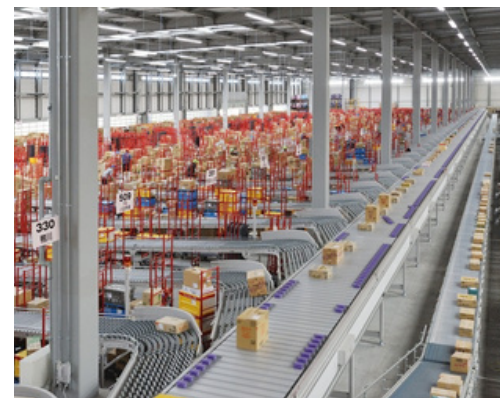
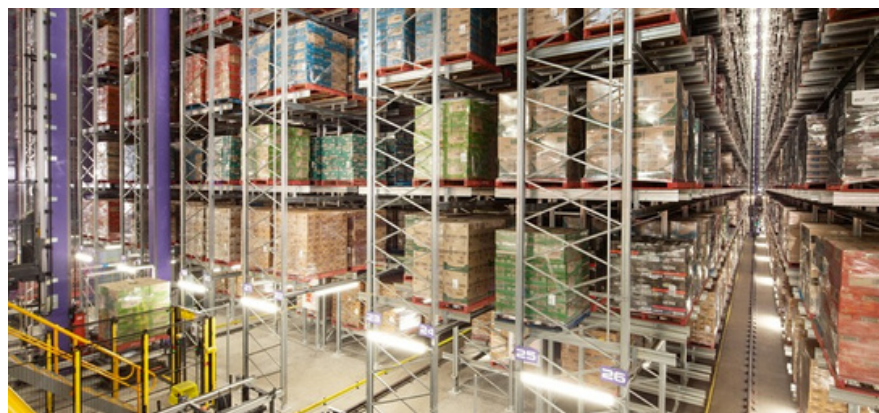
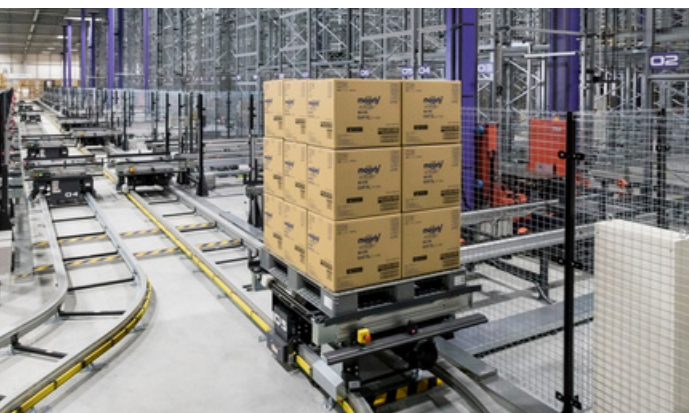


# DAIFUKU



## Intralogistics Solutions

[www.daifuku.com](http://www.daifuku.com)





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# Who We Are

Daifuku is a global leader in automated material handling, helping businesses around the world move goods smarter, faster, and more efficiently. With over 80 years of experience and operations in 24 countries and regions, we deliver automation solutions that transform supply chains and enable sustainable growth.

From automated warehouses and picking systems to cleanroom transport and airport baggage handling systems, Daifuku designs and integrates technologies that optimize the flow of materials across industries.

Our proven solutions and technologies support manufacturing, distribution, e-commerce, food and beverage, pharmaceuticals, and many more industries around the world—wherever precision and performance matter.

With a strong global presence and deep local knowledge, Daifuku partners with customers to deliver tailored solutions backed by reliable service and long-term support. Our commitment to innovation and quality makes us a trusted partner for businesses seeking to future-proof their logistics operations.

## Our Verticals

We operate across six business verticals, with four of those placed as core businesses, each contributing to our leadership in automation—Intralogistics, Cleanroom, Automotive, and Airport.

Our Intralogistics business provides advanced material handling systems for warehouses and factories, helping streamline operations in industries like retail, food, and pharmaceuticals.

The Cleanroom business supports high-tech manufacturing with ultra-precise transport and storage systems for the semiconductor and flat-panel display industries.

In our Automotive business, we deliver production line solutions to many globally recognized vehicle manufacturers.

The Airport Technologies business enhances passenger and baggage flow with smart handling systems at airports big and small around the world.

With our business spread across so many industries around the world, there is a good chance that something you own has been supported by a Daifuku system.



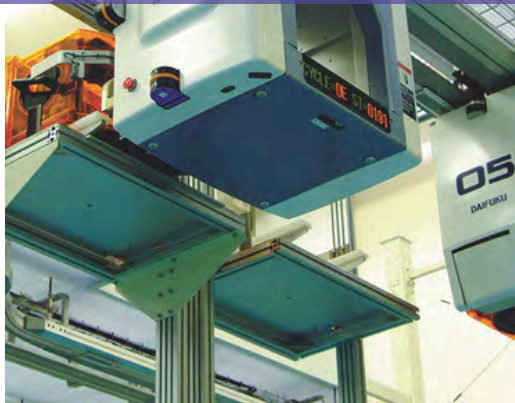
### Intralogistics

Manufacturing and Distribution Systems



### Cleanroom

Semiconductor and Flat Panel Production Line Systems



### Automotive

Automobile Production Line Systems



### Airport

Airport Technologies



### Auto Wash

Car Wash Machines



### Electronics

Industrial IoT Solutions







# Our Intralogistics Business

Daifuku's Intralogistics business delivers advanced automation systems that optimize the internal flow of goods within warehouses, distribution centers, and manufacturing facilities. From storage and picking to sorting and transport, our solutions are designed to meet the evolving needs of industries such as e-commerce, food, pharmaceuticals, and retail.

We offer a comprehensive portfolio of proven technologies—including automated storage and retrieval systems (AS/RS), shuttle systems, conveyors, sorters, and robotics—supported by

intelligent software and data-driven control.

These systems help businesses streamline operations and drive efficiency, reduce labor dependency, and scale their business with confidence.

By integrating advanced technologies like IoT and AI, Daifuku's Intralogistics solutions enable smarter, safer, and more sustainable logistics environments—empowering companies to thrive in a fast-moving global market.



# Proven Technology

Automation takes many forms in warehouses and factories. Daifuku's versatile product portfolio supports key intralogistics processes—including storage, sorting, transport, and picking—to optimize operations and boost efficiency. This example of a distribution center demonstrates how multiple automated solutions can seamlessly integrate into a larger, unified system.



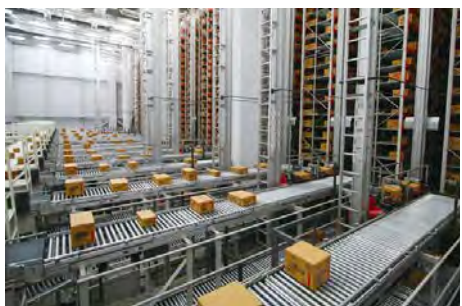
## Unit Load AS/RS

Received pallets of goods from factories or suppliers are automatically loaded into one of two Unit Load AS/RS systems. Each system automatically releases pallets for depalletization, allowing individual cases to enter the Mini Load AS/RS for buffering or proceed directly to shipping.



## Sorting Transfer Vehicles

Sorting Transfer Vehicles (STVs) are rail-guided vehicles that automate the movement of palletized goods across material flows—receiving, shipping, and feeding to AS/RSs. This automated routing streamlines handling, reduces forklift traffic, and improves overall warehouse safety and efficiency.



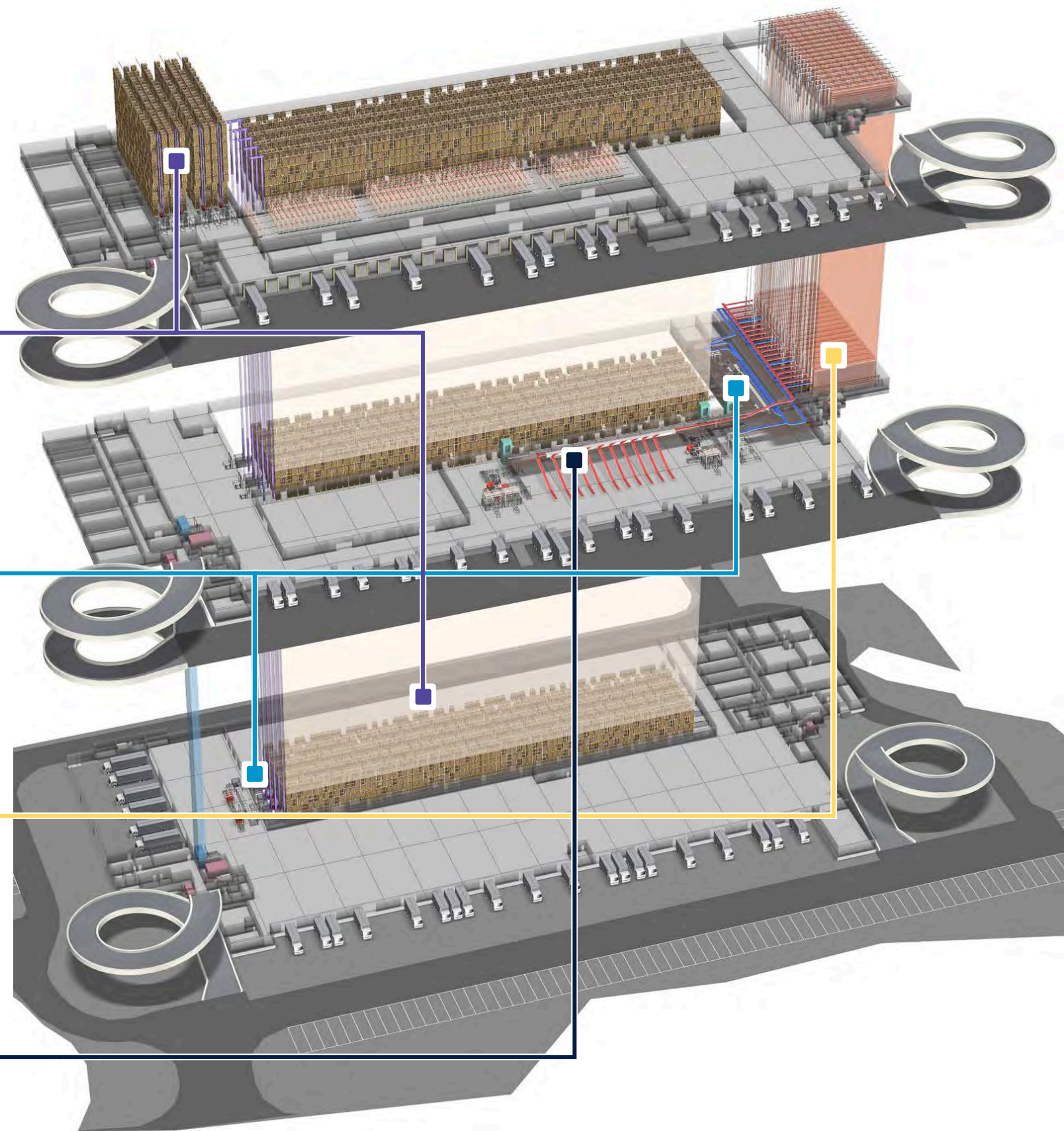
## Mini Load AS/RS / Shuttle Rack

After depalletization, cases are temporarily stored in a Mini Load AS/RS or Shuttle Rack as a buffer. When needed, the system automatically retrieves them in the required sequence and delivers them to the Surfing Sorter for final sorting and palletization before shipping.



## Slide-Shoe Sorter

Once received from the Mini Load AS/RS or Shuttle Rack, a Slide-Shoe Sorter gently and rapidly directs cases to the correct chute based on their shipping destination. This ensures that each case is palletized onto the correct outbound pallet, supporting accurate and efficient order fulfillment.

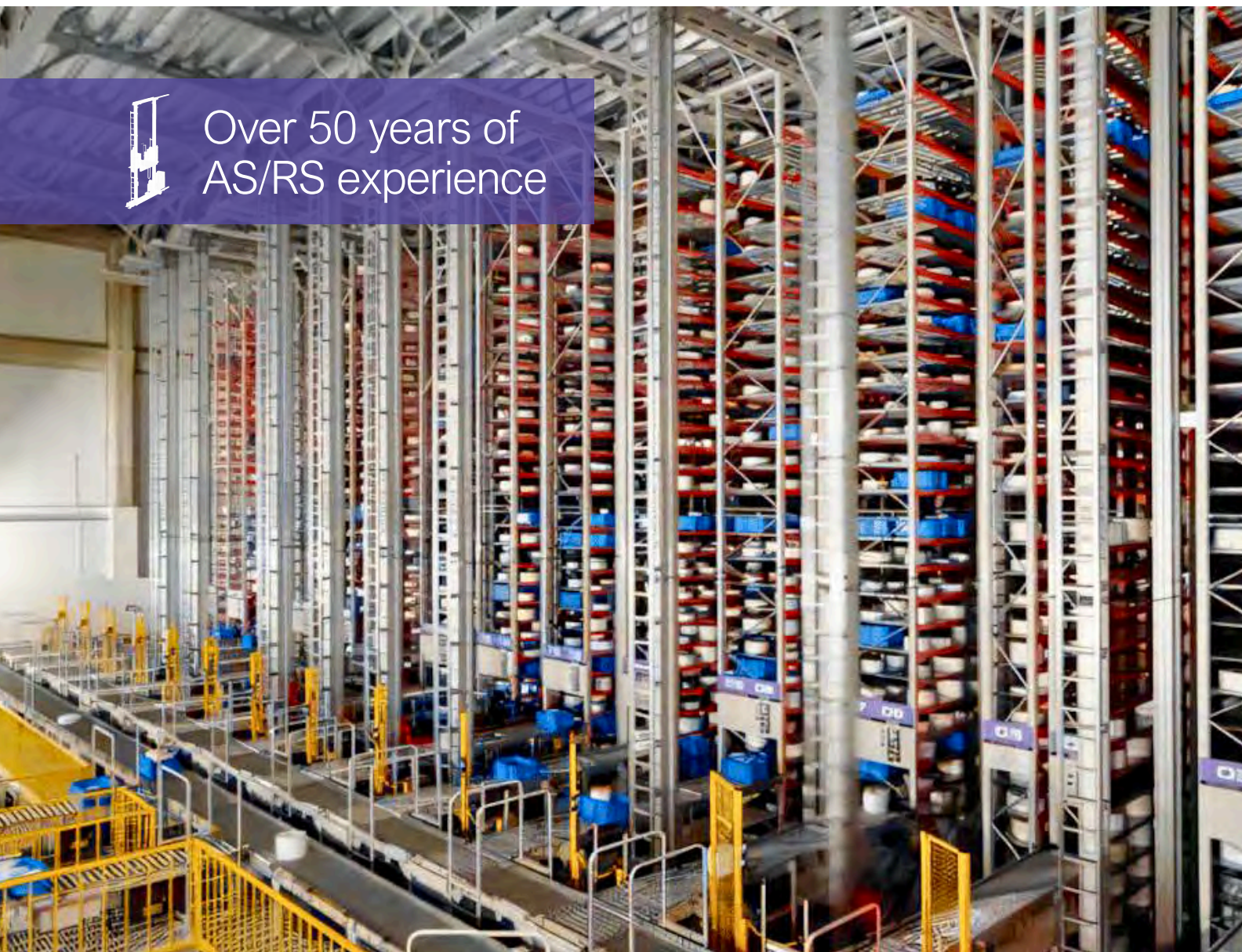




# Storage Solutions

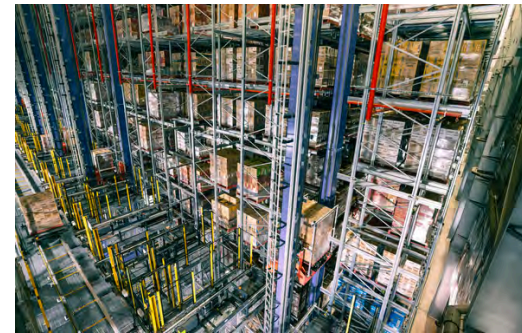
In today's fast-paced, data-driven supply chains, storage is no longer just about holding goods, it's about enabling flow, visibility, and resilience.

Automated storage and retrieval systems (AS/RSs) are fast becoming the backbone of the modern warehouse or distribution center. AS/RSs are engineered to optimize inventory management, reduce labor dependency, and accelerate throughput. Whether you're handling small containers, pallets, rolled materials, or temperature-sensitive goods, AS/RSs are customizable to your facility's layout and business goals.



Over 50 years of  
AS/RS experience

## | Automated Storage and Retrieval Systems



### Unit Load AS/RS

Renowned for its high-density pallet storage and rapid operation, our Unit Load Automated Storage and Retrieval System stands as one of the world's top-selling AS/RSs. Its versatile design spans up to 40 meters, allowing customization to seamlessly integrate into your specific installation environment and operational requirements.



### Mini Load AS/RS

The Mini Load provides fast and efficient storage and retrieval for containers, trays, cases, and other small loads. Its high speed ensures timely inventory supply for both order-picking and manufacturing operations. It is user-friendly and can be easily integrated into an existing material flow.



### Shuttle Rack M

The Shuttle Rack M is a high-throughput automated storage system designed for cartons, totes, and trays. Using high-speed shuttles and lifts, it enables rapid, multi-level access to stored goods—ideal for order picking, buffering, and sequencing operations.



### Shuttle Rack MX

The Shuttle Rack MX is a next-generation, multi-directional shuttle system designed for high-throughput, high-density case handling. It combines the proven capabilities of the Daifuku Shuttle Rack M with new XY mobility—allowing vehicles to move freely across both X and Y axes.



## Storage Solutions

# Unit Load AS/RS

High-density pallet storage, high-speed operation, and versatility make Daifuku's Unit Load AS/RS is a top selling pallet automated storage and retrieval system globally.

### Multi-Stage Support

The Unit Load supports different processes and operations—raw material storage, work-in-process buffer, final product storage, shipping buffer.

### Versatile Load Handling

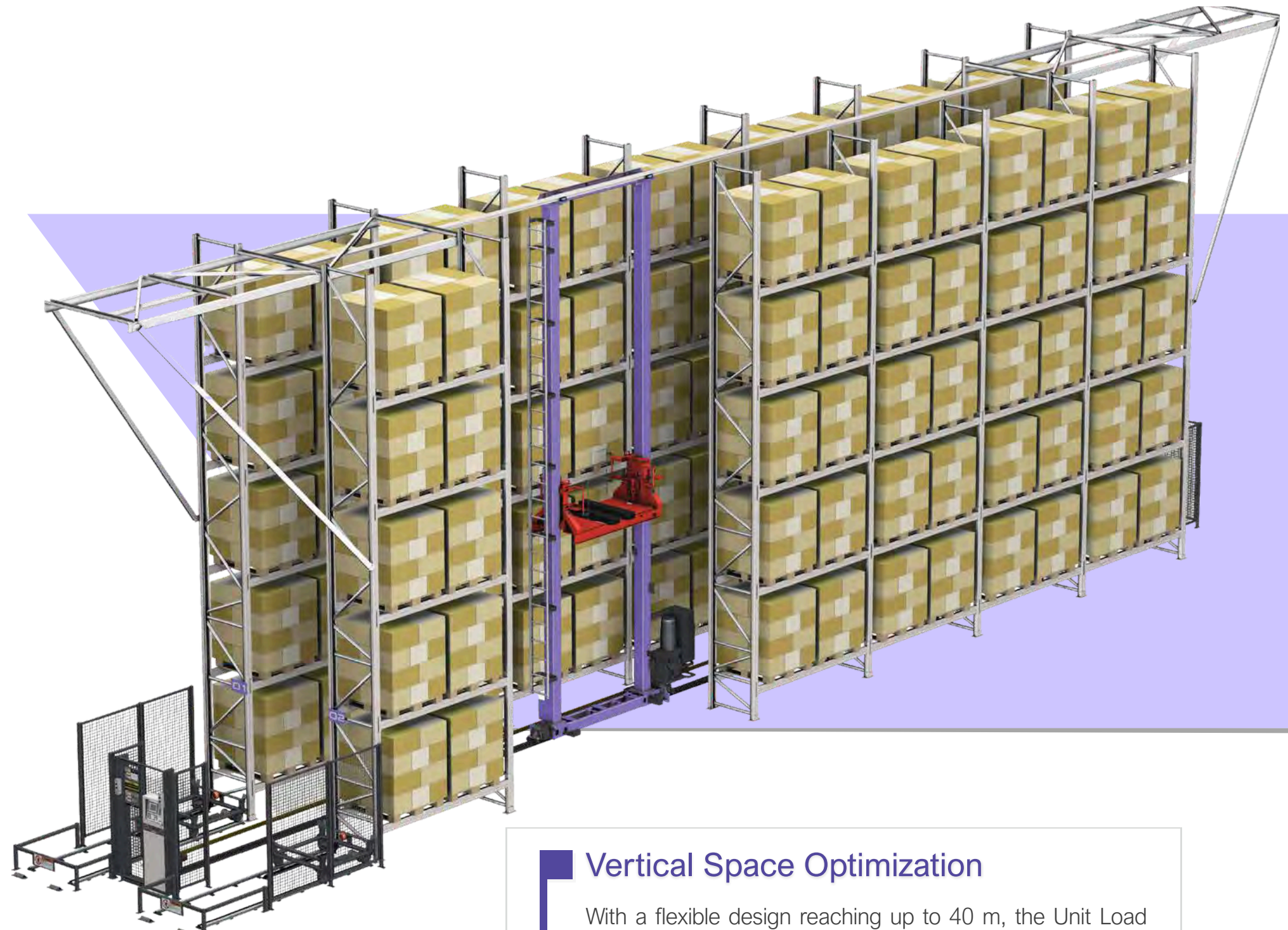
The Daifuku Unit Load can handle a variety of different load and pallet types, including, skid pallets, close pallets, box pallets, rolls, long objects, and more.

### Rapid Handling

Travelling at speeds of up to 250 m/min depending on the crane type and load, the Unit Load rapidly retrieves and stores loads, ensuring efficiency for your business.

### Enhanced Safety

By reducing the need for forklifts, the Daifuku Unit Load AS/RS helps cut down on traffic in the warehouse—creating a safer, more streamlined environment for your team.



### Vertical Space Optimization

With a flexible design reaching up to 40 m, the Unit Load maximizes your vertical space ensuring the best use for your available footprint.

### Customizable for Extremes ❄️

The Unit Load adapts to a wide range of environments—including frozen to -30°C, chilled, oily, dusty, and cleanroom conditions—meeting the varied logistical needs of diverse industries.



# Equipment Details

## Crane Height vs. Load Capacity



## Loads

The Unit Load is a versatile tool that can handle different loads and pallet types.



Box pallets



Skid pallets



Block pallets



Direct handling



Long items

## Peripherals

The Daifuku Unit Load can be accompanied by supporting equipment to fit a specific operating environment or enhance throughput.



### Sorting Transfer Vehicle (STV)

Daifuku's Sorting Transfer Vehicle (STV) is a high-speed pallet sorting and transport system using rail-guided vehicles. Designed to integrate with an AS/RS, it streamlines goods movement between warehouse aisles, picking stations, and shipping zones. A freezer-compatible model supports cold chain automation. The system comes in single, dual, and loop configurations.



### Powered Cart

An electrically powered cart that supports input/output operations by transporting pallets to the stacker crane.

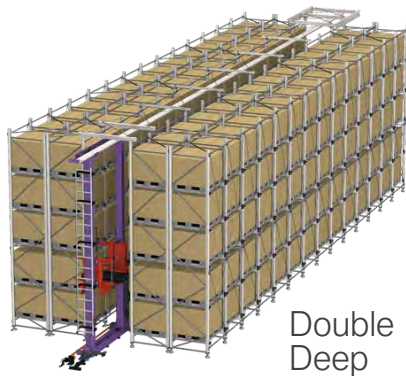
## Single Deep vs. Double Deep Storage

The AS/RS is available in single and double-deep configurations—essentially, whether one or two pallets are stored per lane.

Double-deep maximizes storage density, while the single-deep configuration enables higher throughput.



Single Deep



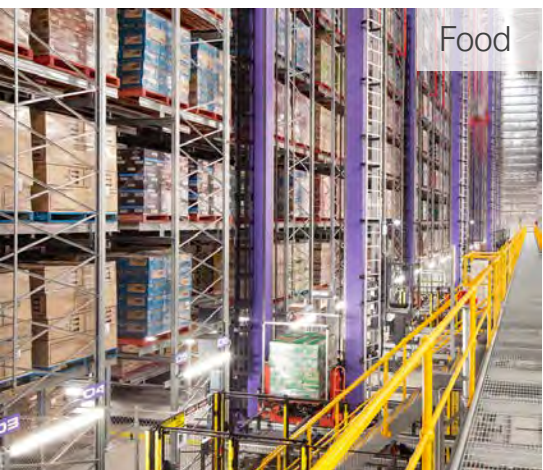
Double Deep



Unit Load

# Proven Applications

From compact setups to large-scale installations, the Daifuku Unit Load supports industries worldwide—handling a wide variety of items with precision. This customizable solution streamlines operations, enhances safety, and reduces the workload on your personnel to take your intralogistics to the next level.



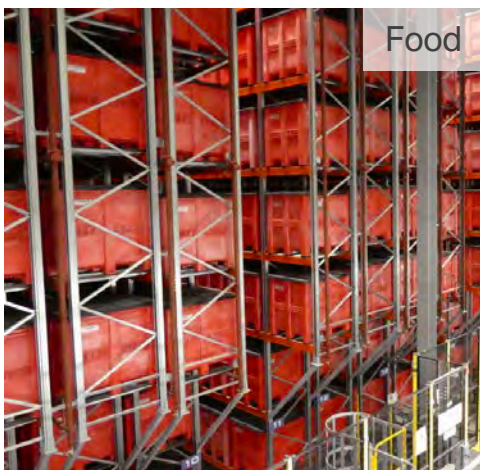
Food

A 30-meter high-bay AS/RS maximizes vertical space for pallet storage



Stationary

Unit Load stacker cranes handle pallets of stationery products, supporting high-volume distribution



Food

AS/RS buffers box pallets of raw materials for pet food at a manufacturing plant.



Hygiene Products

Hygiene products stored and staged for shipment, with final sorting handled by an STV loop



Frozen Food

Cold storage Unit Load AS/RS capable of handling 2,000 pallets at -30°C—enabling case picking to be performed separately at 0°C for greater efficiency and smoother operations.



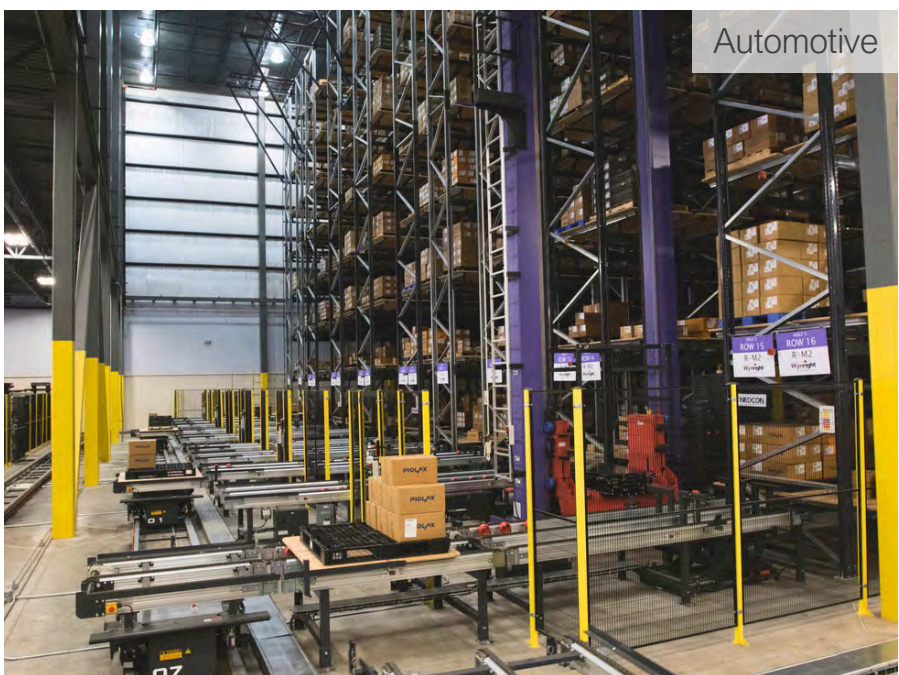
Pharmaceuticals

Unit Load and STVs handling pharmaceutical products



Paper and Printing

Newspaper-grade paper rolls managed directly by the Unit Load



Automotive

Unit Load AS/RS storing over 5,500 pallets, integrated with an STV loop to efficiently handle automotive parts and streamline shipping operations.



## Storage Solutions

# Mini Load AS/RS

Daifuku's Mini Load AS/RS provides fast and efficient storage and retrieval for containers, trays, cases, and other small loads. Its high speed ensures timely inventory supply for both order-picking and manufacturing operations.

### High Speed Handling

The Mini Load cranes, depending on the model, can travel up to 300 m/min, delivering the throughput required for high-volume order picking, manufacturing, or shipping.

### High Density Storage

Built up to 20 m high, the Mini Load lets you maximize your vertical space for storage up to a height that conventional racks typically cannot replicate.

### Smooth & Quiet Performance

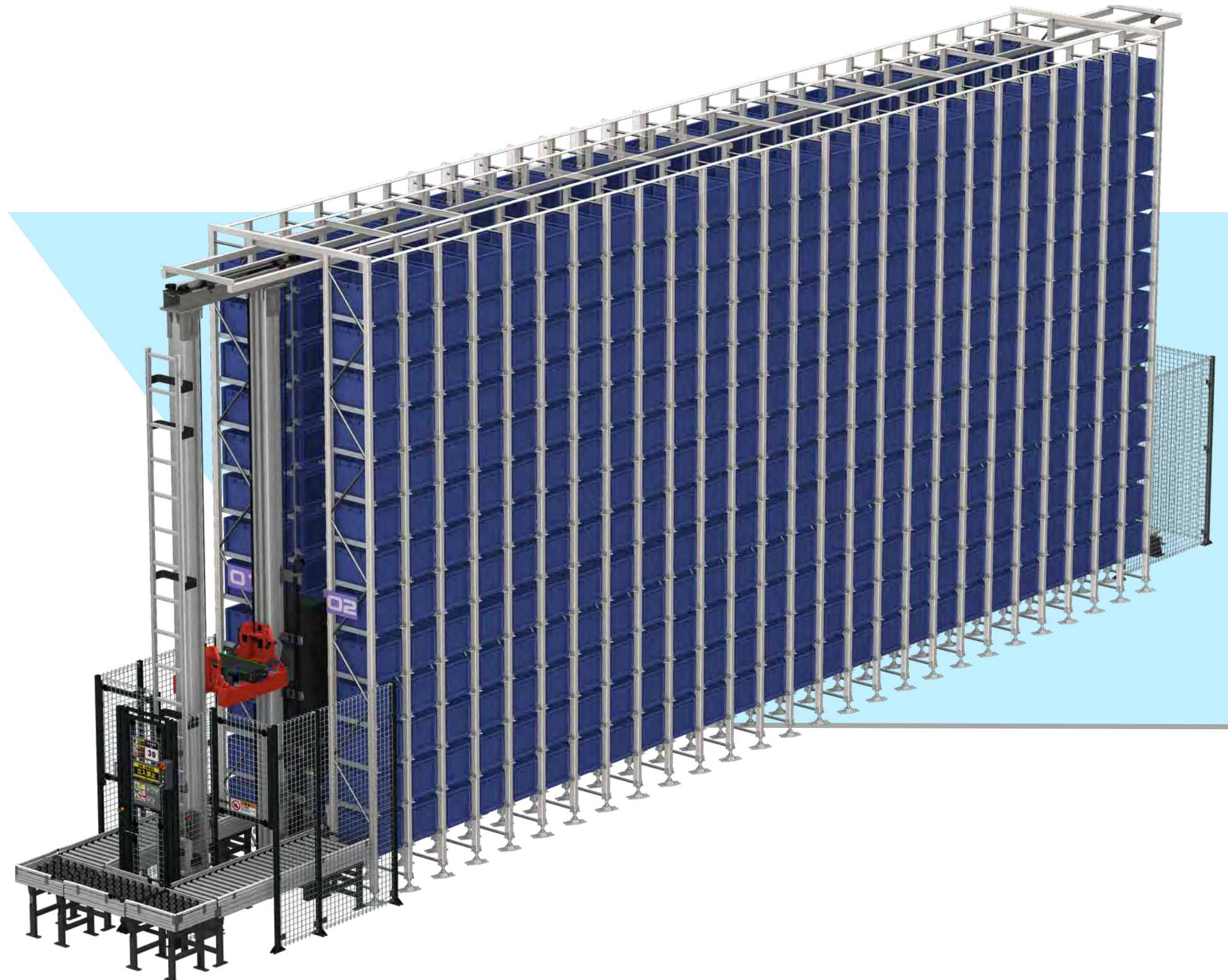
Using aluminum masts and urethane wheels, the Mini Load minimizes noise and vibration to the extent that it can be installed virtually anywhere—including next to offices or on the upper floors of buildings.

### Ambient or Cold ❄️

The Mini Load can operate in temperatures down to -30°C, effectively supporting cold chain storage and picking operations.

### Accurate Inventory Control

Combining a Mini Load AS/RS with a WMS ensures precise inventory control and minimizes losses from errors or unauthorized access. It also eliminates time spent searching for items, boosting overall operational efficiency.



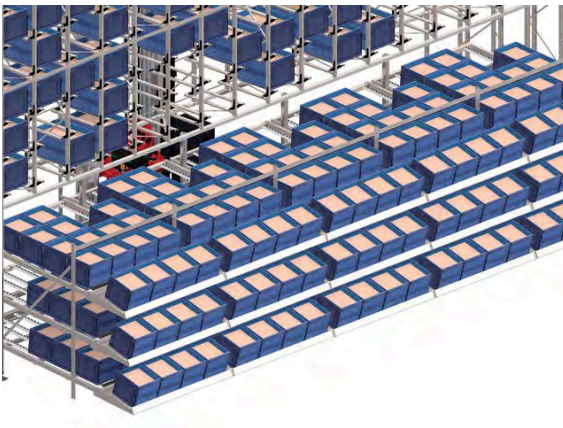


# Equipment Details

## Peripherals



**Mini Load STV**  
The Mini Load STV keeps your operations moving with speed and precision. Available in straight or loop layouts, they seamlessly connect the Mini Load AS/RS with picking stations. Totes are swiftly delivered for picking and returned for storage—maximizing efficiency and flow.

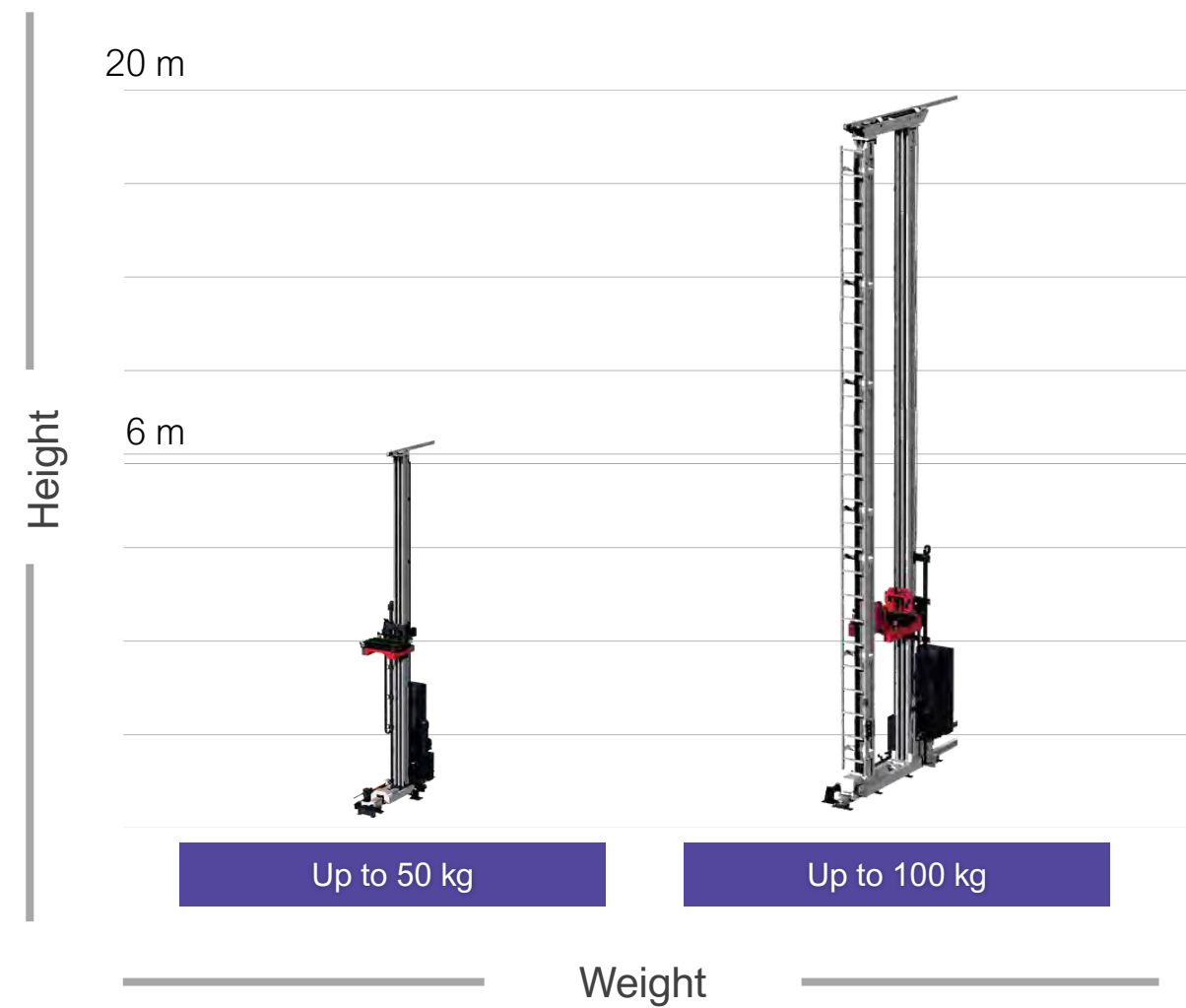


**Flow Rack**  
For efficient piece picking, the AS/RS automatically replenishes gravity flow racks—ensuring timely supply without interrupting operations and supporting productivity with minimal labor.



**U-Shaped Conveyor**  
A proven, space-efficient solution for simple to medium-scale systems, widely trusted in warehouses and factories for streamlined material flow and efficient picking operations.

## Crane Height vs. Load Capacity



## Loads

The Mini Load is a versatile tool that can handle a variety of load types.



Totes



Cartons



Metal Containers



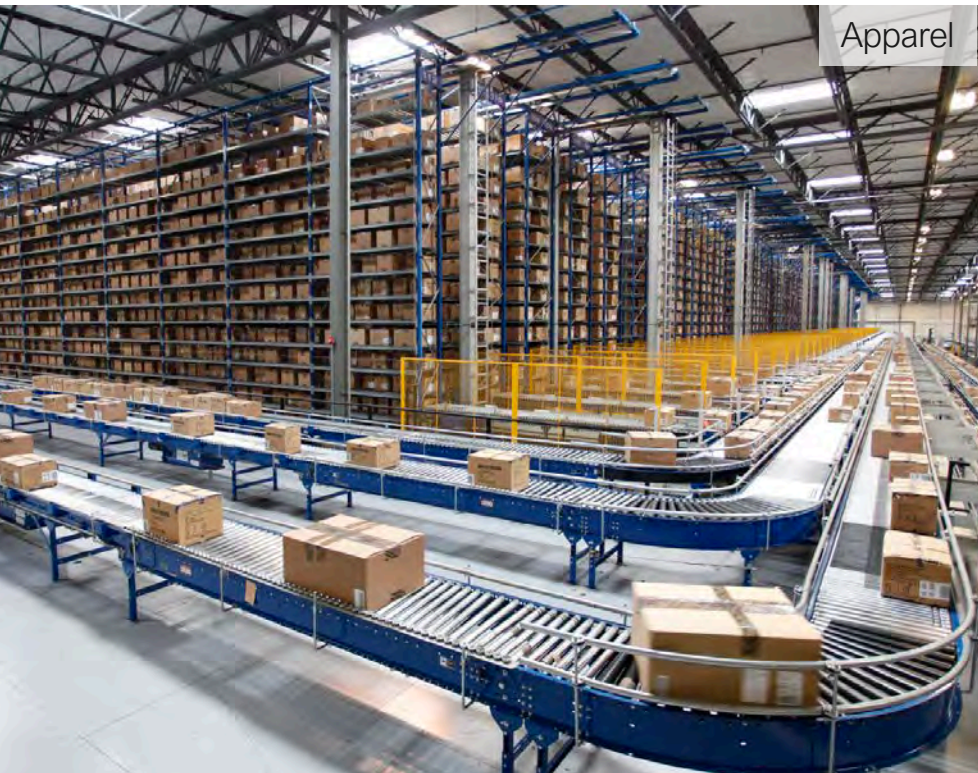
Trays



Mini Load

# Proven Applications

With thousands of Daifuku stacker cranes operating worldwide, the Mini Load AS/RS is a trusted solution—backed by decades of technological innovation and industry expertise. Designed for versatility, it handles a wide range of load types and has consistently delivered results for customers across the globe.



Pack-and-Hold Mini Load with a capacity of 355,000 cases, equipped with 56 stacker cranes for a leading global footwear manufacturer.



A Mini Load AS/RS combined with mini STVs ensures timely tote delivery to goods-to-person stations.



Roll handling extractor



15-meter-high AS/RS system capable of storing over 14,000 containers of motorbike parts



Mini STVs supporting transport and picking operations



Mini Load system with 18 cranes and over 50,000 storage positions—supporting high-volume confectionery distribution operations



Mini Load storing sterilization containers with surgical kits in a hospital



Mini Load crane combined with a flow rack to automate replenishment for picking operations



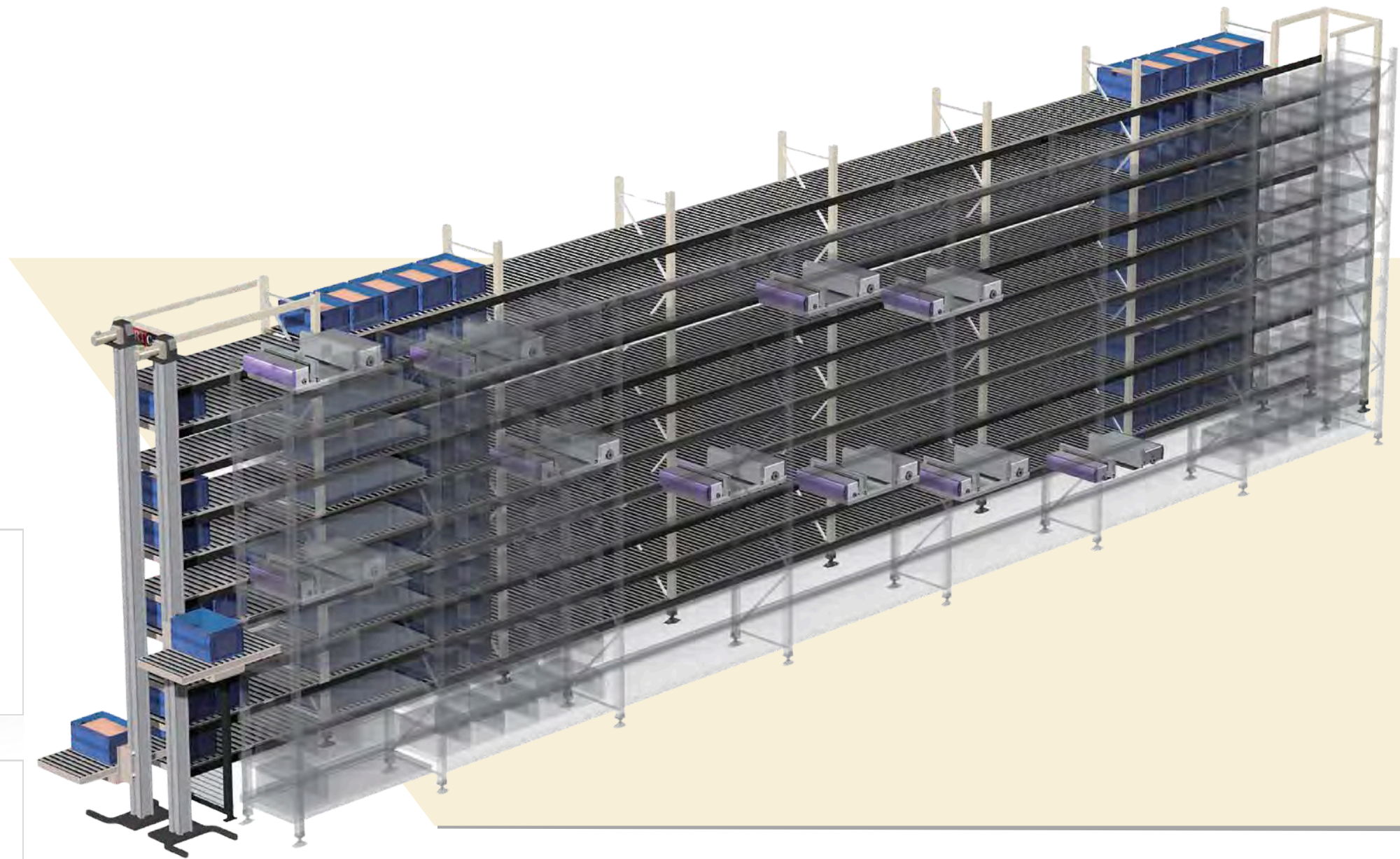
130-meter-long, double-deep AS/RS with over 76,000 storage locations—designed for a leading workwear apparel company



# Shuttle Rack M & MX

## | Shuttle Rack M

Daifuku's Shuttle Rack M is a high-speed, vehicle-based AS/RS that streamlines temporary storage, sorting, and sequencing. It supports a wide range of manufacturing and distribution needs—from buffering products between production and palletizing, to sequencing orders for shipment or mixed pallet creation. Ideal for high-mix, low-volume operations and fast, flexible logistics.



### High Throughput

With a shuttle on every level, the Shuttle Rack M delivers high throughput to support fast-paced manufacturing and distribution—even in environments as cold as -30°C.

### High-Density Storage

Available in single-deep and double deep configurations, the Shuttle Rack M stores various container and carton types with smart load-size allocation, maximizing space efficiency.

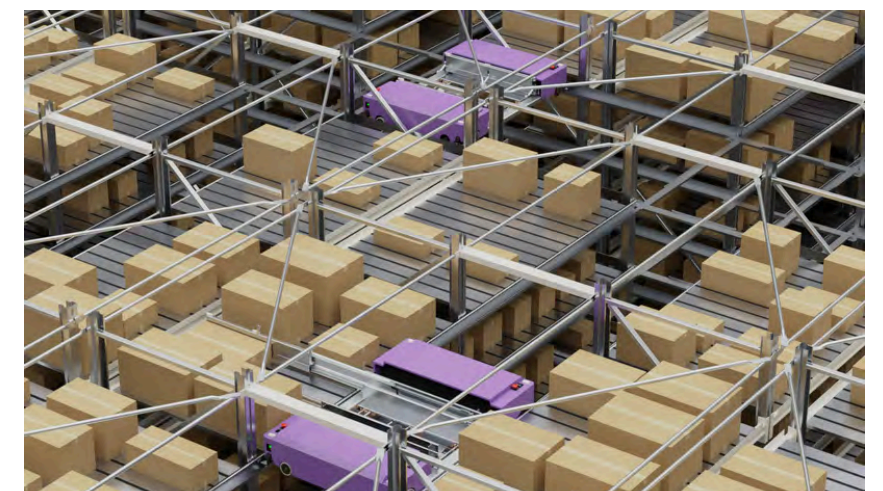
### Versatile Buffering & Picking

Beyond storage, the system streamlines inventory flow—supplying picking stations in the right sequence, buffering picked and packed items, and orchestrating grouped or sequenced dispatch perfectly aligned with delivery route and order.

### Reliable Operation

Faulty shuttles can be swapped with minimal disruption. Others keep running, allowing maintenance without stopping operations.

## | Shuttle Rack MX



Daifuku's Shuttle Rack MX is a next-generation, multi-directional shuttle system designed for high-throughput, high-density case handling. Building on the proven performance of the Shuttle Rack M, it introduces XY mobility, allowing vehicles to move freely along both the X and Y axes for greater flexibility, efficiency, and redundancy in modern warehousing environments.



# Shuttle Rack M

## Proven Applications

From high-speed order picking to compact storage and order sequencing, Daifuku's Shuttle Rack M delivers flexible performance across a wide range of industries—including food and beverage, pharmaceuticals, apparel, electricals, and more. Designed for efficiency and adaptability in both distribution and manufacturing, it helps streamline operations and optimize space, making it a smart choice for modern intralogistics.



Pharmaceutical

The Shuttle Rack M is deployable across industries, including pharmaceuticals.



Cosmetics

Shuttle Rack M supporting order handling for a cosmetics manufacturer



Food

Storing agriculture produce prior to shipping



Electronics

Lifters facilitate the movement of electrical appliances between levels for a major camera manufacturer



Retail

5,000 storage locations for an e-commerce platform



Food

Operating at -25°C to handle home deliveries of frozen food



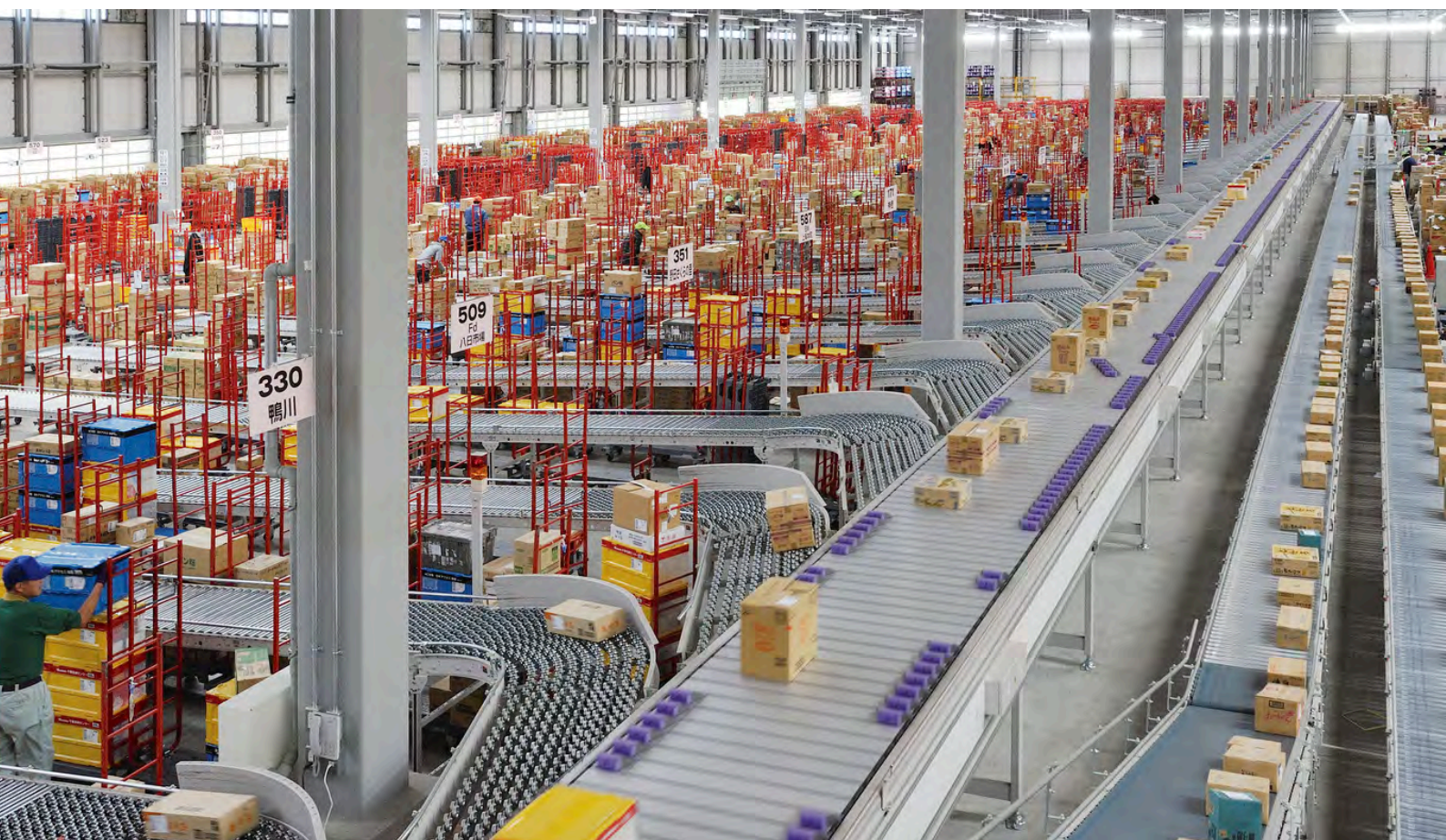
Apparel

Handling footwear for a 3PL – the Shuttle Rack stores inventory and sequences retrieval based on store orders





Daifuku has delivered  
over 9,000 STVs



# Sorting Solutions

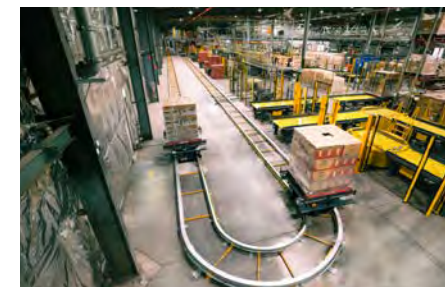
Whether in a warehouse, distribution center, or factory, the ability to quickly and accurately direct items to the right location keeps operations running smoothly. As order volumes grow and product mixes diversify, manual sorting becomes a bottleneck, slowing throughput, increasing errors, customer dissatisfaction, and driving up labor costs.

## Sorting Systems



### Surfing Sorter

Our Surfing Sorter is a slide-shoe type sorter that offers fast, accurate sortation for cartons, totes, and other items. It handles various shapes and sizes with care, ensuring smooth flow and minimal errors — ideal for high-volume operations.



### Sorting Transfer Vehicle (STV)

Capable of operating down to -30°C, the STV is a rail-guided pallet sorting and transport system that moves goods quickly and quietly between zones. Its flexible layout and energy-efficient design make it perfect for scalable, high-throughput environments.



### Sorting Transfer Robot L (SOTR-L)

The SOTR-L is a pallet sorting and transport vehicle that operates without fixed rails or conveyors. It's easy to install, adapts to layout changes, and runs continuously, even during maintenance.



### Sorting Transfer Robot S (SOTR-S)

The SOTR-S is a compact, high-speed sorting vehicle that automates item handling to boost efficiency and reduce labor costs. Operating at up to 180 m/min, it can process up to 10,000 order lines per hour.



## Sorting Solution

# Sorting Transfer Vehicle

Daifuku's automated rail-guided vehicle system, the Sorting Transfer Vehicle (STV), is a pallet sorting system designed to provide high-throughput material handling in conjunction with an Automated Storage and Retrieval System (AS/RS).

The STV has the ability to sort loads onto multiple conveyors, enabling efficient warehousing into and out of automated warehouse aisles, out of and back into order picking stations, and sorting by shipping direction. Cold chain suitable and Mini Load compatible models are also available.

### High Throughput

The STV moves swiftly and quietly, reaching speeds of up to 200 m/min. Intelligent control ensures smooth load transfers and efficient vehicle allocation, even in multi-vehicle systems—maximizing performance while minimizing energy use.

### Flexible Configuration

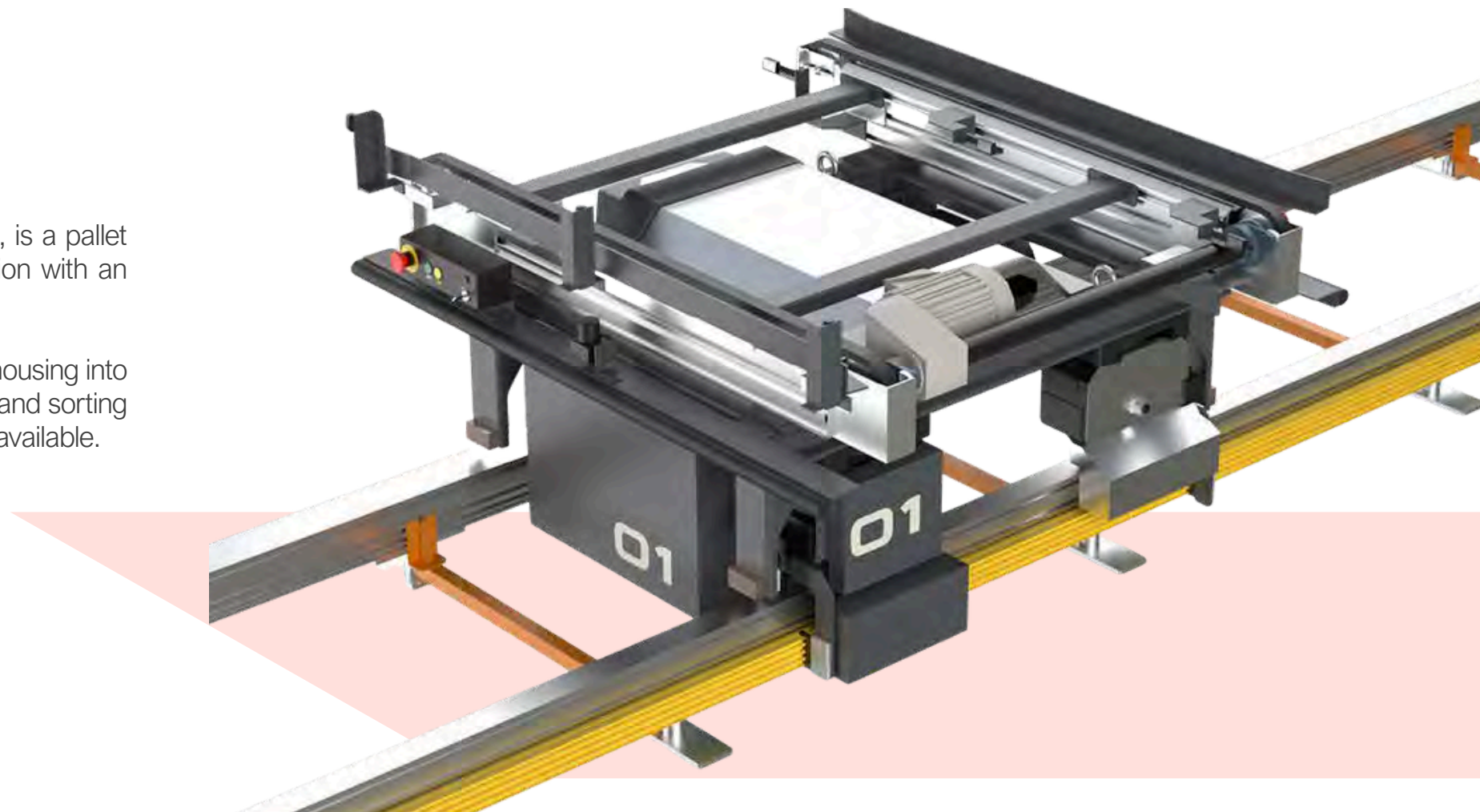
Designed to adapt, the STV supports Single, Dual Shuttle, and Loop setups. It can scale with your operations, whether expanding warehouse space or increasing transport volume.

### Reliable Operation

Conveyors can halt entire lines when one section fails. The STV avoids this with independent vehicles on rails. In Dual and Loop setups, others keep running—even during maintenance—ensuring smooth, uninterrupted flow.

### Cold Chain Ready

The STV supports cold chain operations down to -30°C, eliminating manual handling and forklift traffic in harsh environments.





# Specs & Configurations

## Specifications

Model	STV-100	STV-200	STV-300
Load size (mm)	900-1,300L x 900-1,300W	900-1,500L x 900-1,500W	
Load weight (kg)	1,000 kg	1,500 kg	3,000 kg
Speed (travel)	160 m/min (loaded), 200 m/min (unloaded)		
Speed (transfer)	30 m/min		

## Configurations



**Single Vehicle System**  
A single vehicle travels on a straight rail to transport a load. Forklift operators do not have to move from one end of the warehouse to the other, thus improving work efficiency. The straight rail can be combined with a 90° curved rail.



**Dual Vehicle System**  
The system consists of two vehicles on straight rails, both of which can be operated simultaneously, increasing throughput by 1.5 times.



**Multi-Vehicle Loop System**  
Multiple vehicles are deployed on a loop rail. Each vehicle can carry a load at the same time, enabling a greater number of loads to be processed. Additional vehicles can be added at a later stage to increase the processing capacity.

## Proven Applications

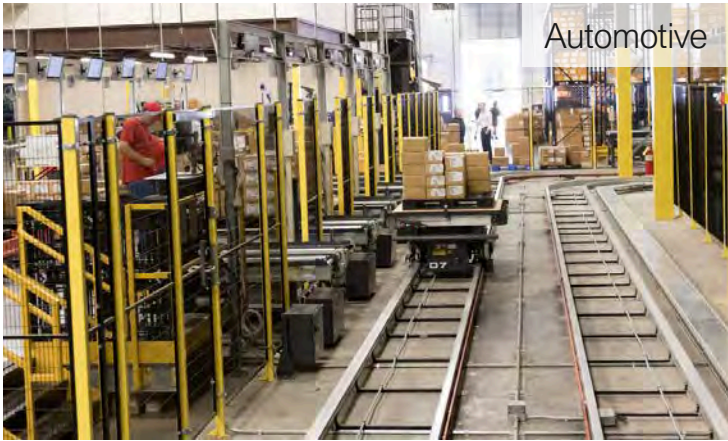
The STV is the ideal companion for maximizing the performance of a Daifuku automated storage system. With over 9,000 units installed globally, it's a proven and reliable technology that supports intralogistics operations across industries. STVs provide efficient transport and sorting functions that streamline workflows, reduce forklift traffic, and help prevent handling errors.



Cosmetics  
Transporting palletized finished products to a Unit Load AS/RS until called for shipping.



Food  
Handling box pallets of finished pet food ready for packing



Automotive  
Delivering palletized automotive parts in cases to goods-to-person stations for efficient case picking.



Food  
An STV loop transports pallets between multiple processes—storage, case picking, and shipping.



## Sorting Solution

# Sorting Transfer Robot S

As order volumes surge and product variety increases across warehouses and distribution centers, traditional sorting methods—often dependent on manual handling—struggle to keep pace. The result? Slower operations, rising costs, and diminished customer satisfaction.

The Daifuku Sorting Transfer Robot S (SOTR-S) is purpose-built to overcome these challenges. With cutting-edge automation, it delivers fast, accurate sorting across a wide range of items. It enhances efficiency, streamlines labor costs, and scales effortlessly with your business needs.

### High Throughput Sorting

Fast vehicles and a two-tier design enable smooth flow and sorting of up to 10,000 lines per hour.

### Easy Installation

Quick setup compared to conventional piece sorting systems—your operations are up and running.

### Flexible and Scalable

Easily expand with more vehicles and chutes to handle varied loads as your business needs change.

### High Productivity

Dense chutes reduce walking distance and let you operate with fewer operators—boost efficiency.

### Space Saving

High-density sorting in a compact footprint, with narrow aisles enabled by a tilting tray mechanism for flexible left-right sorting.

#### Vehicle

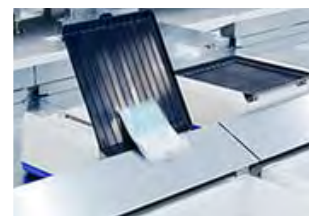
Rapidly sorts piece items with a double-sided sorting function.

#### Lifter

Transports vehicles between levels.

#### Induction Station

A worker places the product on the vehicle, and an overhead barcode reader scans the label.



#### Belt Conveyor Chute

Transports goods into pockets. An operator then moves them to collection bins.



#### Plate Chute

Deposits goods directly into collection bins. Ideal for non-fragile goods like apparel.



#### Charging Station

Rapidly recharges vehicles.





# Picking Solutions

Picking is no longer just about selecting items—it's about speed and accuracy in a world where same-day delivery is the norm. Daifuku's automated picking solutions reduce labor, boost throughput, and ensure precision. From goods-to-person and pick-to-light systems to robotic arms, our solutions are available as part of a wider system to keep orders flowing from storage to shipment.

## Picking Technologies



### Pick-to-Light System

Daifuku's pick-to-light system guides workers with digital shelf displays, boosting picking speed and accuracy while reducing errors. It's flexible, scalable, and proven across retail, e-commerce, and wholesale operations.



### Quick Pick Station (QPST)

The QPST automates goods-to-person picking by delivering both inventory and order containers to the operator. Guided by a simple display, it reduces errors, boosts efficiency, and minimizes physical strain—ideal for fast, accurate order fulfillment.



### Piece Picking Robot

As part of Daifuku's integrated systems, piece picking robots automate item-level picking with precision—reducing labor, improving accuracy, and supporting high-volume operations.



### Case Picking Robot

Integrated into Daifuku's automation systems, case picking solutions optimize carton-level handling to accelerate case picking and palletizing operations.



# The Right Automation Partner

Choosing the right partner to lead your automation journey is no easy task. With a wide range of providers offering diverse solutions, selecting the right one is critical to the success of your project.

Here's what Daifuku brings to the table:

## Daifuku Designed and Built

Daifuku's automated warehouses are fully designed and built in-house, backed by decades of engineering and manufacturing expertise.

## End-to-End Solutions

Our solutions go beyond storage—covering picking, sorting, and on-site transport to fully automate and transform your operations. From receiving and inspection to putaway, in-process handling, retrieval, picking, and shipping buffering, we can support every step of the intralogistics journey.

## International Sales and Support

Daifuku is able to provide support in Asia, Oceania, the Americas, and Europe. We are ready to meet your needs with advanced material handling systems.

## Proven Expertise

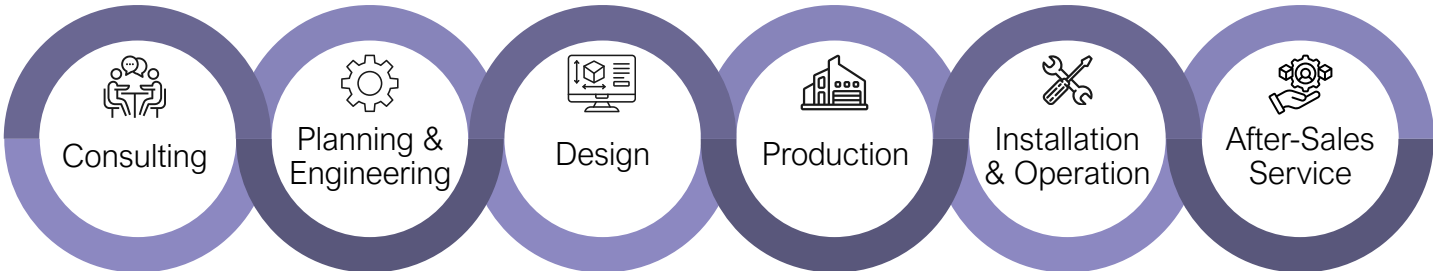
We bring decades of proven expertise—backed by over 35,000 stacker cranes and 9,000 STVs delivered across thousands of projects worldwide.



## Total Solution Experience

As a global leader in material handling automation, Daifuku delivers comprehensive, end-to-end solutions tailored to your needs.

Our Total Solution Experience covers every stage of your automation journey—from consulting and planning to design, manufacturing, installation, maintenance, upgrades, and retrofits. With Daifuku, you gain a trusted partner who guides you through every step with expertise and reliability.





# Experience It — Hini Arata Kan

Hini Arata Kan is our state-of-the-art demo center located within our Shiga Works facility in Japan.

This full-scale showroom allows visitors to experience Daifuku's material handling systems and technologies firsthand.

It features our latest innovations in storage, transport, sorting, and picking. Guided by our experienced staff, guests can explore solutions tailored to a wide range of manufacturing and logistics applications.

- Over 450+ technologies
- Tours available in four languages
  - English
  - Japanese
  - Korean
  - Chinese

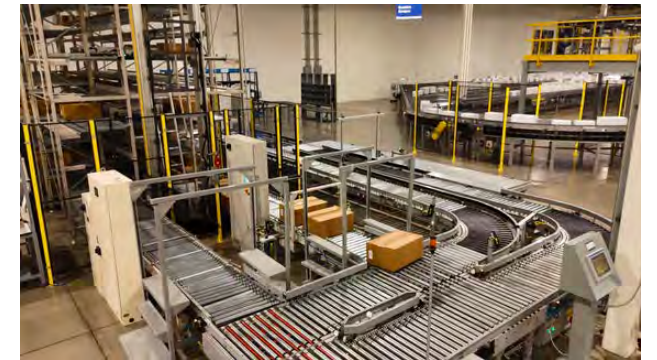


## US Innovation Center



In addition to our demo center in Japan, we also operate a demo center in Chicago, Illinois (USA) to support application validation and hands-on training.

Our Intralogistics Innovation Center combines classroom learning with live demonstrations of advanced material handling technologies. Visitors can explore interactive kiosks and experience over 20 automated systems across 60,000 square feet—including storage, picking, conveying, sorting, robotics, and structural solutions.





# DAIFUKU

*Daifuku is one of the world's top  
material handling solution providers.  
Discover how we can support you and  
your customers today.*

[www.daifuku.com](http://www.daifuku.com)

