

# Storage-Retrieval Machines and Shuttles

Pure Dynamic, Flexibility, and  
Efficiency in the Warehouse

[ssi-schaefer.com](https://www.ssi-schaefer.com)

The SSI SCHAEFER logo is located in the bottom right corner of the page. It consists of the letters 'SSI' in a bold, red, sans-serif font, followed by 'SCHAEFER' in a bold, black, sans-serif font. The logo is set against a yellow background that is part of a larger yellow graphic element at the bottom of the page.

**SSI SCHAEFER**

# Indispensable Partners in Modern Warehouses

Storage systems such as storage-retrieval machines (SRMs) and shuttle systems from SSI SCHAEFER are crucial building blocks in a cost-optimized logistics chain.

We offer innovative storage-retrieval machines and shuttle systems that are flexible, economical, and perfectly tailored to your needs for all applications requiring optimized warehousing with fast material transport and short access times. With our solutions for heavy and compact load carriers, you benefit from better turnover performance and a significant increase in efficiency.

While the production of our solutions is based on standardized components, it is still customer-specific. In-house manufacturing ensures consistent quality and maximum reliability of the end products. With engineering services, machine technology, steel construction, and control technology all from a single source, as well as our own customer service and software expertise, we ensure that all components work together perfectly. In addition, SSI SCHAEFER offers a wide range of solutions for connecting the storage systems to automatic and manual storage equipment, from incoming goods, to picking workstations, and to shipping.



## Benefits for You

- Application-optimized load handling devices adapt to any load carrier
- Low approach heights ensure excellent space utilization
- Optimized turnover performance through tailored dynamics and a variety of different drive units
- Low maintenance thanks to high-quality, tried-and-tested machine elements and ease of access
- Compact assembly groups and storage-retrieval machines that have already been commissioned at the factory ensure smooth transport and short installation times
- Control via WAMAS® logistics software or SAP EWM

## Our Solutions for

### Heavy Load Carriers:

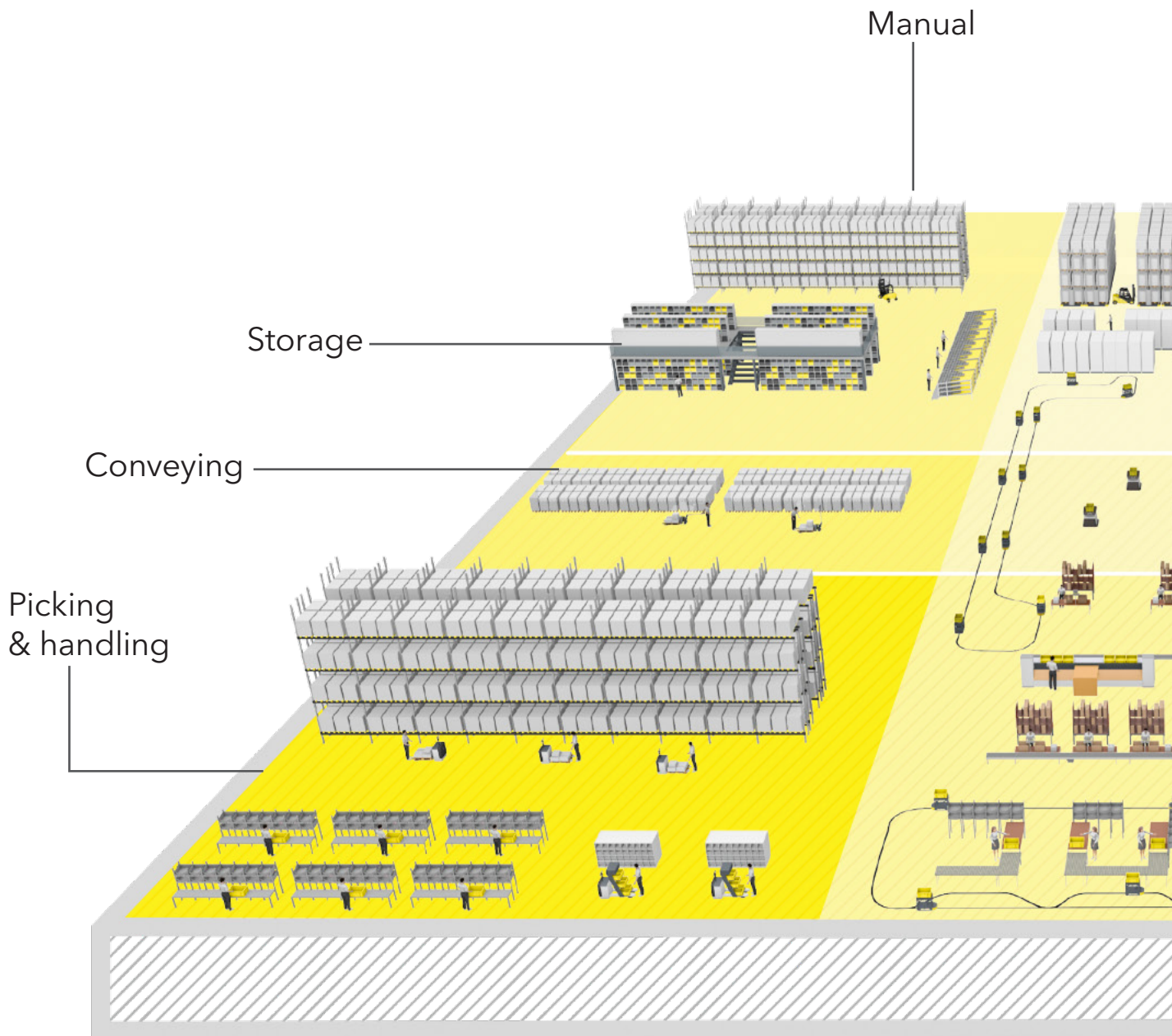
- SSI Exyz: Storage-retrieval machine for energy-efficient storage of heavy load carriers
- SSI Lift&Run: Multi-level pallet shuttle for channel storage systems

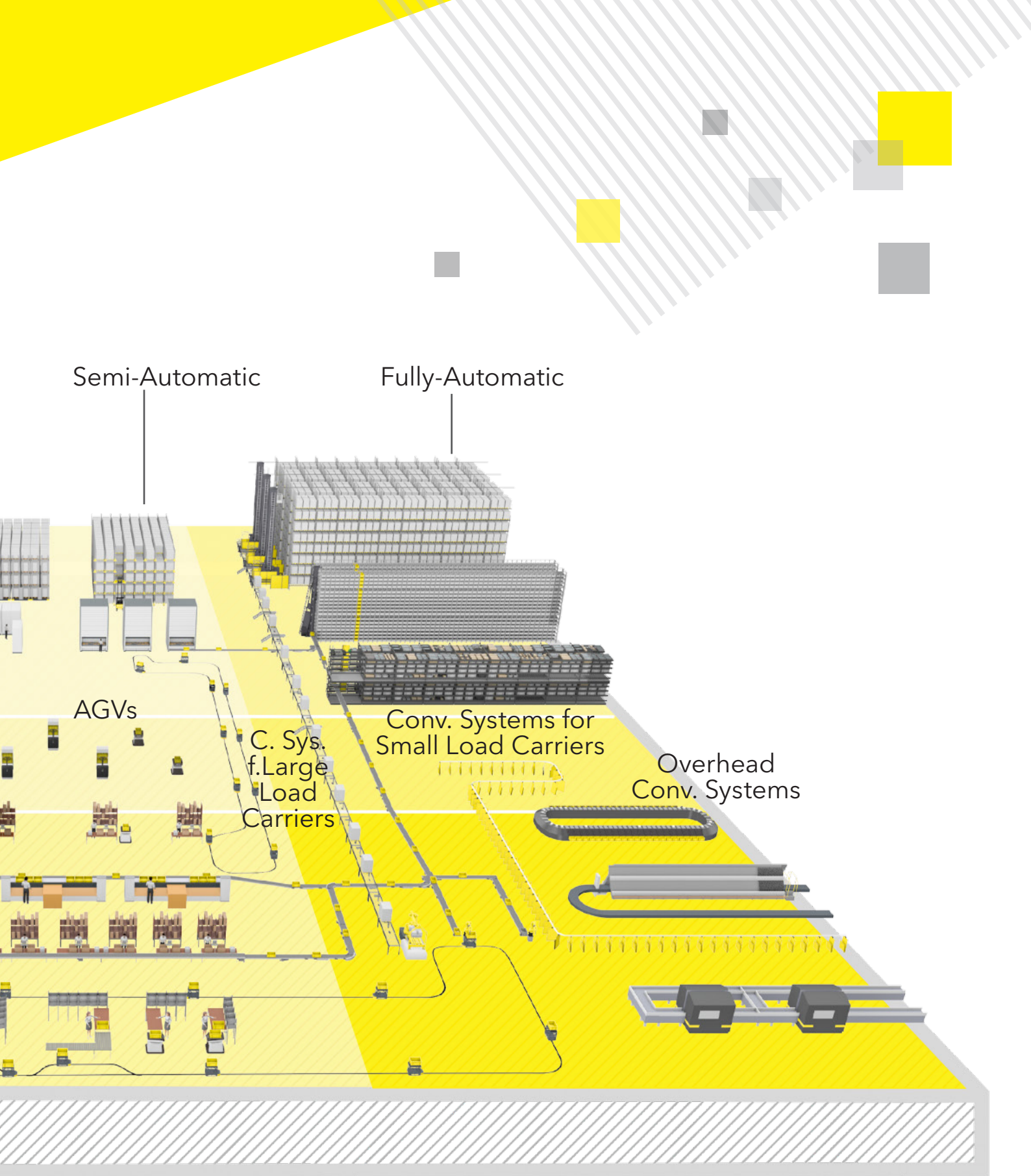
### Compact Load Carriers:

- SSI Miniload: Storage-retrieval machine to store and pick bins, cartons, and trays
- SSI Cuby: Standardized one-level shuttle system for bins and cartons
- SSI Flexi: Highly flexible one-level shuttle system for cartons, trays, and bins of different sizes



# Our Logistics Solutions





Semi-Automatic

Fully-Automatic

AGVs

C. Sys.  
f. Large  
Load  
Carriers

Conv. Systems for  
Small Load Carriers

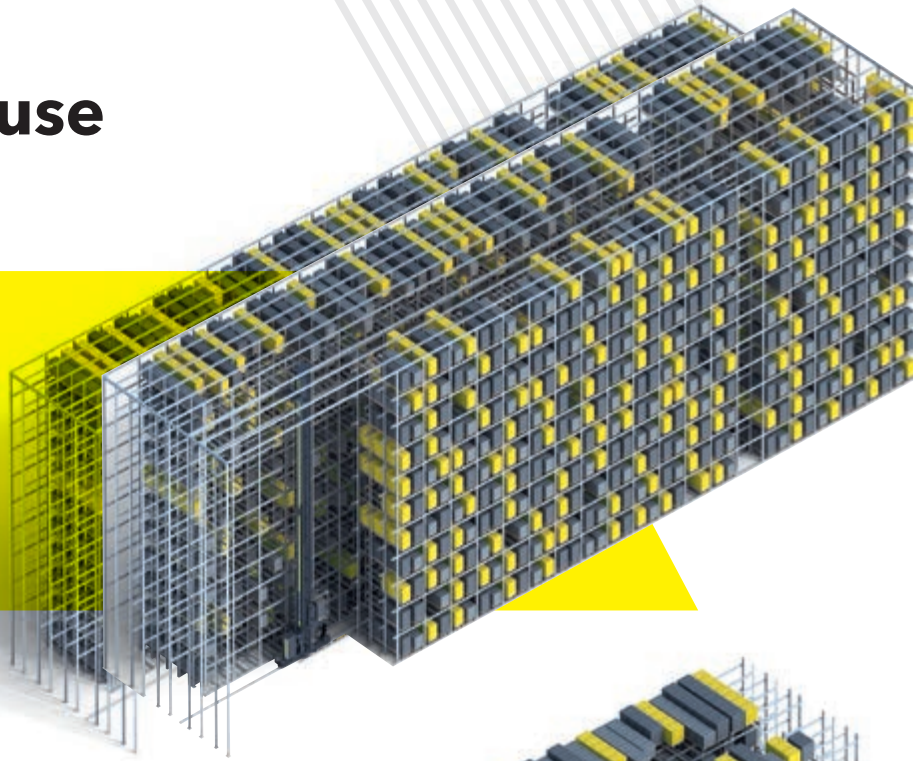
Overhead  
Conv. Systems

Management and control of material flows  
with e.g. WAMAS<sup>®</sup> and SAP EWM

# Pure Dynamic in the Warehouse

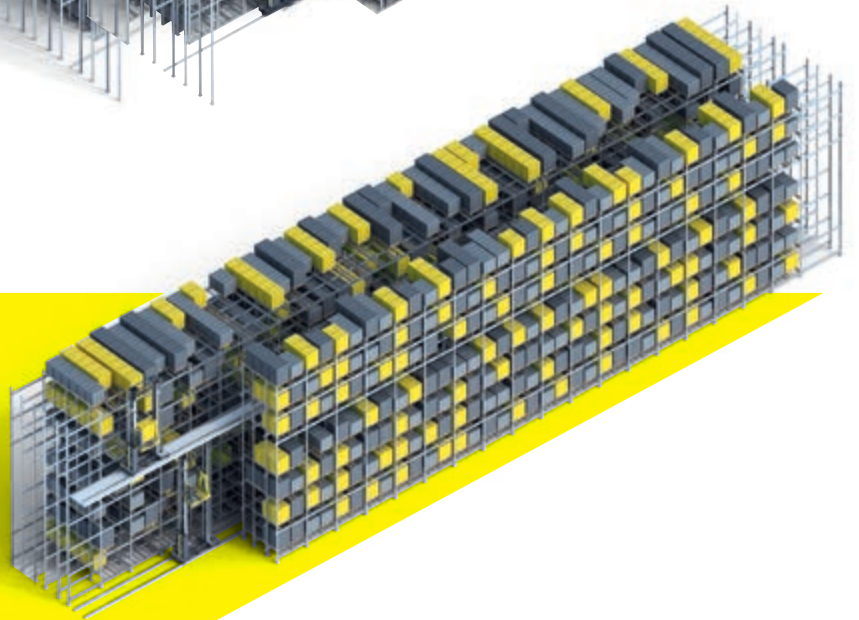
## SSI Exyz

Storage-retrieval  
machine for pallets



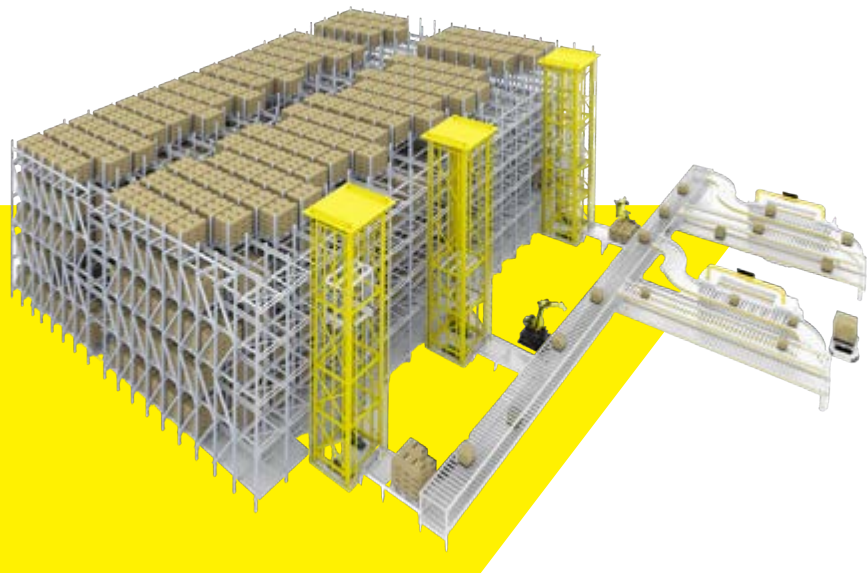
## SSI Lift & Run

Multi-level shuttle  
system for pallets



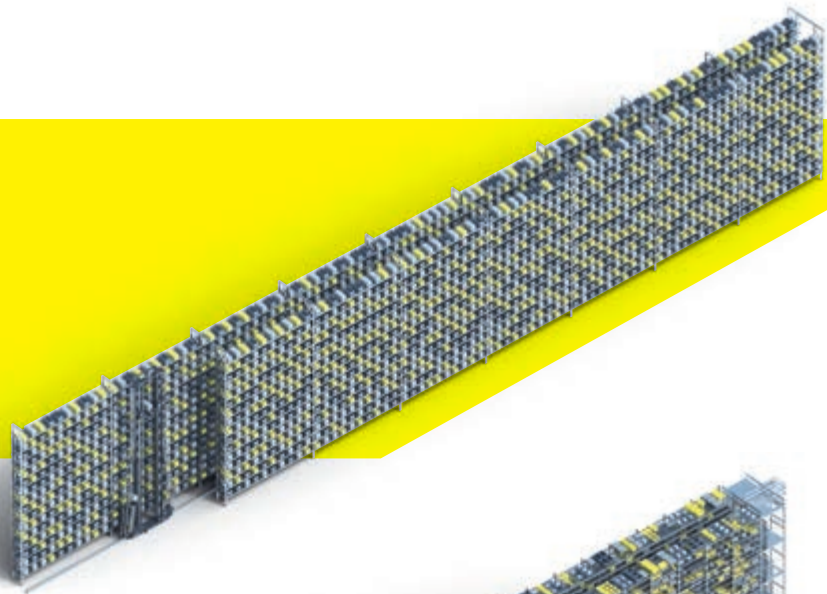
## SSI Pallet Roaming Shuttle

Multi-level, multi-axis  
roaming shuttle for pallets



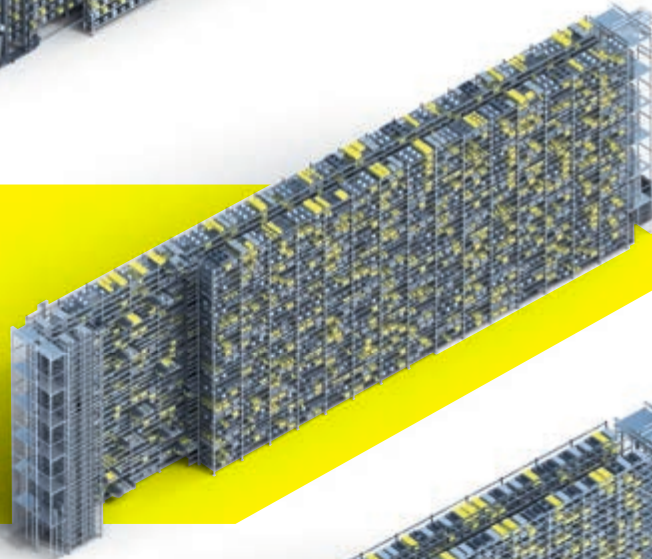
## SSI Miniload

Storage-retrieval machine  
for small parts logistics



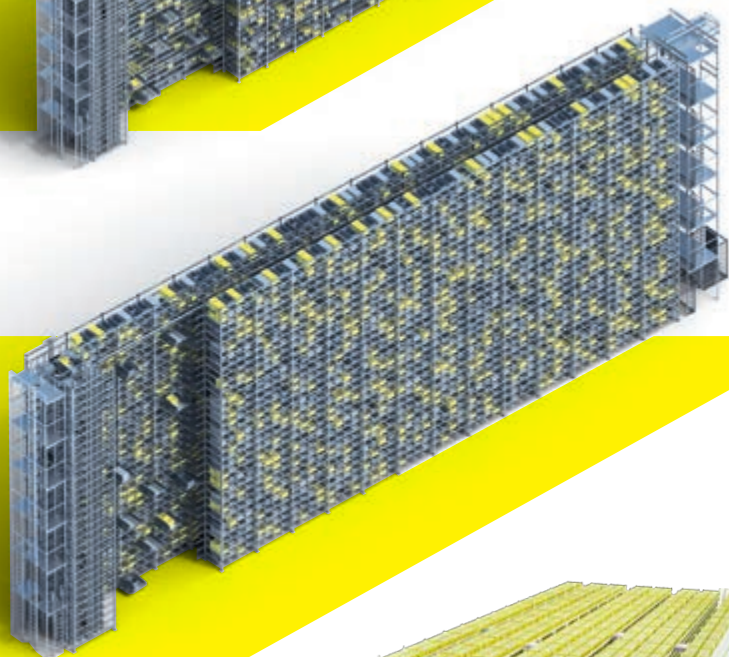
## SSI Flexi

Flexible one-level  
shuttle system for  
compact load carriers



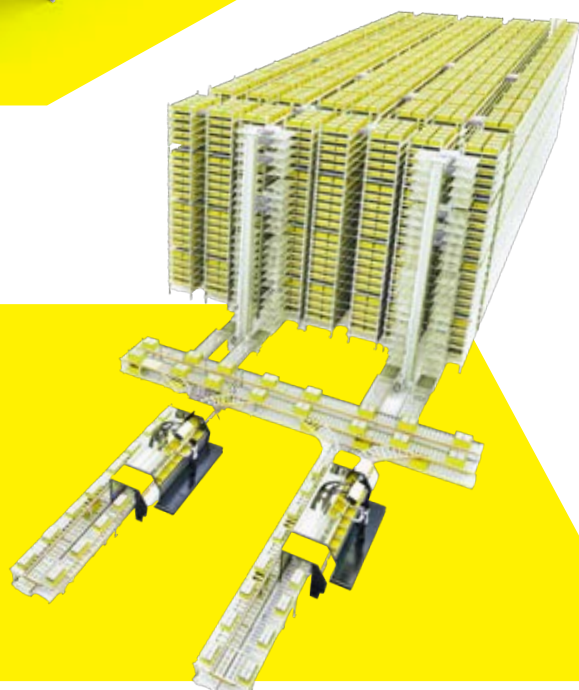
## SSI Cuby

Highly standardized  
one-level shuttle system  
for compact load carriers



## SSI Case Roaming Shuttle

Multi-level, multi-axis shuttle  
for compact load carriers



# SSI Exyz

For Maximum Energy and  
Cost Efficiency in Pallet Storage



The SSI Exyz from SSI SCHAEFER is the ideal solution for fully automated storage of pallets in high-bay warehouses. The SRM can be used under tropical conditions as well as in deep-freeze warehouses as low as -28 °C, and its extremely compact design allows efficient high-bay warehouse storage at heights from 5 to 45 meters.

The SSI Exyz boasts maximum flexibility. For example, our storage-retrieval machine can be used as a single- or double-mast system with one or two load handling devices for single-, double- or multiple-deep storage and retrieval, including the SSI Orbiter LHD. The SRM configuration is based on an efficient modular principle: The SSI Exyz components are mass-produced and pre-assembled at the factory, allowing them to be put into operation in a short time.

Thanks to consistent use of the latest control technologies, the SRM requires only a minimum of safety distances, supported by a compact interlocking design of the floor beam, pallet truck, and mast. The cleverly nested and extremely compact design, in combination with optimized control, significantly reduces the space needed, allowing space savings of up to 5% over conventional high-bay warehouses. These savings translate to many cubic feet that do not have to be built, heated, or air conditioned.

SSI Exyz is the most innovative device on the market and takes into account the critical contribution that the lifting gear makes to the energy consumption of heavy load carrier storage. Energy savings in this area can be achieved from the start through use of a counterweight integrated into the mast. These savings are significantly higher than any gains from energy recovery. SSI Exyz offers both together - an absolutely unique selling point from SSI SCHAEFER.



## Technical Data

<b>Height</b>	5 to 45 m
<b>Aisle length</b>	Up to 160 m (longer aisles optional)
<b>Load</b>	1,500 kg
<b>Storage</b>	Single-, double-, multiple-deep
<b>Traveling speed</b>	Up to 4 m/s
<b>Lifting speed</b>	Up to 1.5 m/s
<b>Temperature range</b>	-30 °C to +50 °C (non-condensing)

## Benefits for You

- The ideal solution for fully automated storage and retrieval of heavy load carriers
- Modular design: Maximum reliability thanks to serial production
- Significant reduction of operating costs thanks to efficient energy usage
- Simple maintenance: The units can be maintained entirely from the ground
- Highly compact design reduces operating and construction costs

# SSI Lift & Run

The SSI Lift & Run (SLR) pallet shuttle system combines a highly dynamic design and storage density with maximum flexibility and efficiency.



With the SSI Lift & Run system, SSI SCHAEFER offers a very special shuttle system solution for highly dynamic pallet handling with multiple-deep storage. Special features: The SLR can be customized to your specific needs depending on the required turnover performance, storage capacity, product range, and the available floor space and geometry. This allows creation of logistics systems optimized for your needs. For instance, multiple shuttles can be arranged one above the other; these can directly access a configurable number of storage levels that are all connected via lifts. The operation of multiple shuttles within one aisle has already been implemented. With the SSI Lift & Run, even matrix concepts for handling pallets can be implemented consistently.

Depending on the number of items, the variety of batches and the range of storage, almost any channel depth can be selected. The special highlight is that, through our warehouse management system, dynamic adjustment of the channel depths is easy, even after several years. At the same time, all channels can continue to operate even when neighboring aisles are being accessed - an invaluable advantage for system availability.

High dynamics, a small footprint, and low operating costs make the SSI Lift & Run a promising alternative to conventional high-bay pallet warehouses for many applications.

With our SLR, buildings for outgoing goods, shipping, and preparation can also be integrated into the system, allowing additional significant space reduction. This could be the decisive advantage for integration at your location.



## Technical Data

<b>Speed</b>	Up to 240 m/min
<b>Acceleration</b>	Up to 0.8 m/s <sup>2</sup>
<b>Lifting speed</b>	Up to 0.6 m/s
<b>Aisle height</b>	Up to about 9.2 m
<b>Y levels served per SLR</b>	Typically 2-4 levels per platform
<b>Height</b>	Up to 45 m
<b>Temperature range</b>	-30 °C to +50 °C

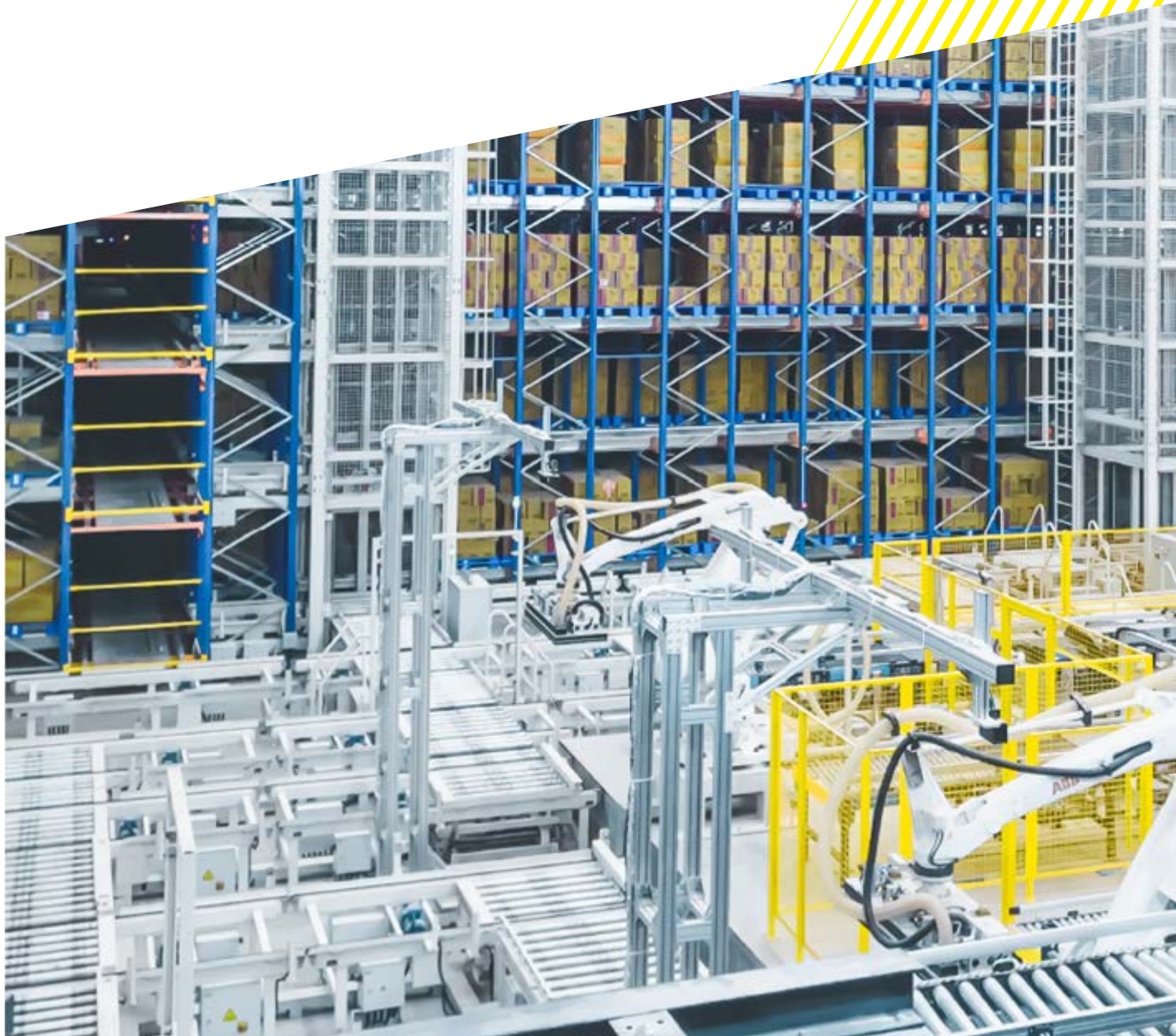
## Benefits for You

- Maximum flexibility for storage configuration
- Possibility of integrating shipping preparation and loading within the storage cube
- Any conveyor connection possible, from conventional pre-zone to high-performance matrix
- Implemented as in-house system and SILO high-bay warehouse up to a height of 45 m
- Low operating costs
- Maximum redundancy through integration of the channel rail design into the safety concept
- Brake energy recovery and intelligent drive control reduce energy consumption
- Very low maintenance thanks to ease of access

# SSI Pallet Roaming Shuttle

The SSI Pallet Roaming Shuttle is an intelligent robot that moves in four directions within a rail-guided system, enabling precise and efficient pallet handling in high-density, three-dimensional warehouses.

Fully integrated with WMS or enterprise-level systems, it provides real-time coordination, automatic identification of goods via RFID and barcodes, and optimized storage, retrieval, and inventory management.



The SSI Pallet Roaming Shuttle supports compact single- and multi-deep storage, maximizing space while enabling efficient inbound and outbound operations.

It is designed for quick deployment across various setups, including height-restricted facilities, existing buildings, and irregular layouts.



## Technical Data

<b>Speed</b>	1.5 / 1.6 m/s
<b>Load capacity</b>	Up to 1,500 kg
<b>System height</b>	24 m; options of 30 m and higher available
<b>Temperature range</b>	-25 °C to +45 °C

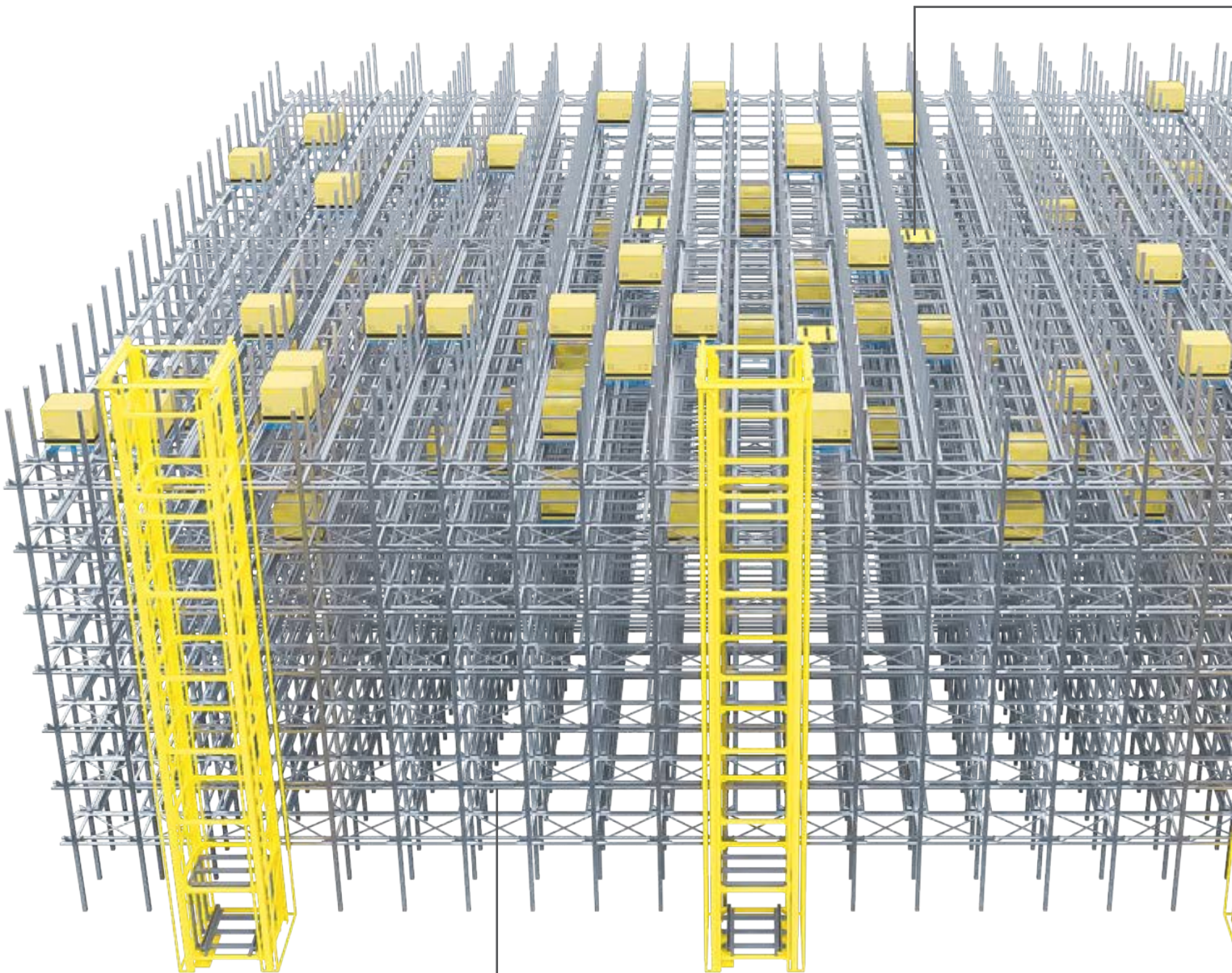
## Benefits for You

- **Omnidirectional movement:** Capable of reversing on the spot with optimally distributed drive wheels, allowing seamless navigation and direction changes within the system
- **Intelligent multi-shuttle coordination:** Equipped with autonomous path planning and multi-shuttle scheduling, ensuring smooth, synchronized operations and optimized throughput
- **Automatic charging:** Performs self-diagnostics and navigates independently to charging stations, supporting continuous and reliable operation
- **Advanced obstacle detection:** Utilizes multi-sensor navigation for real-time monitoring and accurate obstacle perception, enhancing safety and system performance

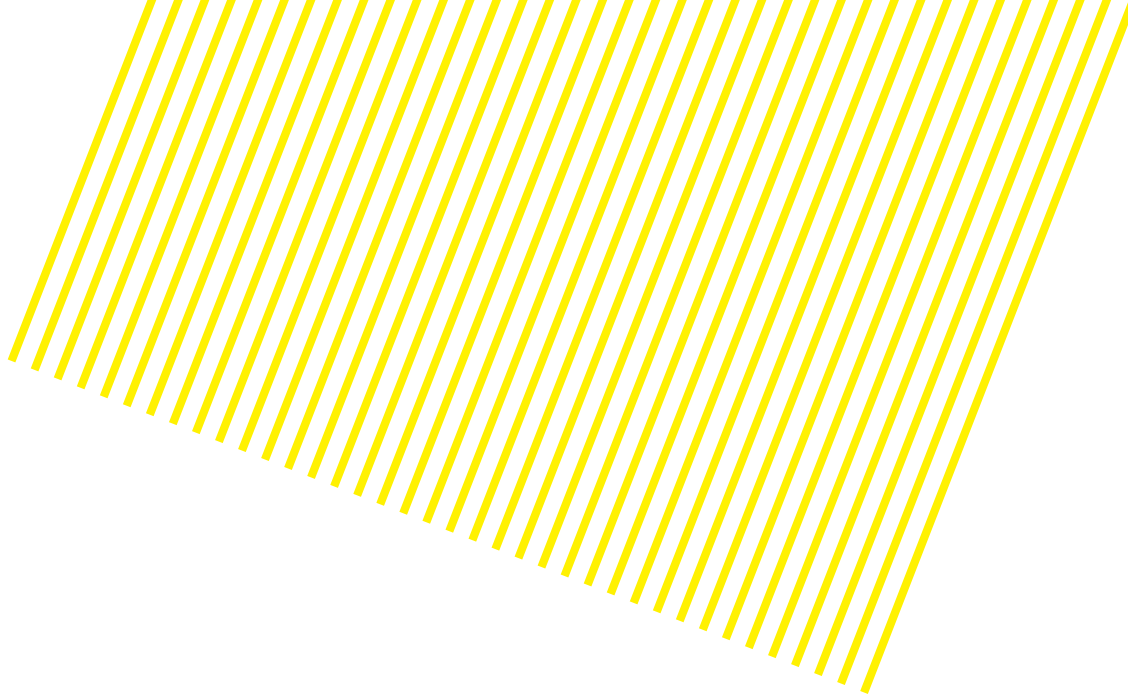
# SSI Pallet Roaming Shuttle

The SSI Pallet Roaming Shuttle unlocks full warehouse accessibility, reaching any position with precision while adapting its operations to your unique workflow.

Gliding seamlessly across aisles and levels, it redefines how space is used, enabling flexible storage depths, dynamic layouts, and a smarter flow of goods. Designed to thrive in complexity, it brings resilience, adaptability, and performance together, even in the most irregular warehouse environments.



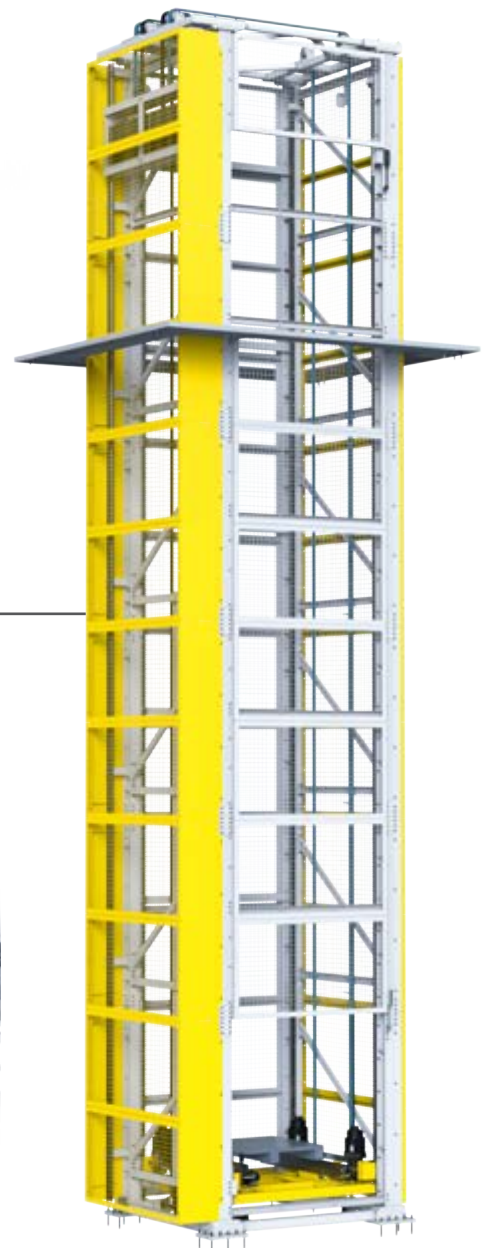
SSI Pallet Roaming Shuttle Racking System



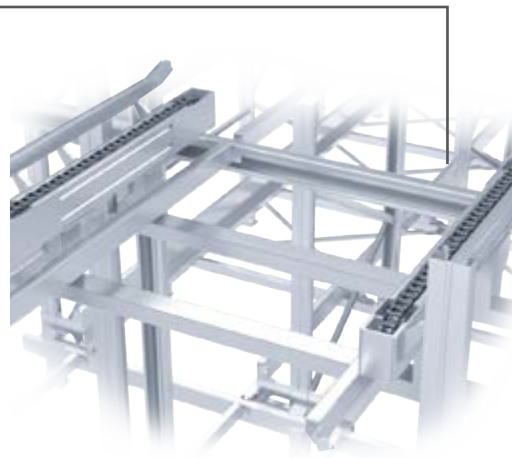
SSI Pallet Roaming Shuttle



Shuttle Carriage Lift



Layer Conveyor



Other Equipment:  
WiFi Access Points, Conveyors, etc.

# SSI Miniload

## Optimal space utilization in small parts warehouses with high availability and minimum energy consumption

The SSI Miniload is the ideal storage-retrieval machine in fully automated small parts logistics. It allows storage and picking of bins, cartons, and trays. The SRM makes optimum use of space - even in smaller warehouses - and allows safe storage of sensitive or valuable goods, even under freezing conditions.

The large variety of load handling devices means there are almost no limitations on the shape or surface characteristics of the parts to be stored or buffered. Thanks to the SSI Miniload's different variant options as a single- or double-mast device, the load handling devices can be tailored to your requirements. The modular design principle allows you to customize the system to your individual needs and achieve an optimal price-performance ratio. The storage-retrieval machine is designed for quality down to the smallest screw.

The further technical development of the SSI Miniload focused on low energy consumption and maintenance-friendly individual components in particular. The highly dynamic drives required for the operation of a small parts warehouse are specifically designed for a positive fit and slip-free operation to achieve full conversion of drive power into motion. The drive control as a central component for energy efficiency compensates for energy as a result of the intelligently combined control of drive and lifting motors. This ensures optimum travel and lifting times and allows an intelligent energy utilization and savings concept. Thus, energy that is generated on one axis is used directly for the operational processes of the second axis.



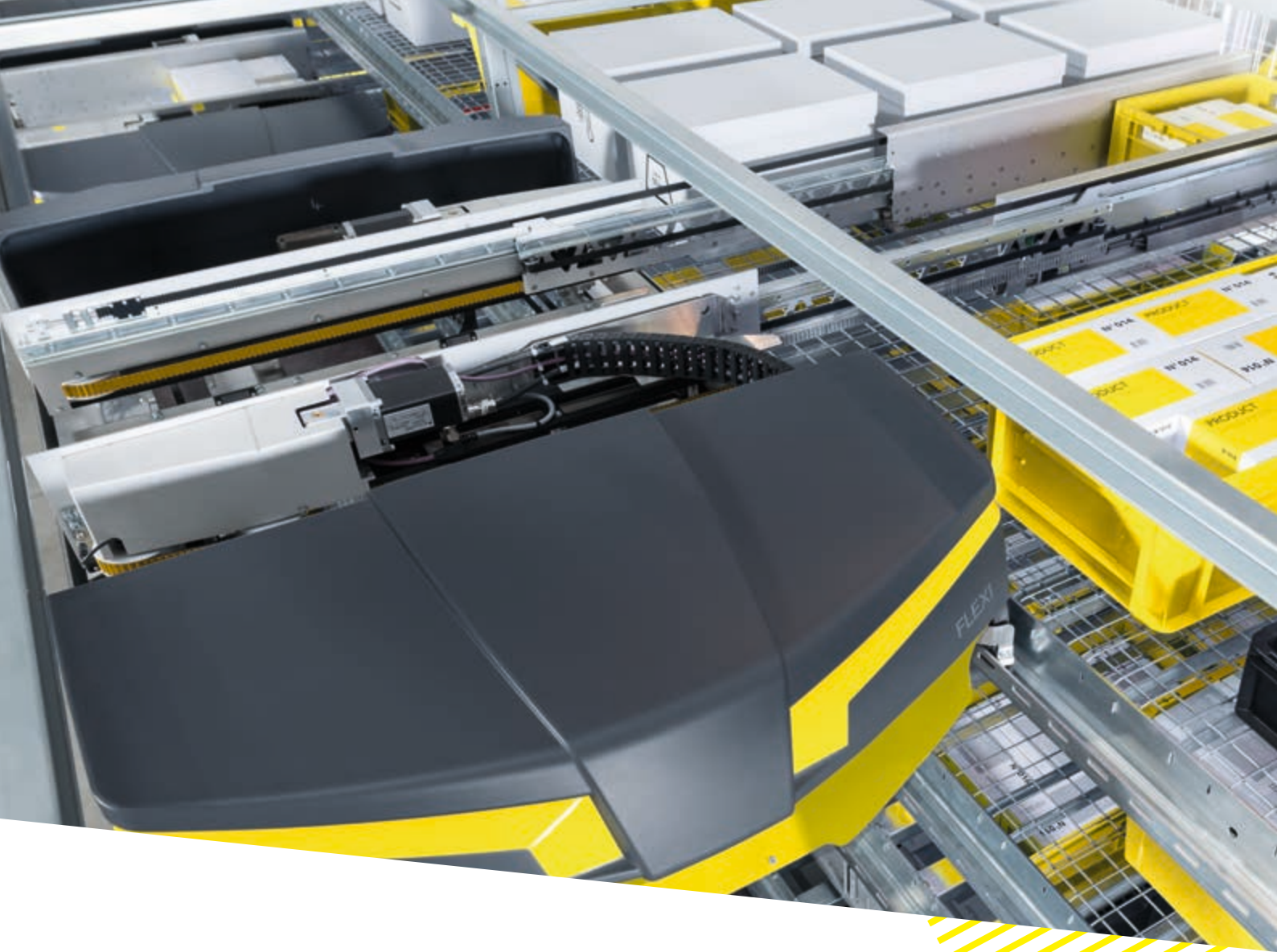
### Benefits for You

- Maximum utilization of the vertical storage direction along with a small footprint
- A large variety of load handling devices for a high degree of flexibility in handling various loading aids
- Diagonal mast bracing reduces weight
- High throughput due to fast travel and short load changeover times
- A wide range of solutions for connection to manual and automatic storage equipment
- Available as single- or double-mast device

### Technical Data

<b>Height</b>	Up to 24 m
<b>Load</b>	Up to 100 kg
<b>Storage</b>	Single-, double-, multiple-deep
<b>Traveling speed</b>	Up to 5 m/s
<b>Lifting speed</b>	Up to 4 m/s
<b>Acceleration</b>	Up to 3 m/s <sup>2</sup>
<b>Temperature range</b>	-28 °C to +35 °C (non-condensing)





## SSI Flexi

The scalable one-level shuttle for use in highly dynamic automated small parts warehouses with a large variety of transport units up to 50 kg and dynamically adaptable storage location sizes

The SSI Flexi is the trend-setting solution for fully space-optimized storage of a mix of cartons, trays, and cubic bins. While conical bin handling is also possible, there are limitations on combining these with other transport units. The modular design, consisting of a shuttle, lift, and rack system, allows tailored system concepts with excellent space utilization, maximum throughput, and a high degree of flexibility.

Thanks to the universal load handling device with width adjustment, the Flexi shuttle allows single-, double-, and multiple-deep storage of a wide range of transport units and dimensions, even under freezing conditions.

Unique feature: the rack concept with dynamically adjustable storage location sizes. Forgoing fixed assignment of x-storage locations allows space-optimized shelf allocation with maximum storage density, even with heterogeneous transport units and a wide range of transport dimensions.

In combination with the patented 3D-MATRIX Solution®, it significantly increases throughput: In addition to high-performance lifts installed at the beginning of the aisles, this solution also allows installation of any number of integrated lifts anywhere in the storage aisles. This allows a combination of highly dynamic solutions with automated storage, buffering, and integrated sequencing in a single system.



## Technical Data

<b>Speed</b>	Up to 4 m/s
<b>Load capacity</b>	Up to 50 kg
<b>Max. dimensions (L×W)</b>	860 × 680 mm (including tolerances)
<b>Transport units</b>	Cubic/conical bins, cartons, trays
<b>Length</b>	Up to 150 m
<b>Height</b>	Up to 30 m
<b>Storage</b>	Single-, double-, and multiple-deep
<b>Temperature range</b>	-30 °C to +45 °C

## Benefits for You

- Tailored, expandable system concepts with excellent space utilization and performance
- Safe handling of various transport units with a maximum load of 50 kg
- Dynamically adjustable storage location sizes allow flexibility throughout the life of the system coupled with maximum storage density
- Suitable for use in freezing environments
- Maximized throughput and integration through 3D-MATRIX Solution®
- Innovative shuttle power supply with supercapacitors for maximum energy efficiency
- Secure, high-performance communication via Industrial Wireless LAN (IWLAN) from Siemens

# SSI Cuby

The highly standardized one-level shuttle system for high availability at attractive costs.

The SSI Cuby one-level shuttle allows fully automatic, high-density storage of compact load carriers weighing up to 35 kg. The system consists of a rack, at least one lift, one Cuby shuttle per storage level, a shuttle crane at the back, a maintenance platform, and the corresponding control system. A scalable lifting system with two-story functionality ensures high performance alongside compact system layouts. Thanks to attractive purchase and operating costs, the SSI Cuby is one of the most economical shuttle solutions on the market.



It was designed for load carriers with dimensions from 600 × 400 mm to 640 × 440 mm and can be extended at a later time. Narrow shuttle vehicle travel paths and low level heights ensure a compact system layout that saves space. The combination of double-deep storage in the rack and a single-deep shuttle aisle leads to excellent space utilization and very high storage density. Thanks to these advantages, the SSI Cuby achieves low storage location costs.



## Technical Data

<b>Speed</b>	Up to 4 m/s
<b>Load capacity</b>	Up to 35 kg
<b>Max. dimensions (L×W×H)</b>	Bin system: 600 x 400 x 460 mm Carton system: 640 x 440 x 460 mm (carton, excluding tolerance/deformation)
<b>Transport units</b>	Cubic/conical bins, cartons, trays
<b>Length</b>	Up to 100 m
<b>Height</b>	Up to 24 m
<b>Storage</b>	Single-, double-deep

## Benefits for You

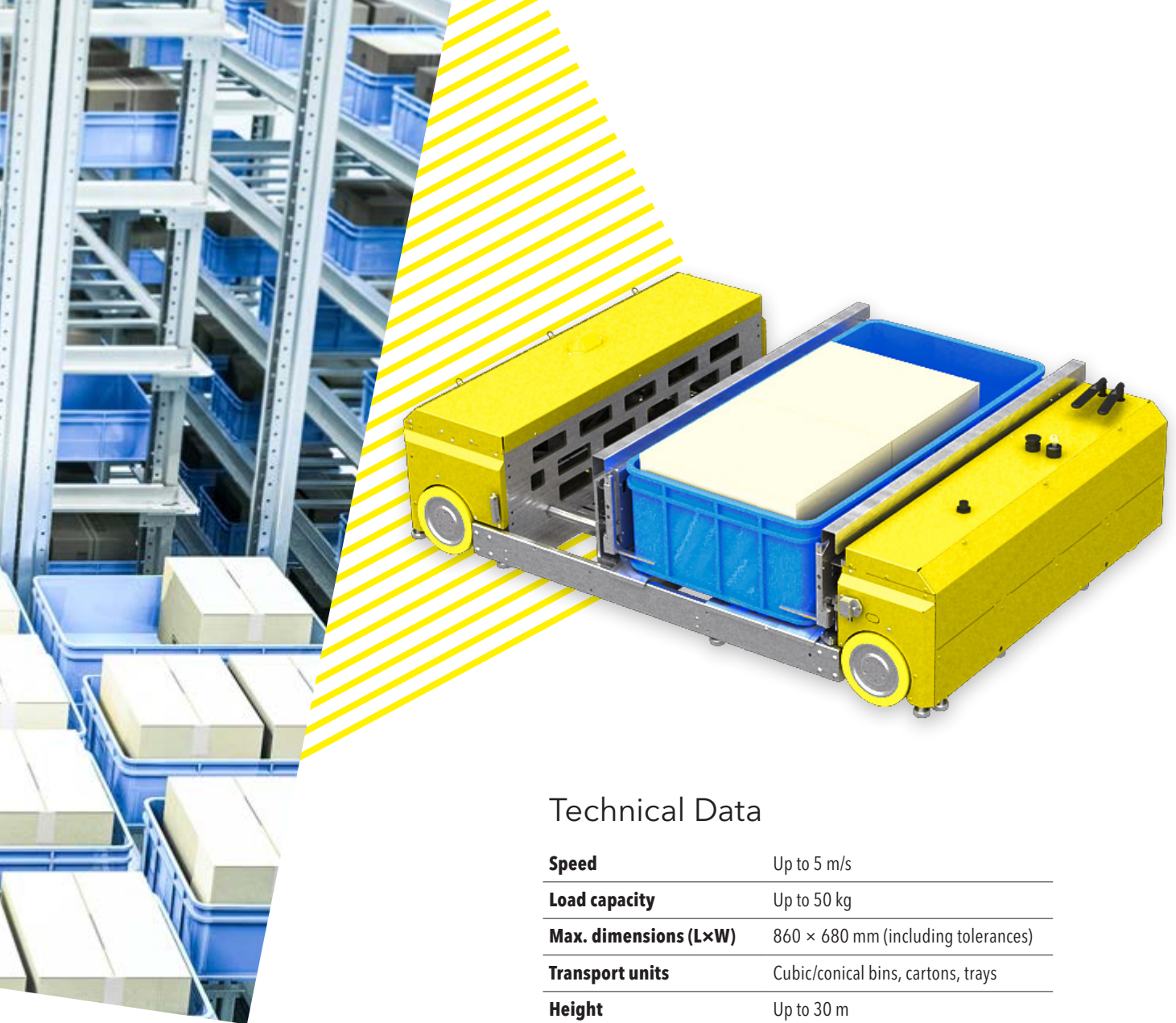
- Customized system concepts with excellent space utilization and optimal performance characteristics for bins and/or cartons
- Safe handling of transport units with a load of up to 35 kg
- High availability and attractive performance, as well as energy efficiency and cost effectiveness
- Excellent space utilization through double-deep storage in a single-deep shuttle aisle
- Very solid, modular kit construction
- Optimized connection to the pre-zone through two-story load handling device on the lift
- Simple, ergonomic shuttle maintenance



## **SSI Case Roaming Shuttle**

The SSI Case Roaming Shuttle is a multi-axis shuttle designed to handle compact load carriers up to 50 kg. Engineered for operation in extreme temperatures, it enables fast and efficient handling of totes and containers in three-dimensional warehouses.

Its flexibility and scalability allow installation across various warehouse setups while providing a cost-efficient solution for diverse material-handling requirements.



## Technical Data

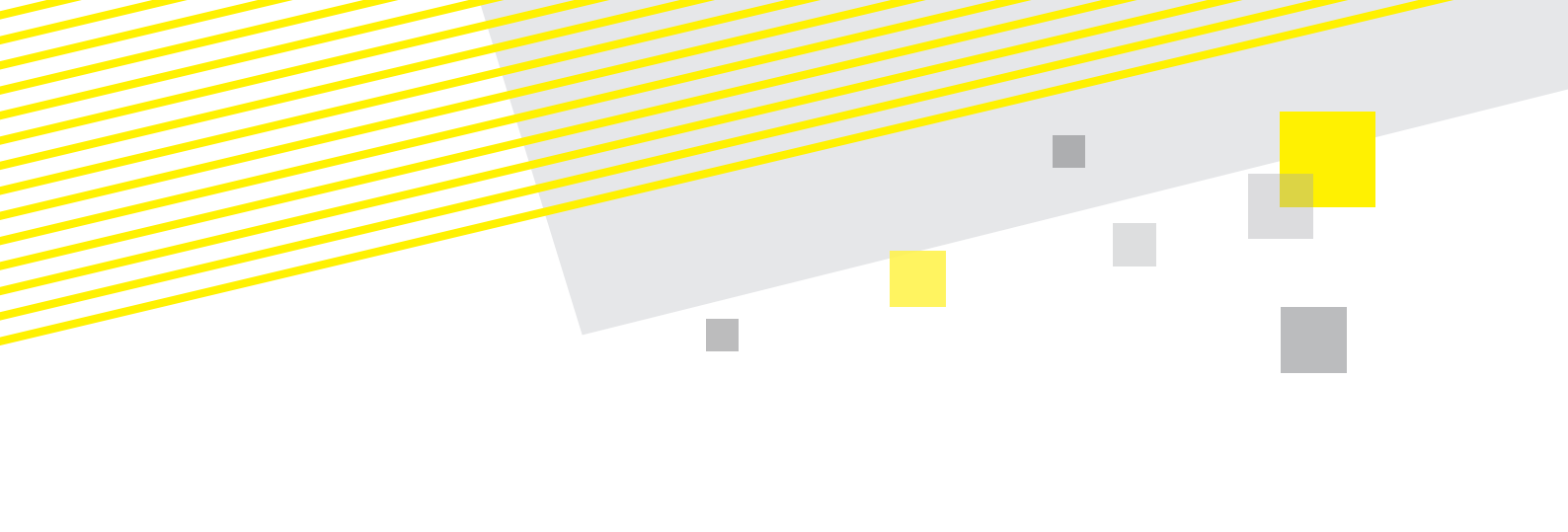
<b>Speed</b>	Up to 5 m/s
<b>Load capacity</b>	Up to 50 kg
<b>Max. dimensions (L×W)</b>	860 × 680 mm (including tolerances)
<b>Transport units</b>	Cubic/conical bins, cartons, trays
<b>Height</b>	Up to 30 m
<b>Storage</b>	Single-, double-deep
<b>Temperature range</b>	-25 °C to +45 °C

## Benefits for You

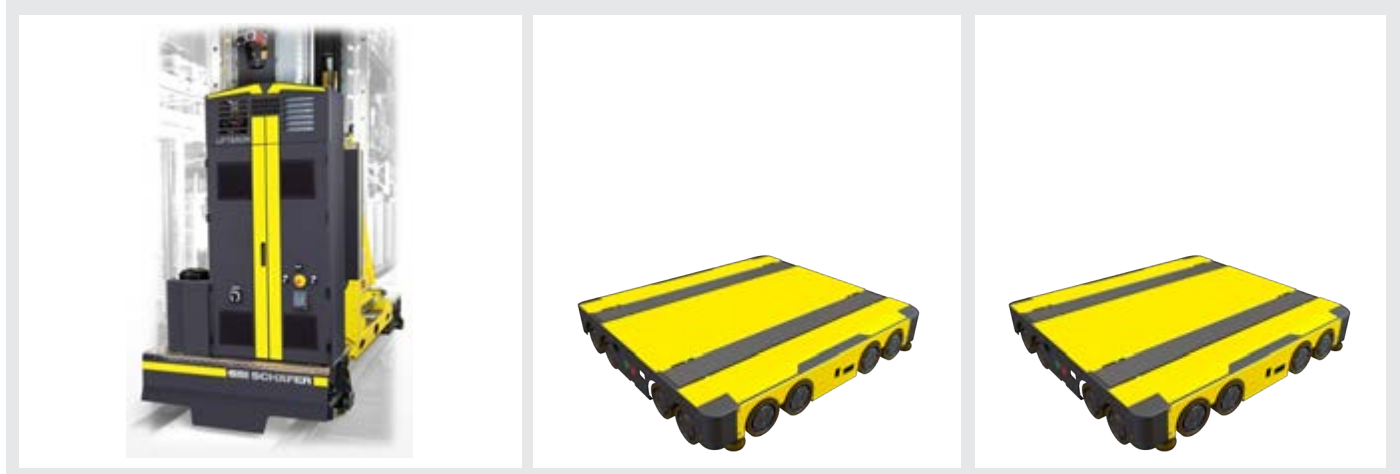
- **High density storage:** Suitable for single- and double-deep smallload carrier storage, maximizing space utilization
- **Efficient and sustainable:** Delivers high performance while minimizing energy consumption and operating costs
- **High redundancy:** Multiple pathways enable continuous operation even when one level is offline for maintenance
- **Fast charging:** 0 to 100% charging in 10 seconds
- **Extreme-temperature capable:** Suitable for all temperature ranges, including deep-freeze environments down to -25 °C
- **Flexible and scalable:** Suitable for various warehouse setups and layouts

# Pallet Automated Solutions Comparison

	<b>Exyz - Single Deep</b>	<b>Exyz - Double Deep</b>	<b>Exyz with Orbiter - Multi Deep</b>
			
<b>SKUs</b>	Very High SKUs range	High SKUs range	Low SKUs range
<b>Max. Pallet Weights</b>	1500 kg	1350 kg	1350 kg/ 1500 kg
<b>Working Temperature</b>	-30 °C to +45 °C	-30 °C to +45 °C	-30 °C to +50 °C
<b>Max. System Height</b>	45 m	42 m	37 m
<b>LHD/ Shuttle Location</b>	Fork	Fork	One shuttle per crane
<b>Throughput</b>	High throughput	Medium/ High throughput	Low/ Medium throughput
<b>Throughput Performance Improvement</b>	Twin Fork Concept	Twin Fork Concept	Orbiter can access otherside of the aisle through same channel route

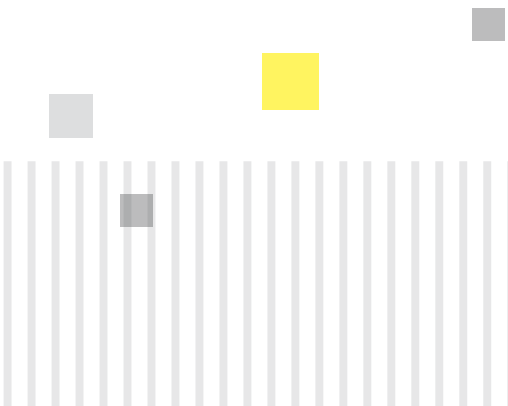


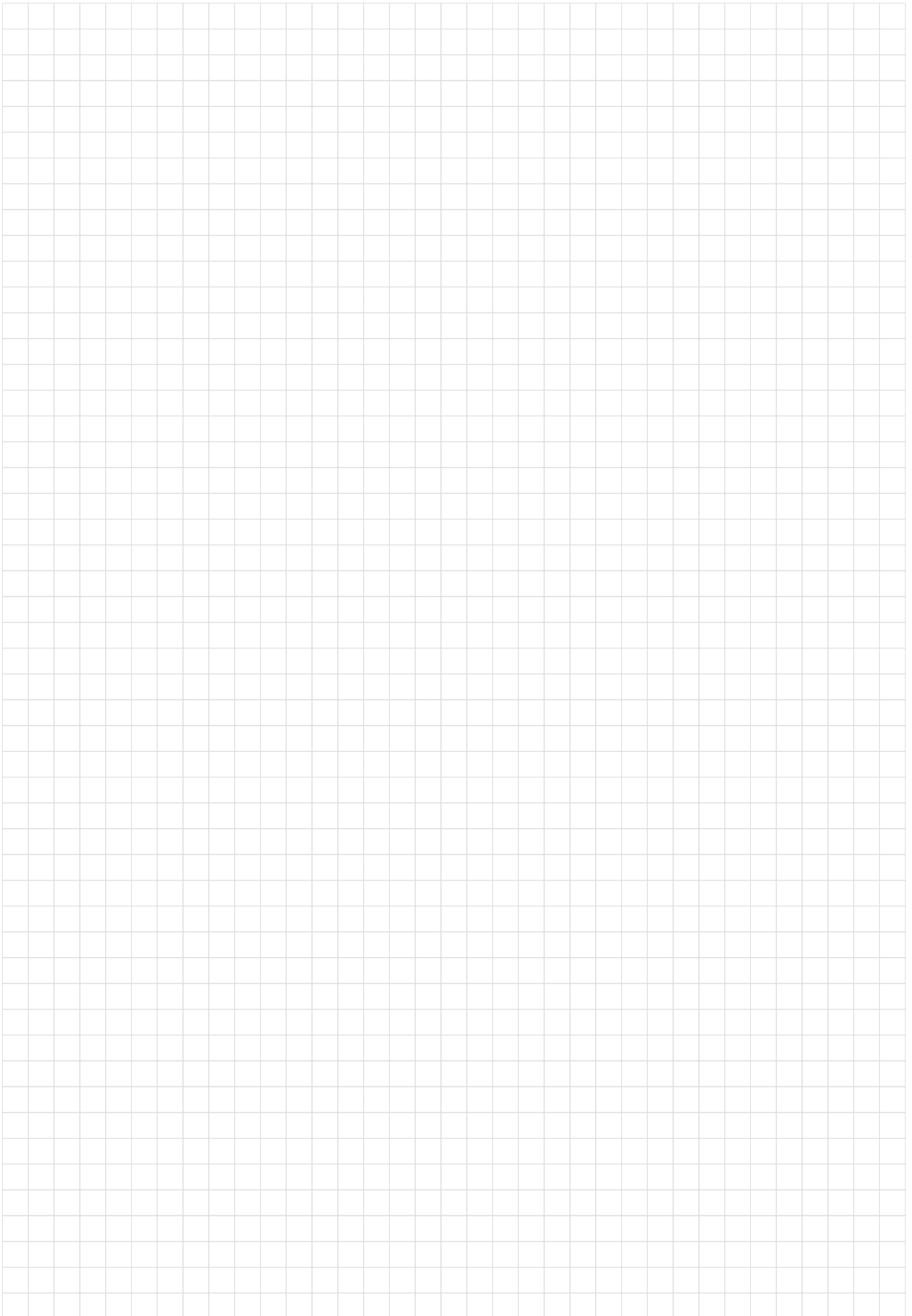
SLR - Multi Deep	4D Pallet Shuttle Solution - Multi Deep	3D Pallet Shuttle Solution - Single
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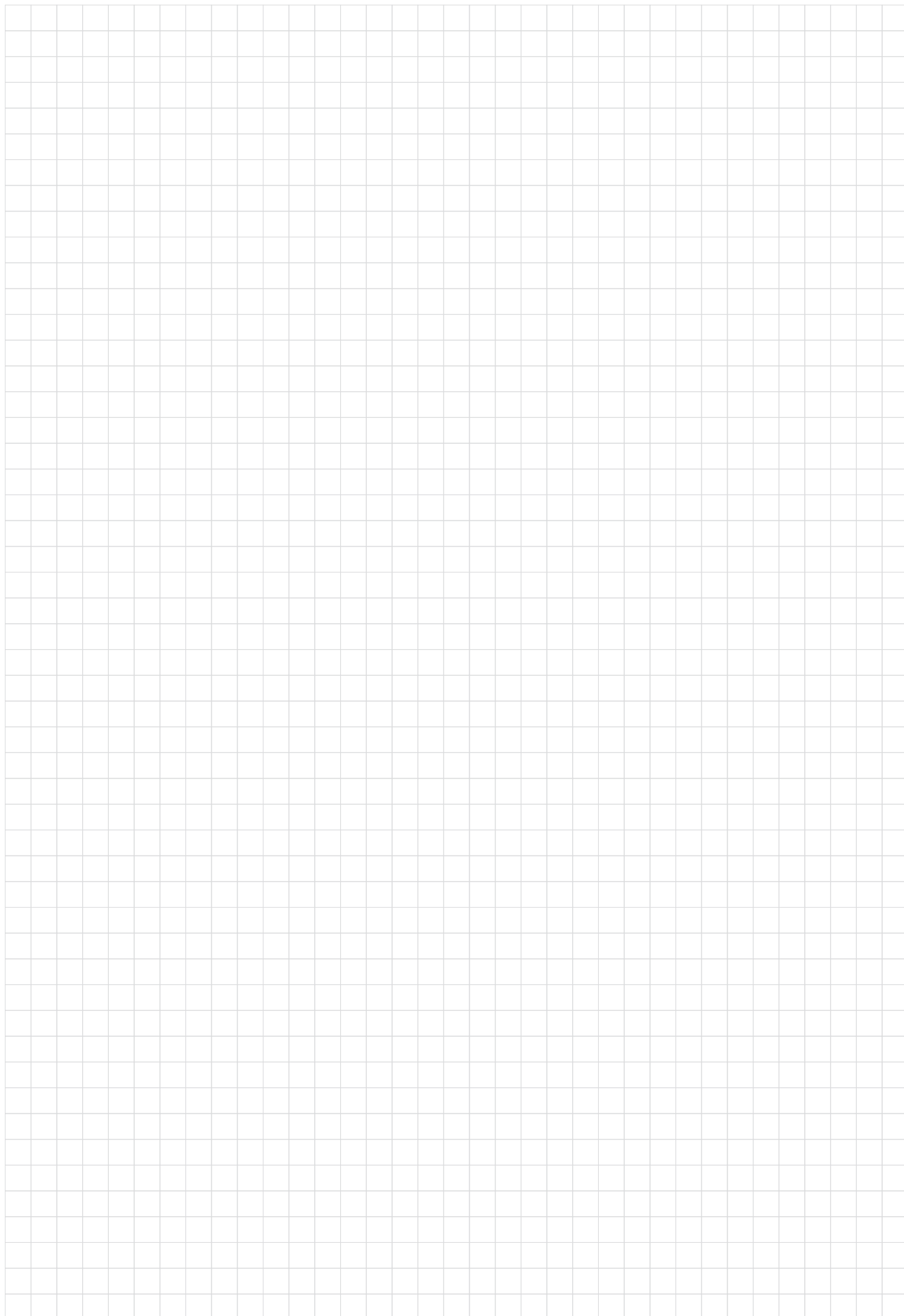


Low SKUs range	Great for Medium & Low SKUs range	Great for Medium & High SKUs range
1350 kg	1500 kg	1500 kg
-30 °C to +45 °C	-25 °C to +40 °C	-25 °C to +40 °C
9.2 m (up to 35 m Multi-stack)	30 m*	30 m*
One shuttle per crane	Roaming in all direction the warehouse	Roaming in X & Y direction the warehouse
Medium/ High throughput	Low throughput	Medium throughput
Additional level can add top of each block	Additional shuttles can be added to the system	2x Shuttles per level/ aisle

\*Beyond 30 m may be possible by case-by-case upon request







# Seven Reasons for choosing SSI SCHAEFER

## ■ **Stability**

As a financially independent family business, SSI SCHAEFER is committed to long-term solutions. You can trust that our team of experts will be there for you today, tomorrow and in years to come.

## ■ **Efficiency**

SSI SCHAEFER solutions are scalable and able to grow with your business. You can always upgrade or retrofit.

## ■ **Quality**

As a systems specialist with its own production facility and software development department, SSI SCHAEFER provides tailor-made and high-quality solutions from a single source, specifically designed to meet your challenges.

## ■ **Reliability**

Thanks to our worldwide Customer Service & Support network, SSI SCHAEFER ensures smooth operation of your system long term, both during and even long after installation.

## ■ **Know-how**

SSI SCHAEFER solutions are always up-to-date with the latest technological standards and can be easily integrated into an existing (IT) landscape.

## ■ **Sustainability**

As a global intralogistics provider, SSI SCHAEFER is committed to sustainable, efficient and future-proof solutions. The company therefore contributes to the goals for sustainable development set by the United Nations.

## ■ **Internationality**

As a global organization, SSI SCHAEFER has local offices worldwide. With over 80 operative subsidiaries, our team of experts speak your language.

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