

Fully automated buffer storage for production

Standardised storage modules for intermediate storage of pallets

Automated production buffer

**Efficient intermediate storage of materials.
Space saving, reliable, secure.**

The production environment places great demands on machine configurations, processes and material flows. Production steps with different cycles must be concatenated, processes must be carried out on a 24/7 basis with precision, transparency, and reliability. And employees must be protected and given adequate relief. The material flows are the core element of every production chain. To enable companies to meet these challenges now and in the future, Kardex Mlog has developed intelligent solutions for buffering of materials.

Each individual solution has its specific advantages; they all feature high costeffectiveness, low investment costs, ease of integration into existing building structures, and rapid implementation. Through the automation of your processes, you can sustainably save personnel and material resources, and reduce the risk of accidents. All solutions can be linked with automated guided transport systems.



7 advantages of fully automated buffer storage:

- ▼ High-buffer capacity coupled with low-space requirements
- ▼ Secure, error-free and reliable staging
- ▼ Just-in-sequence delivery to the production
- ▼ High availability - Operations run 24/7
- ▼ 100% Transparency of storage processes
- ▼ High operational safety
- ▼ Reduction in personnel and material costs

Top customer benefits:

- ▼ Automated intermediate storage enables high availability of the stored semi-finished products. When required, the buffered products are delivered to the production process quickly and reliably - costly production downtimes are avoided.
- ▼ Automated buffer storage enables automated linking of different levels of a building.

- ▼ Pallet buffer storage enables optimal use of storage spaces. It means less pressure on the storage facilities at the individual production stations and it creates space for further extension of production capacities.
- ▼ The fully automated production buffer guarantees process security and full transparency over all storage processes.

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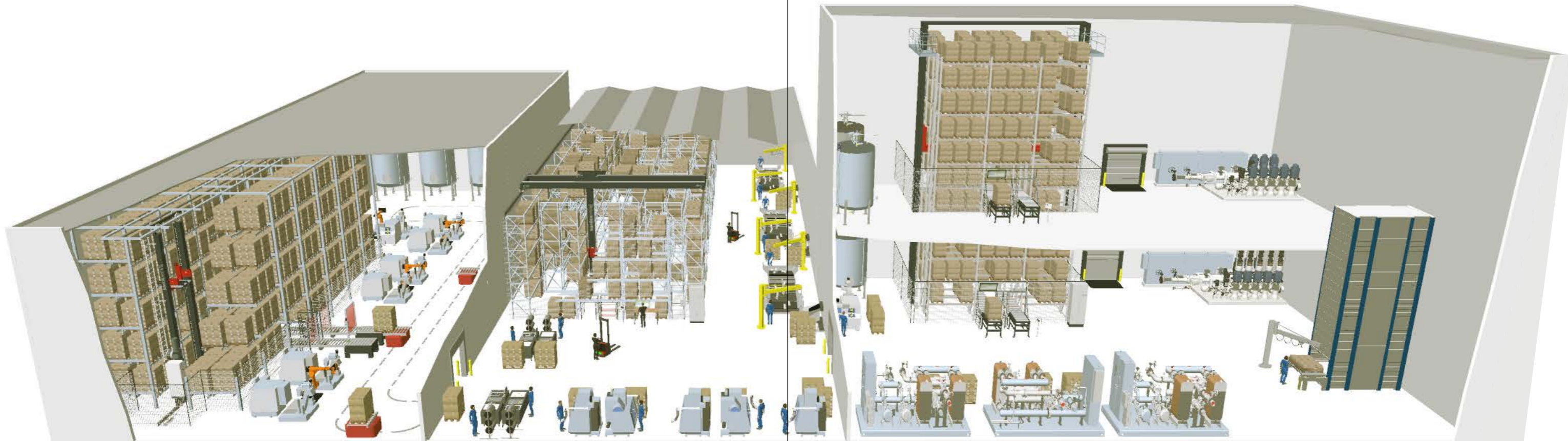
Shuttle XP 1000*

Compact, modular and extendable storage.

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*from Kardex Remstar

Overview of fully automated buffer storage systems



MSequence

Flexible buffer and sequencing solution.

typical buffer capacity

170 - 600 pallets

typical height

8 - 12 m

Space required (width / depth)

50 m / 8 m

MCompact

Automated, universal mobile racking system.

typical buffer capacity

500 - 1300 pallets

typical height

< 9 m*

Space required (width / depth)

14 m / 40 m

MTower

Highbay warehouse with minimum footprint.

typical buffer capacity

300 - 500 pallets

typical height

15 - 25 m

Space required (width / depth)

12 m / 8 m

XP 1000*

Compact, modular and extendable storage.

typical buffer capacity

< 110 pallets

typical height

< 20 m

Space required (width / depth)

2.2 m / 4.4 m

*top of load unit 7.5 m

*from Kardex Remstar

MSequence

Flexible buffer and sequencing solution.



Racking construction with storage and retrieval machine

Feed and discharge station with conveying technology

Connection with automated guided transport system (AGV) possible

Properties

- ▶ Automatic pallet buffer with double-deep storage
- ▶ Designed for maximum storage and retrieval capacity
- ▶ Storage of the pallet in longitudinal direction on driven roller conveyors with contour check
- ▶ Space savings of up to 65%
- ▶ Complete module (Plug&Play)
- ▶ Scalable system

Benefits

- ▶ High buffer capacity combined with low space requirement - space gains
- ▶ Secure, error-free and reliable staging of goods - process quality
- ▶ Flexible configuration of dimensions and capacity
- ▶ 24/7 operations - high availability
- ▶ 100% transparency of storage processes
- ▶ Reduction in personnel and material costs

Consists of

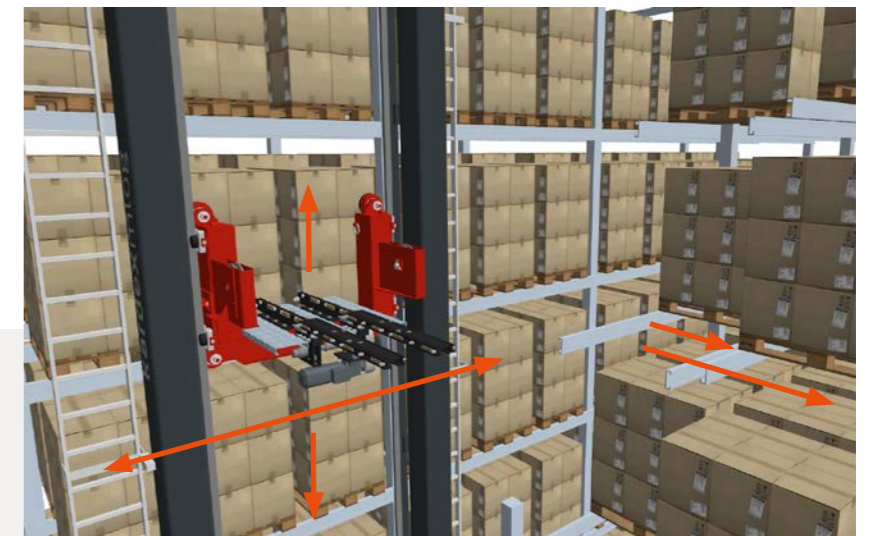
- ▶ 1 automatic storage and retrieval machine
- ▶ Racking
- ▶ 1 storage line
- ▶ 1 retrieval line
- ▶ Control technology (Siemens S7)
- ▶ Warehouse management software



MSequence*

Body:
Overall height: up to 12 m
Width: up to 50 m
Depth: 8 m
Payload:
 max. 1000 kg

*Specs for standard variant

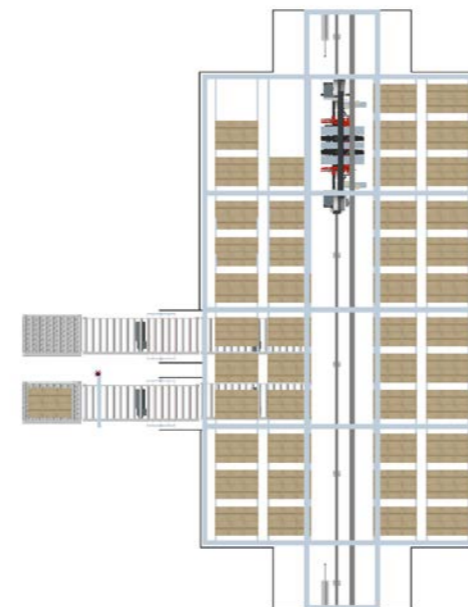


The storage and retrieval machine positions the load pick-up device in front of the various pallet spaces in the rack.

The modular solution for future-oriented, efficient and consistent production.

To sustainably lower the costs in production and to improve process quality, Kardex Mlog has developed the MSequence dynamic pallet buffer. This ensures automatic, error-free and dynamic

order staging while, at the same time, providing transparency and eliminating labour-intensive searches for material.



Configuration examples:



Properties:

- ▶ Double-deep storage
- ▶ 4 levels
- ▶ 4 grid sections each with 3 load units
- ▶ (WxDxH): 17 m x 8 m x 10 m
- ▶ 1 driven storage line
- ▶ 1 driven retrieval line

Storage capacity:
180 Euro pallets



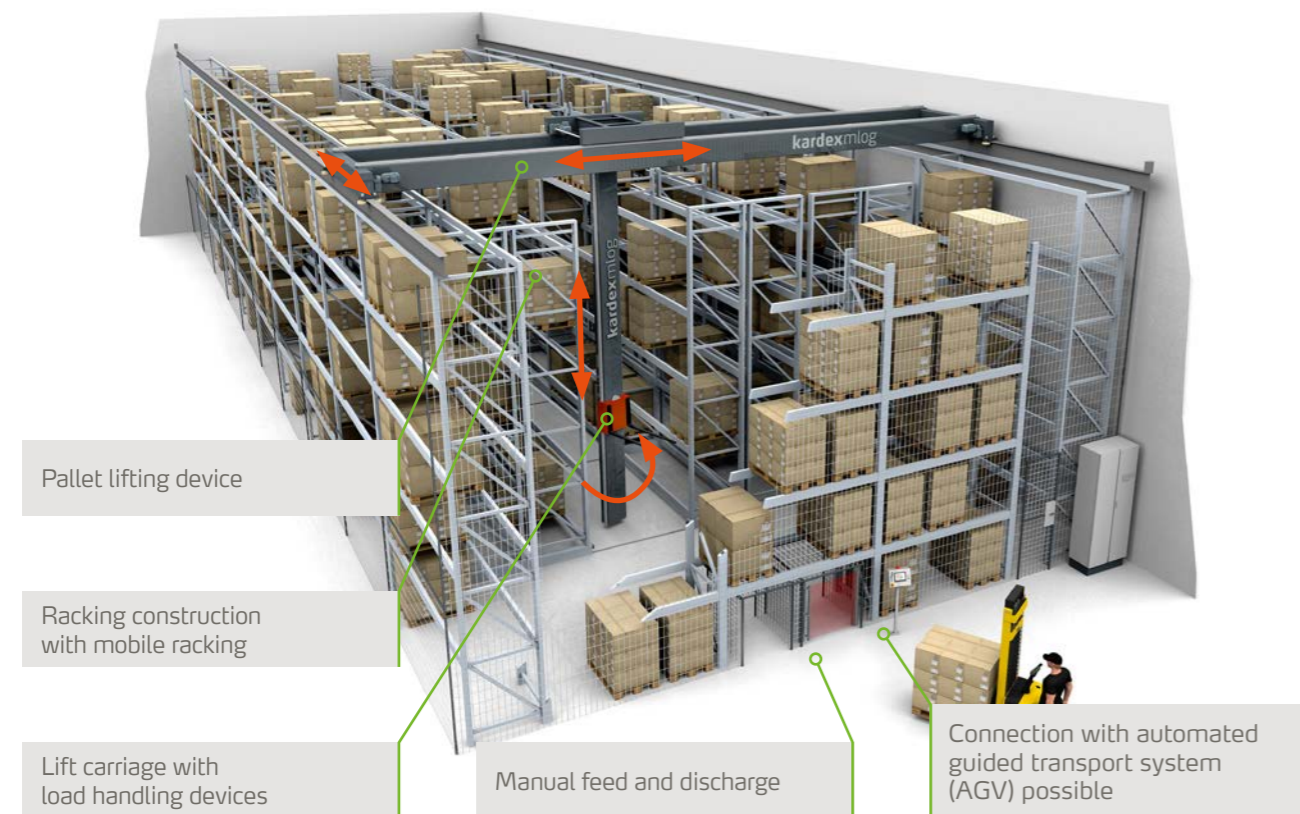
Properties:

- ▶ Double-deep storage
- ▶ 7 levels
- ▶ 10 grid sections each with 3 load units
- ▶ (WxDxH): 36 m x 8 m x 12 m
- ▶ 3 driven storage lines
- ▶ 3 driven retrieval lines

Storage capacity:
804 Euro pallets

MCompact

Automated, universal mobile racking system.



Properties

- ▶ Automatic pallet storage
- ▶ Compact construction through mobile racking
- ▶ Suspended, rotating lifting column with no floor contact
- ▶ Floor-level pallet feed and discharge without conveying technology
- ▶ Complete module (Plug&Play)
- ▶ Scalable system

Benefits

- ▶ Mixed storage of pallets and wire mesh containers
- ▶ Increase in space efficiency through optimal utilisation of building height
- ▶ Individual access to each pallet thanks to mobile racking
- ▶ Integration into existing buildings is easily possible
- ▶ Compatible with existing IT structure thanks to intelligent modules
- ▶ Autonomous, accident-free operation reduces operating costs
- ▶ Automatic storage that does not require extensive load securing
- ▶ Floor-level transfer with manual pallet truck or AGV is possible

MCompact

Body:

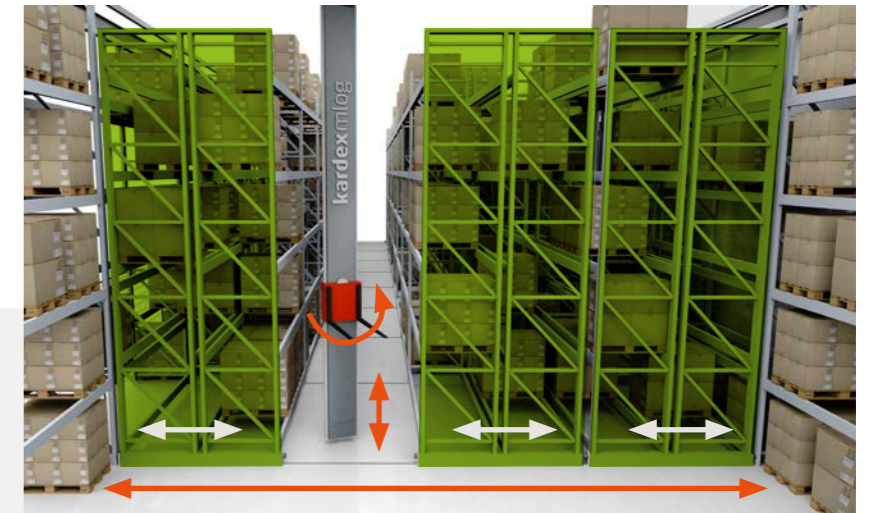
Height: up to 9 m
(7.5 m top of load unit)
Width: up to 14 m
Depth: up to 40 m
Payload: max. 1000 kg



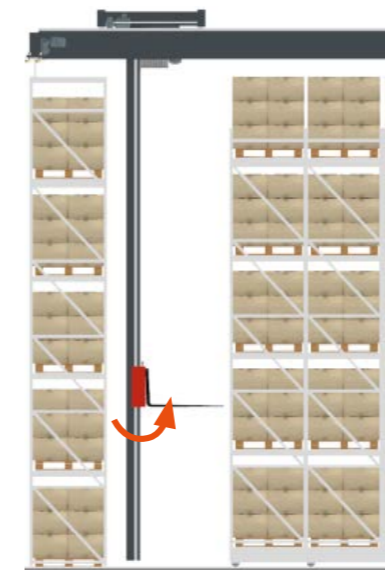
Consists of

- ▶ 1 automatic pallet lifting device with fork arms
- ▶ Racking with fixed shelving and mobile racking
- ▶ Control technology (Siemens S7)
- ▶ Automatic storage location management

The mobile racking forms an aisle along which the pallet lifting device can access the various pallet spaces



The MCompact turnkey mobile racking system features a small footprint, requiring around 40% less floor space than a conventional forklift-based storage system. It is especially suitable for small and medium goods volumes and can be integrated into existing buildings – even under challenging conditions, e.g. for storage of hazardous materials and for deep-freeze storage. MCompact is a standardised but modular extensible compact warehouse with access to each individual location. Even the basic version features a fully automated storage and retrieval machine, a mobile racking system and a complete control system with storage location management.



Rotating lift carriage

The number of racks, the dimensions of racking or the floor area can be designed individually. The maximum height of the top of the load unit is 7.5 m. This means that a sprinkler system is normally not necessary. The storage and retrieval machine can access each storage space directly without needing to move other items. The load units are picked up and set down using

manual pallet trucks or by means of additional conveyor systems. MCompact can be supplemented and customised through our function-oriented conveyor modules. The warehouse management system of the MCompact can be integrated into the existing IT environment without any problem and can be coupled with any popular host system.

Configuration examples:



Properties:

- ▶ Racking construction with 2 mobile racking units
- ▶ 5 levels
- ▶ (WxDxH): 11 x 32 x 9 m
- ▶ Automatic storage and retrieval line

Storage capacity:
760 Euro pallets



Properties:

- ▶ Racking construction with 3 mobile racking units
- ▶ 5 levels
- ▶ (WxDxH): 14 x 40 x 9 m
- ▶ Manual feed and discharge

Storage capacity:
1340 Euro pallets

MTower

Highbay warehouse with minimum footprint.



Lifting beam device with distribution vehicle and load

Feed and discharge station with conveying technology

Connection with automated guided transport system (AGV) possible

Properties

- ▶ Automatic pallet storage for Euro pallets
- ▶ Tower construction
- ▶ Separate conveying technology elements for storage and retrieval
- ▶ Complete module (Plug&Play)
- ▶ Scalable system

Benefits

- ▶ Minimum floor space required
- ▶ Extensive storage and retrieval capacity
- ▶ Secure, error-free and reliable staging of goods - process quality
- ▶ Optimal utilisation of building height
- ▶ 100% transparency of storage processes
- ▶ 24/7 operations - high availability

Consists of

- ▶ 1 autom. lifting beam device with telescopic fork
- ▶ Racking
- ▶ 1 storage line
- ▶ 1 retrieval line
- ▶ Control technology (Siemens S7)
- ▶ Autom. storage location management

MTower

- Body:**
Height: up to 25 m
Width: up to 12 m
Depth:
 Single-deep 4.5 m
 Double-deep 8 m
Payload: max. 1000 kg

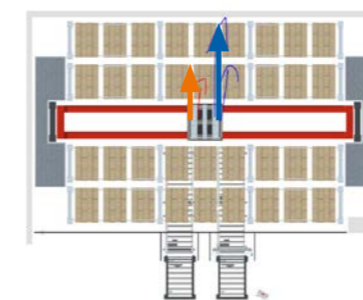


Via the lifting beam, the distribution vehicle services the pallet locations on the different levels.

The narrow but high lifting-beam warehouse MTower is both fast and efficient: With its dynamic design, the complete system increases throughput by up to 20% compared with solutions based on conventional storage and retrieval machine concepts.

The principle is based on a shuttle car mounted on a vertically guided lifting beam. The construction design is extremely flexible and can also be used under challenging conditions, for example, clean room storage facilities.

The load pick-up can be designed either for single or double-deep storage by means of a telescopic fork. The load capacity can be defined individually and the storage system reaches a high throughput capacity.



- Double-deep storage
- Single-deep storage

MTower is equipped as standard with storage and retrieval machine, function-oriented conveyor modules, racking structure, and control and warehouse management system. It is particularly suitable for small spaces and was specially developed for geometries up to 25 metres high and 12 metres wide. This makes MTower an economical option

for short but high warehouses without compromising on stability, performance and speed. MTower is suitable for all popular host systems and software standards and is equipped with the latest interfaces. This means that it can be integrated without any problem in virtually any IT environment.

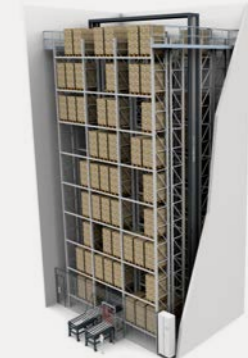
Configuration examples:



Properties:

- ▶ Single-deep storage
- ▶ 4 levels
- ▶ (WxDxH): 12 x 4.5 x 12 m
- ▶ 1 driven storage line
- ▶ 1 driven retrieval line

Storage capacity:
84 Euro pallets



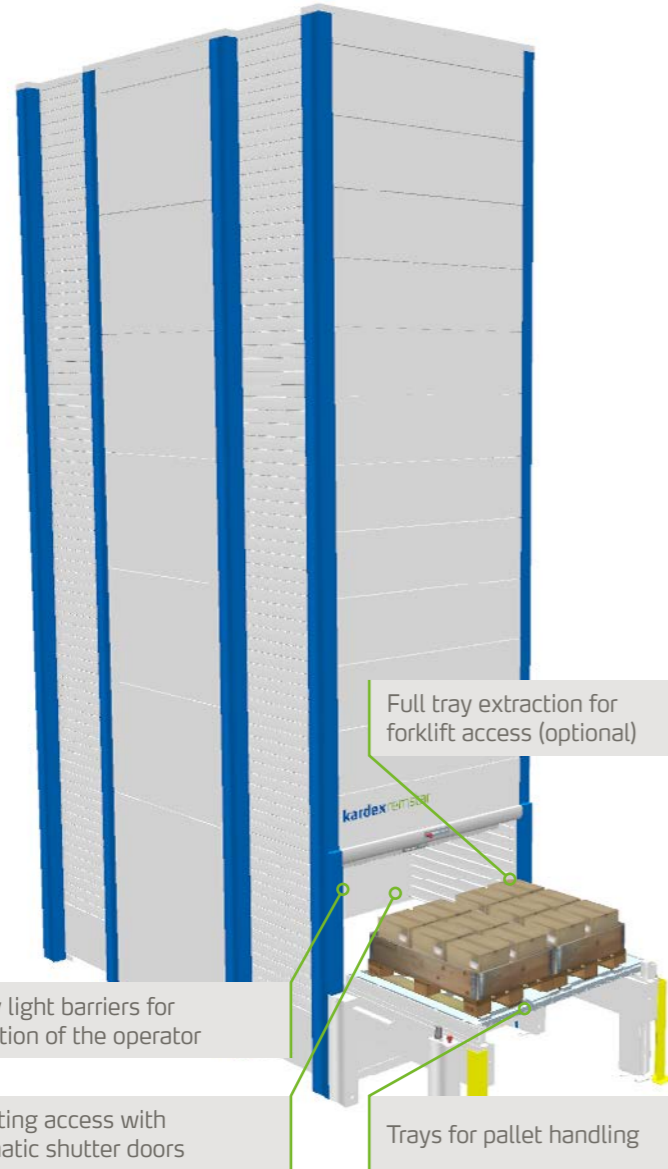
Properties:

- ▶ Double-deep storage
- ▶ 9 levels
- ▶ (WxDxH): 12 x 8 x 24 m
- ▶ 1 driven storage line
- ▶ 1 driven retrieval line

Storage capacity:
318 Euro pallets

Shuttle XP 1000*

Compact, modular and extendable storage.



Full tray extraction for forklift access (optional)

Safety light barriers for protection of the operator

Operating access with automatic shutter doors

Trays for pallet handling

Properties

- Automatic pallet storage for Euro pallets
- Tower construction
- Load pick-up on trays
- Complete module (Plug&Play)
- Scalable system

Benefits

- Compact storage within a minimum floor space
- Modular extensibility
- Optimal utilisation of building height
- Connection of different floors of a building
- Flexible usage for pallets of different heights
- Easy installation and integration
- Reduction in personnel and material costs

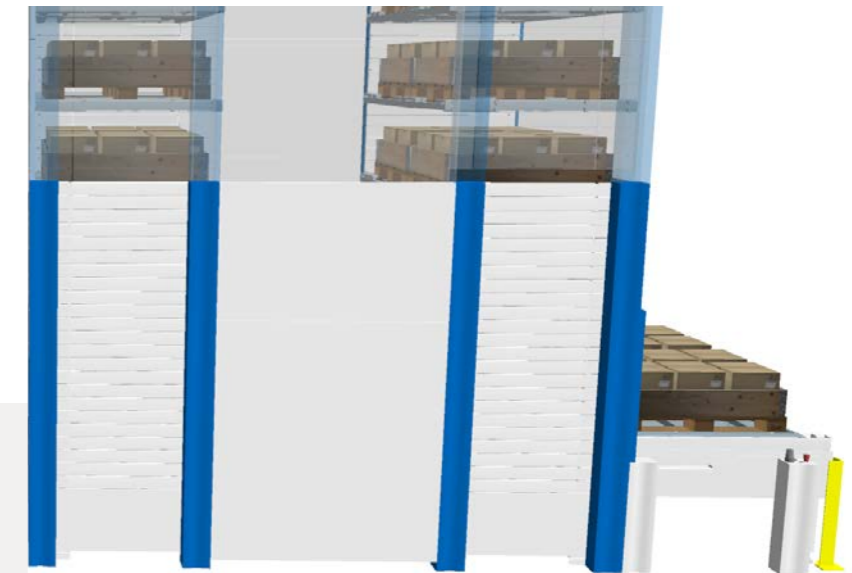
Consists of

- 1 Automated, vertical storage lift system
- Housing
- 1 operating access with automatic lifting door
- Trays
- Logicontrol control unit with touchscreen
- Warehouse management

Shuttle XP 1000*

- Body:**
Overall height: up to 20 m
Width:
 Single 1.6 m
 Double 2.5 m
Depth: 4.4 m
Payload:
 Single 1 pallet 1,000 kg
 Double 2 pallets each 475 kg

*from Kardex Remstar



Pallets can be placed directly onto the pallet tray by forklift truck or pallet truck.

The narrow but tall XP 1000 storage lift is both clever and efficient: With its tiny footprint, it is truly a space-saving genius. The principle consists of a closed system, in which trays are stored vertically at the front and rear of the device. In the centre, there is an extractor which automatically conveys the trays with the goods into the operating access.

The modular structure of the XP1000 enables almost unrestricted flexibility for use with various ceiling heights. If structural chan-

ges are made to the building, the XP 1000 can quickly be adapted to the new conditions by adding or removing modules.

Depending on the height available, the system enables floor space savings of at least 85% compared to conventional systems.

To provide protection for humans, machine, and materials, and to reduce noise emission, a lifting door is fitted as standard to all machines. The modern design of the Logicontrol intuitive touchscreen user interface provides a major boost to the ergonomics and operational efficiency of the user.

Configuration examples:

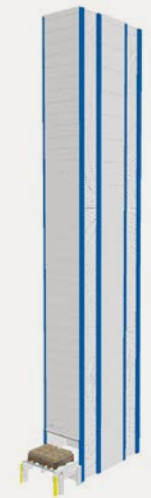


Properties:

- Single-deep storage
- 25 trays
- (WxDxH):
1.6 m x 4.4 m x 15 m

Storage capacity:

25 Euro pallets
each 800 mm tall

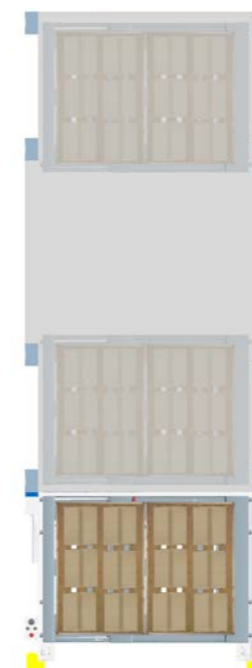


Properties:

- Double-deep storage
- 56 trays
- (WxDxH):
2.5 m x 4.4 m x 20 m

Storage capacity:

112 Euro pallets
each 500 mm tall



top view of device
with full tray extraction



Locations Kardex Mlog

Germany
Headquarter: Neuenstadt am Kocher
Other seats: Herford, Oberhausen

Locations Service Partners

Austria, Belgium, Germany, Hungary, Italy,
Luxembourg, Netherlands, Switzerland,
Serbia, Turkey

Locations Service Customers

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