system is ideal for warehouses operating a high number of SKUs – an average system holds 34,000 bins. Bins are molded from high-grade polyethylene (HDPE). Users may also equip systems with special ESD bins to safely store electronics, customize the lengthwise and crosswise dividers for easier handling and store standard KLT boxes (Euro containers) within the AutoStore bins. Based on individual needs, various configurations are possible:

- Outside dimensions:
  649 mm × 449 mm
  (25.6 in × 17.7 in)

- Inside dimensions:
  603 mm × 403 mm
  (23.7 in × 15.9 in)

- Max. Load Capacity: 30 kg

- Height outside: 425 mm (16.7 in)
- Height inside: 404 mm (15.9 in)
- Max stack: 14 bins

- Height outside: 330 mm (13 in)
- Height inside: 312 mm (12.3 in)
- Max stack: 16 bins

- Height outside: 220 mm (8.7 in)
- Height inside: 202 mm (8 in)
- Max stack: 24 bins

Ports

AutoStore workstations are called ports. Here bins are presented for picking, replenishing or other inventory actions. There are various port options available based on functionality and speed.

- Conveyor port. A simple, clear and functional workstation configuration. A conveyor belt moves the bins to the operators through an opening outside the grid. Maximum bin throughput is 240 bins per hour on an elevated level and 180 bins per hour on the floor level
- Carousel port. Enhancing picking performance, the Carousel port operates with three rotating arms, each holding a bin. One bin tray is located in the operator's access area and the other two in the robot's access area, enabling faster bin presentation without interruptions. Maximum bin throughput is 350 bins/hour
- Swing port. This workstation was designed for picking and putaway from above or below the grid. Performance depends on lift height, e.g., 160 bins/hour with an 8 meters (26.2 feet) bin lift
- Relay port. This workstation consists of a picking module and 3 to 6 buffer modules. The robots can deliver bins to the port at any time and transport bins already approved by the operator back into the grid. The advantage: No robot has to wait, and the articles can be sequenced according to the order. With 6 buffer modules, this port can achieve a throughput of up to 650 bins/hour

Controller

The controller is the command center, traffic control unit and database holder for the entire AutoStore system. Since AutoStore is a closed system, it represents the connection between AutoStore and the Warehouse Management Software (WMS).

- All WMS systems may use XML protocols to communicate with AutoStore via its integrated interface allowing full control of operation logistics and exact analysis features
- The software solutions Planner™ and Router™ enable the system to continuously adapt to external events such as priority orders or cancellations

Benefits

Reliable

AutoStore systems show a worldwide average uptime of 99.6%. The system's unique redundancy means there is no single point of failure.

Fast order fulfillment

AutoStore is the fastest order fulfillment system per square foot with picking performance 10 times higher than manual storage.

Future proof & scalable

To increase overall warehouse capacity, more bins can be added. Additional picking stations and robots will produce a higher throughput.

Energy efficient and cost effective

AutoStore enables energy savings of up to 90% compared to conventional solutions. The system can be powered entirely through solar energy.

How can AutoStore help me?

E-commerce order fulfillment
E-commerce customers are overwhelming warehouses with unprecedent expectations. From same-day delivery demands to individualized products and stress-free returns, many e-commerce providers struggle to keep up with customer expectations. With this in mind, AutoStore offers several features to help e-commerce warehouses successfully grow while maintaining a competitive edge.

- AutoStore is the fastest order fulfillment system per square foot on the market with the highest storage density
- The flexible and scalable system can be expanded to increase the warehouse capacity or throughput at short notice, without impacting ongoing operations
- A simple touch of a button lets users switch AutoStore workstations between replenishment and order picking

Just-in-time supply of production lines
As customer requirements continue to change at a minute's notice, companies need to keep a steady growing range of parts in stock, but often struggle to provide them as and when needed.

- AutoStore enables a smooth and efficient transition between production supply and assembly lines
- AutoStore secures order-related just-in-time supply of production lines with parts that are stored in the densest possible way

Micro-fulfillment solutions
Whether you prefer the backroom of a store, the center of a store or a small corner of a warehouse, AutoStore is compact enough to fit almost anywhere.

- The modular, highly automated e-commerce fulfillment solution delivers online retail orders fast and efficiently
- Thanks to AutoStore's high-density storage, the in-store product assortment can be expanded, while providing an engaging customer experience
- AutoStore fulfills express orders the customer is waiting for in less than 5 minutes. E-commerce orders can also be consolidated and prepared for last-mile delivery companies or customers to collect from a self-service pick-up point

AutoStore is also a proven solution for other areas of application, such as wholesale and third-party logistics. Let's talk!

We understand you.
Now let us support you on your journey.

Navigating today's customer demands and innovative purchasing outlets forces warehouses to rethink internal operations. Companies, regardless if they are an established industry leader or small start-up, will not be able to surpass competitors in today's market without flexible, fast and high-density storage solutions. AutoStore allows warehouses to expand storage capacity four times without moving warehouses; increase performance ten times without hiring and unlock new order fulfillment potential.

ⓘ Contact a specialist

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