

Solution Guide

# 4 Strategies to Boost Warehouse Production



# Common production constraints

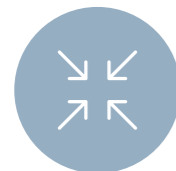
In today's rapidly evolving industrial landscape, warehouses face multiple challenges to be able to

- Maximize space utilization
- Maintain accurate stock inventories
- Minimize the risk of human error
- Empower production staff to focus on core tasks by reducing manual processes
- Find a sufficient number of employees

These goals are often hindered by slow, error-prone manual processes. Moreover, a warehouse's ability to maintain a competitive edge, particularly in the face of rising real estate costs, is compromised by overstocking, stockouts and space limitations.

Through four actionable strategies and real-world success stories, this How-to Guide demonstrates how effective automation and space utilization strategies can revolutionize dynamic manufacturing environments, helping warehouses stay ahead in today's competitive market.

Our how-to strategies include



How to store items efficiently – The value of maximizing space



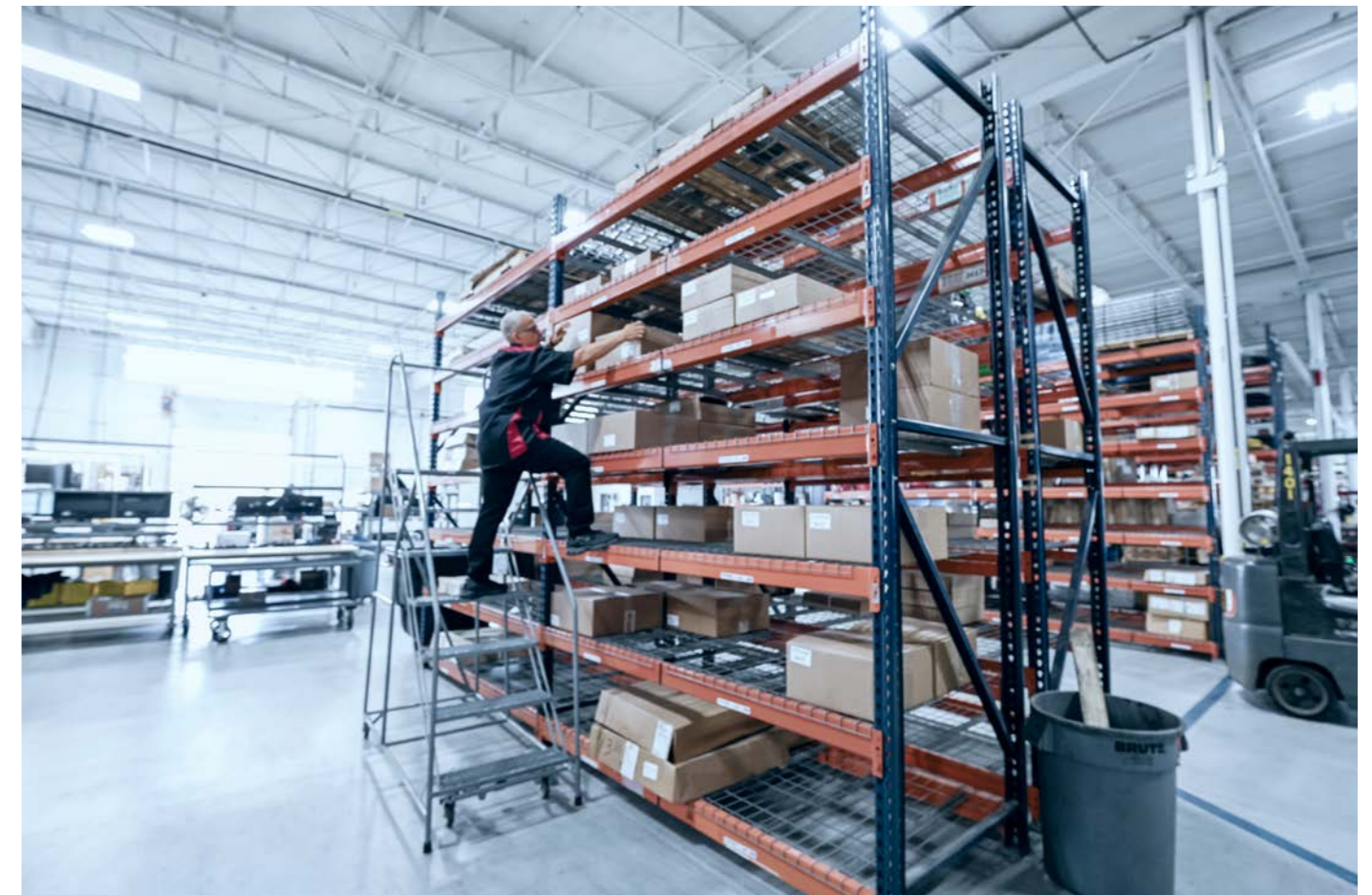
How to control processes – The importance of software



How to enhance productivity – The role of automated storage and retrieval systems in modern manufacturing



How to ensure high availability of parts – The benefits of remote services



Manual storage and retrieval processes with static shelving



Automated storage and retrieval with Kardex Shuttles

# 4 Strategies to boost warehouse production

## How to store items efficiently – The value of maximizing space

Integrate a vertical storage system to maximize floor-to-ceiling height and recover floor space.

Imagine recovering up to 85% of valuable floor space while accommodating future growth needs seamlessly. This is a tangible reality with automation-driven, high-density storage solutions. While numerous companies across diverse industries still rely on static shelving to store raw materials, material, production goods, consumables or semi-finished parts alongside production machinery, forward-thinking manufacturers are harnessing the potential of high-density vertical storage solutions. Storing items at the available floor-to-ceiling height allows production facilities often to expand their operations without the need for physical expansions or relocations. Businesses are thus able to grow organically within their existing footprints, minimizing costs and maximizing operational efficiency.

Expanding your production area by transitioning from conventional storage setups, such as cabinets or shelves, will mean

- Warehouse staff will no longer find themselves entangled in narrow pathways or struggling with poor stock visibility
- Operator motivation will increase, as they experience a modern and ergonomic workspace where they can easily access products and components of varying sizes and weights in a highly compressed space
- Temporarily buffer components between production steps in a space-saving manner close to production



Did you know that your available floor-to-ceiling height can become high-density storage space with our [Kardex Shuttle](#)?

[Click here to learn more about how to save space in our solution guide "7 Space-Saving Technologies".](#)

## How vertical storage recovers valuable production space across industries

In the electronics industry, where components are both numerous and small, vertical storage systems allow for storing vast quantities of SMD reels in a compact footprint, right next to assembly lines. This proximity reduces the time and motion required for material handling, directly boosting production efficiency.



Did you know that SMD handling can be fully automated by integrating Kardex Shuttles with robotics?

Similarly, in mechanical engineering, where parts can be bulky and heavy, vertical storage solutions use the available floor-to-ceiling height, optimizing the use of vertical space that is often underutilized. This not only preserves floor space for additional machinery and assembly operations, but also enhances worker safety by reducing the need to manually handle heavy items.



Space saving storage of SMD reels

## How to enhance productivity – The role of automated storage and retrieval systems in modern manufacturing

Integrate an automated storage and retrieval solution to

- Optimize inventory management for just-in-time production supply
- Reduce errors to maximize accuracy
- Enhance working conditions and safety standards

### Integrate an intelligent Warehouse Management System (WMS)

A WMS provides seamless access to inventory information and timely notifications, effectively mitigating bottlenecks in production processes. Furthermore, leveraging accurate retrieval and pick-to-light technology minimizes search times, preventing unnecessary production delays.

### Speed up manufacturing with automated kitting

Automated kitting will optimize production planning and enhance supply chain efficiency. Employees pick parts and assemble them in to kits before they re-store them in a high-density and space-saving storage system.

### Integrate an automated production buffer before or after certain production steps

This allows you to store goods in a minimal footprint and retrieve them in sequence, while maintaining visibility into what is stored and what is missing to complete the next production step.

### Streamline shipping processes by consolidating orders

Consolidate orders awaiting shipment. Ready-to-ship orders move fully automated into the storage system using conveyor technology. Once all parts for one order are available and ready to ship, the storage system retrieves them in the correct sequence. All parts are stored on a minimum footprint and operators have full inventory visibility.

### Improve working conditions and safety

Automation will reduce walking distances, which will significantly increase throughput. It will also increase operator satisfaction by providing a more ergonomic, modern, and safe workspace, as well as reducing mental stress and sick days.

### Automate the storage of heavy parts & pallets

Benefit from various options, such as an integrated crane combined with an automatic full tray extraction, to easily lift loads exceeding 20 kilograms. It will eliminate labor-intensive processes while prioritizing workplace safety. This supports an ergonomic workspace and contributes to increased employee satisfaction and reduced sick days.

## How automated solutions improve storing, picking and consolidating



## How to control processes – The importance of software

Integrate software solutions that fulfill your individual needs.

As highlighted earlier, combining automated solutions with a smart WMS is instrumental in alleviating bottlenecks within production processes.

### Benefits of a WMS

- Ensure real-time visibility into stock levels
- Simplify inventory tracking & reduce errors
- Increase the productivity of your warehouse processes

With instant access to inventory data, you gain invaluable insights, enabling informed decisions regarding production commencement or material replenishment. Leveraging reorder points facilitates automated reordering of items below predetermined stock thresholds, guaranteeing continuous production supply.

Kardex software solutions seamlessly integrate with existing ERP or SAP systems or operate independently as standalone software, such as the **Kardex Power Pick System**. Irrespective of your chosen software configuration, rest assured that each solution offers precise control and comprehensive visibility over inventory, minimizing instances of overstocking or stockouts.



Kardex Power Pick System software to support inventory management

## Which Kardex Remstar software is right for you?

Choosing the right software solution is as easy as knowing the specific needs of your operation.

Do you have an existing WMS, ERP or WCS you'd like to manage the inventory, locations and workflows in your automated storage and retrieval system (ASRS)?

YES

NO

Do you have SAP or another WMS, ERP or WCS you'd like to manage your ASRS?

No, I want a turnkey solution where Kardex manages the inventory, locations and workflows within the ASRS.

SAP

Another WMS, ERP or WCS

If you need an easy to use, comprehensive inventory management solution with a wide range of features and capabilities that can communicate to other business systems, **Kardex Power Pick System** is the best choice.

If your needs are simple and you require a simple solution for managing locations and inventory and to process parts, **Kardex Power Pick Web** is a great solution for you.

Explore **Kardex Drive** to enable your existing SAP system to manage your ASRS.

**Kardex JMIF** will allow your existing WMS, ERP or WCS to manage your ASRS.



 Learn more about software solutions from Kardex

## How to ensure high availability of parts – The benefits of remote services

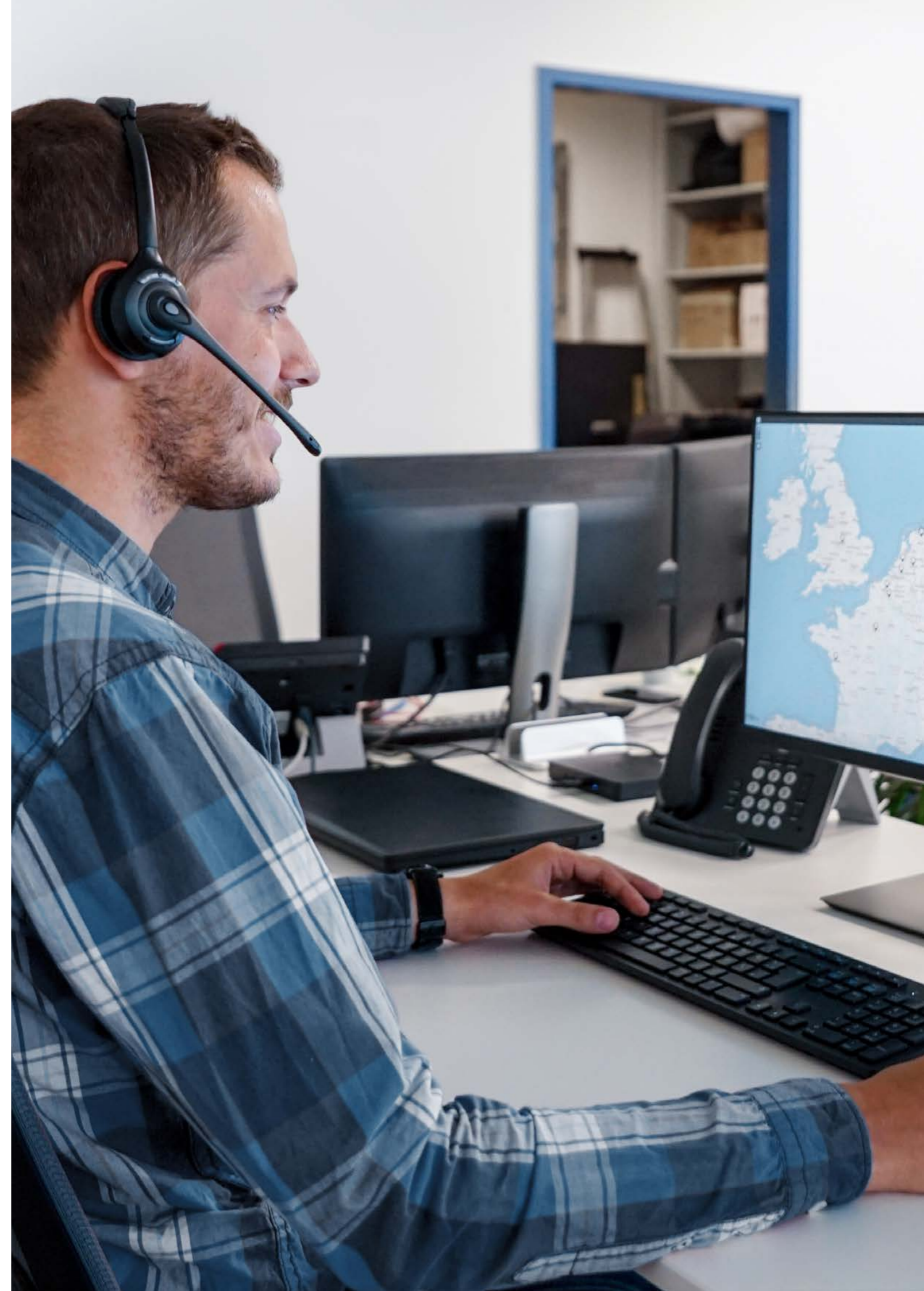
Integrate digital services to ensure high availability of stored parts.

Ensuring uninterrupted production relies heavily on the reliability of machinery. Kardex Connect and its suite of remote services collaborate seamlessly to maximize the availability of stored parts, ensuring smooth production processes with minimal to no disruptions while proactively addressing potential issues.

Kardex Connect is a secure Industrial Internet of Things (IoT) platform that orchestrates remote support, video conferencing, monitoring, and analytics services. Leveraging data-driven insights, Kardex Connect empowers tailored reporting on performance metrics, fill rates, and real-time machine status updates.

With Kardex Connect, the Kardex lifecycle service team is able to rectify errors remotely, mitigating costly on-site interventions. Our team conducts a remote diagnosis upon receiving your permission to connect. Should the issue persist beyond remote maintenance capabilities, our service technicians are promptly dispatched with precise diagnostics and solutions to rectify the issue on-site efficiently.

 [Learn more about Kardex Connect](#)





Two Kardex Shuttles boost production and save space

# Success stories

## Intech automates their inventory management for more precision and productivity

Intech is a global leader in orthopedic contract-manufacturing and plays a critical role in medical device innovation and production. Intech's traditional inventory management system consisted of tool cabinets, static shelving, and manual cataloging. After experiencing 150% growth over the past decade, the inventory management system in their 9,290 square meters (100,000 square feet) contract manufacturing facility in Athens, Alabama, USA needed an overhaul.

The Intech Toulon facility in France solved a similar issue using ZOLLER TMS. Intech Athens took the solution further and replaced their traditional racking and cabinet systems with two state-of-the-art Kardex Shuttles. The Kardex Shuttles integrate via the Kardex JMIF software with the ZOLLER TMS software. This complete solution not only provided better inventory control but also delivered instant space savings and increased manufacturing productivity.

»The transformation was incredible. Racks and cabinets that once cluttered our space, now stood outside. With this newly freed space, we were able to accommodate two more CNC machines, enhancing our production capabilities.«

Joseph Forsyth, Director of Advanced Manufacturing, Intech

# Böllhoff Produktion GmbH optimizes assembly processes with fully automated Kardex solution

The Böllhoff Group, a global leader in fastening, assembly, and system technology, operates 14 production sites worldwide and employs over 3,200 individuals. The company partnered with Kardex to implement a fully automated, space-saving buffer storage solution at its Bielefeld, Germany production site.

Parts needed for the production are stored in a Kardex Miniload-in-a-Box. The process commences with an operator's request for parts, triggering a fully automated retrieval of the needed parts and their transfer to the respective assembly machines using conveyor systems and AGVs. Finished parts are automatically transferred and stored in a second Kardex Miniload-in-a-Box until delivery. Automated retrieval upon batch size completion streamlines shipping preparations.

This solution helped Böllhoff to

- Optimize space utilization – storing approx. 1,900 bins on 67 square meters (720 square feet)
- Minimize manual intervention, search times, and errors
- Enhance assembly machine communication, feedback, and efficiency

»The Kardex Miniload-in-a-Box enables us to store and retrieve our articles in a fully automated and centralized manner. The transparency, space savings and process reliability will bring us enormous benefits and flexibility.«

Dipl.-Ing. (FH) André Koring, Head of Intralogistics, Böllhoff Produktion GmbH

[Read the full press release here](#)



Automated solution with two Kardex Miniload-in-a-Box and conveyor connection



Automated storage and retrieval with AGVs



# Conclusion

As highlighted, integrating effective automation and space utilization strategies is vital to transforming dynamic manufacturing environments and maintaining a competitive edge in today's market. Automation empowers manufacturers to unlock the full potential of their production processes and spatial resources. It's about enhancing productivity by maximizing warehouse space, harnessing technology, and embarking on a journey toward a future where space isn't a limitation but a realm of untapped opportunity.

The Kardex team stands by ready to assess your current operations, offer expert recommendations, and propel your warehouse production processes to new heights. Together, we'll discuss unmet needs and uncover untapped automation potential, crafting tailored solutions to optimize production.

Let's collaborate to



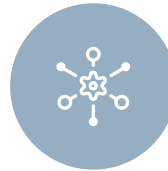
Maximize your available space by using vertical storage solutions



Enable you to control all processes with a customized software solution



Reduce walking and create ergonomic working conditions to enhance efficiency



Ensure a high availability of your parts with tailored digital services



Contact us