



Lützenkirchen Lagertechnik GmbH

... solves your storage problems



Tidiness and clarity in the
warehouse ensures rational work





Lützenkirchen Lagertechnik GmbH ...

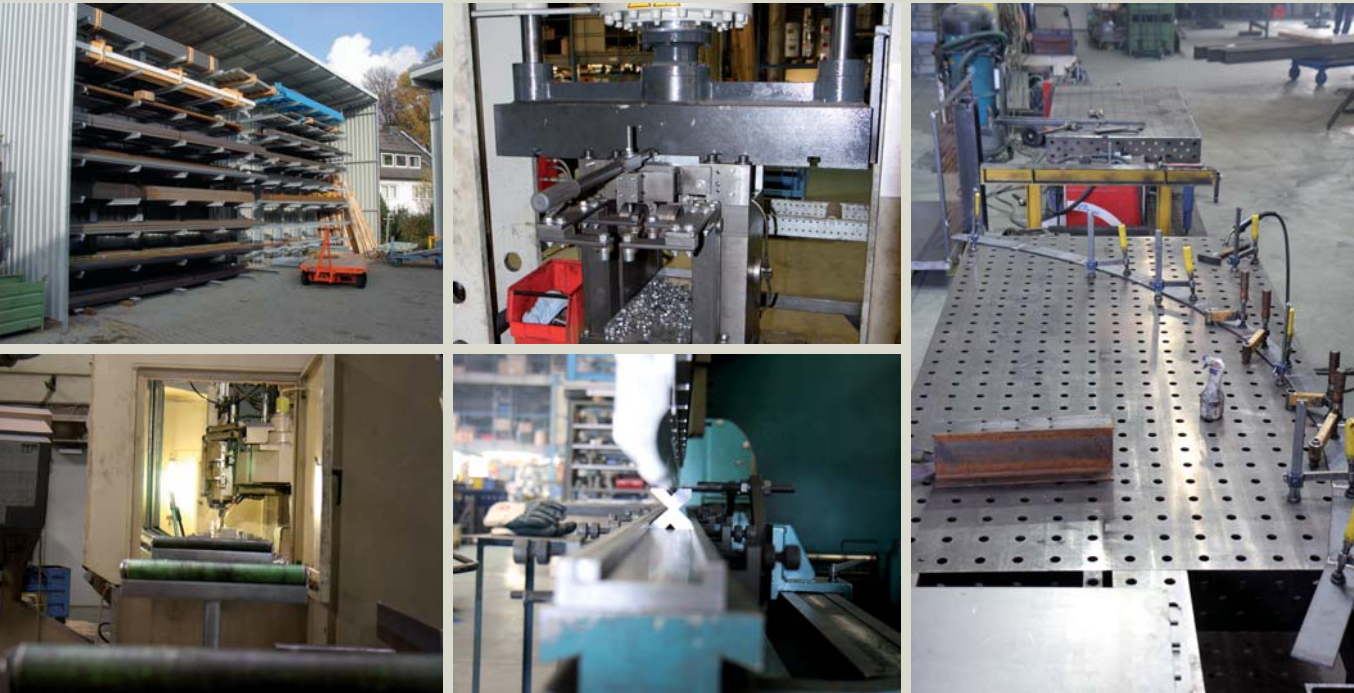


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Special solutions are our standard



Warehousing technology is needed in all areas of industry and commerce. And nearly every company needs adapted solutions to manufacture economically. Since 1983, we have made it our mission to supply these customized designs at series prices.

Starting with small parts storage, handling dollies, transport cradles through pallet shelving unit warehouses, long goods and sheet metal warehouses including the corresponding handling devices, whether manual, semi-automatic or even as automatic systems, we have been manufacturing these demanding systems for over 25 years with a high degree of vertical integration.

We place great importance on robust and solid constructions, which is why our units are used around the world. With our flat hierarchy, custom solutions can be put into action very effectively and reasonably priced.

Our own electrical project planning and fabrication complements our plants. From the first quotation to turnkey systems, we can supply you with everything from one source.

In October 2001 we moved into new facilities with production facilities and office space totaling

1600 square meters in Leichlingen. Here, special warehousing and operating equipment, which is being used worldwide by famous companies, is manufactured by a team of twelve employees.

The Managing Director Manfred Lützenkirchen has been working in the sector for more than 40 years. His designated successor Mark Lützenkirchen have also worked for the company for nearly 20 years. Lützenkirchen Lagertechnik GmbH plans, produces and assembles warehousing and operating equipment from one source.



Aisle stacker equipment



Bin warehouse in a dispatching area of a tool manufacturer



- Robust
- Versatile
- Reasonably priced
- Load carry devices according to requirements

The aisle stacking equipment provide these benefits:

- Very narrow aisle width (aisle width = load depth + approx. 1000 mm, for Europalettes in cross-aisle direction we need about 2,200 mm)
- Various sizes provide large load-bearing capacity ranges (20 – 6,000 kg)
- Lifting heights up to 9,000 mm
- Track widths up to 20,000 mm
- Manual operation makes order picking operations feasible in the same aisle.
- No floor rails – the shelf operating equipment is suspended from above. That means there are no rolling motions, e.g. due to a damaged floor.
- Very small approach dimensions make perfect use of existing room heights
- A great range of accessories facilitate optimal usage

With rack picking equipment nearly all loads can be easily set down in the smallest space in the matching shelf systems. From cartons in small retail warehouses up to heavy tools in foundries. Using aisle stacking equipment means all unergonomic and impermissible lifting work is omitted. The employees are spared and can concentrate on the work more effectively. The extremely robust design keeps the equipment highly available. But if there is ever a reason to complain about a failure, company maintenance can very often repair the devices.





Aisle stacking equipment with vacuum extractors as the load carrying device with which plates can be placed on a processing machine

Normally, the aisle stacking equipment is placed on **running rails** that are attached to the shelf. But attachment to existing crane rails, suspending from track systems from the ceiling or, e.g., a semi-gantry (one side of the aisle stacker runs on the floor) is also possible. Transfer systems in which the aisle stacker is moved from aisle to aisle with a special transfer vehicle can also be implemented.

The **power supply** is implemented through bus bars. That secures permanent current supply. Downtimes due to battery charging times or battery replacement no longer exist. Expensive battery replacements after just a few years are no longer necessary. Energy chains are installed for devices with Ex-protection approval.

The **trolleys** can be driven manually in the basic version. If desired or based on our recommendation, the trolleys are electrically operated.

A load-correspondent turntable is placed in the **tower trolley**. The tower trolley can be driven manually or as above if desired or on recommendation, operated electrically. Turning is implemented manually or electrically. In the manual versions, latching is every 90°, which ensures exact movement into the shelf. The respective 2-stage lift motor is integrated in the stacking tower.

The **operating controls** are attached rigid ergonomically at a pleasing height. Accessories such as height display bands, camera systems and automatic height preset are available.

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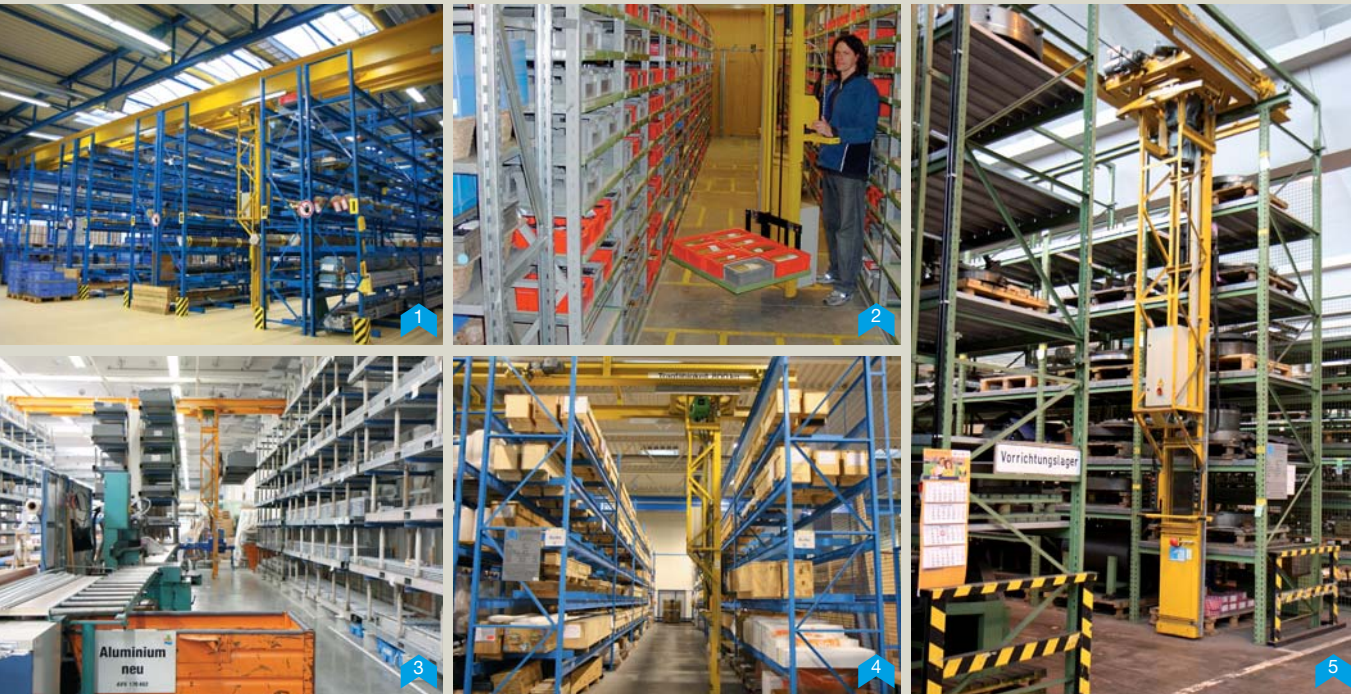


Photo 1: Long-goods warehouse for 3m long rods • Photo 2: Picking warehouse for small parts • Photo 3: Long-goods warehouse for aluminum strips in the assembly area of a vehicle manufacturer • Photo 4: Dispatch warehouse for palletized and packed goods • Photo 5: Appliance storage in a machinery manufacturer



Photos 1 and 2: Aisle stacker with telescoping tower mast • Photo 3: Aisle stacker for two different bin sizes in the flow-through rack. The running rails are placed solely on the shelf to permit undisturbed access to the work areas on the opposite side. • Photo 4: Aisle stacking equipment with tiltable lift mast for long passage channel. Here also: the running rails are placed solely on the shelf.



Heavy duty slide guide systems Model 1000



Stamping tool warehouse in the production facilities

- Ergonomic handling
- Versatile
- For all shelving systems

With heavy-duty slide guide systems **heavy loads** (up to 1,500 kg with partial extensions or up to 1,200 kg with full extensions) can be comfortably placed with a crane or forklift from above onto the floor. If higher load-bearing capacities are needed, please note our models 1001, 4007 or 5003.

Heavy-duty slide guides are often used both in **small tool warehouses** as well as in **assembly areas**, for instance. Smaller storage areas **near machinery** can also be effectively availed with heavy-duty slide guides. For instance, extremely heavy parts can be comfortably and quickly positioned with simple lifting tackle.

The heavy-duty slide guides are screwed laterally to pallet racking uprights or can even be clamped to horizontal rack beams from above. Subsequent assembly in external systems is also feasible.

Various heavy-duty slide guide designs are available:

- **Partial slides with one or two sides**
- **Full extensions with one or two sides**

Furthermore, depending on the load-bearing capacity and the extraction depth, various profile thicknesses are available. These dimensions are stipulated based on the requirements.

on the requirements. The effective areas can be made according to the requirement with smooth sheet covering, with edges in any desired height one or multi-sided, with wood plankings, with positioning guides, centering rails or as simple support frames. Depending on the stored product, correspondingly rigid or plug-in sub-dividers, prism mounts or similar can be attached to the floor space.

Heavy-duty slide guides are delivered with **individual latches**. Normally, these are attached to one side on the left. For special requirements however, **two-sided latches** can also be offered. Partial extensions can also be arrested in the extracted state if desired. For heavy-duty slide guides in rack towers, a **single extraction block** can also be supplied. Then, only one each drawer can be extracted per shelf bay. This variant is not available for heavy-duty slide guides clamped onto horizontal rack beams.

For higher levels or higher frequencies, it is better to extract the drawers with the aid of draw bars. That allows the operator to move the load in the most favorable height.

Additional accessories such as crane systems or ladder systems, used to reach the higher storage locations, can also be offered together if desired.



Photo 1: Pick-up and delivery shelves in the assembly area of a vehicle manufacturer



Photo 2: Appliance storage at a machinery manufacturer





Floor conveyor Model 1001



Photo 1: Floor conveyors with 2000 kg load-bearing capacity for heavy transmission parts at a vehicle manufacturer
Photo 2: Provisioning area on an assembly line · Photo 3: Construction material in a retail section in a DIY market

- Ergonomic handling
- Very high load-bearing capacities



With floor conveyors, **heavy loads** can be comfortably placed with a crane or forklift from above onto the floor. For higher load-bearing capacities (starting at about 2,000 kg, depending on the floor planarity and wheel size), **motor drives** can be used to move the conveyor floors at the touch of a button.

The application areas of conveyor floors and the range of designs are similar to Model 1000.

The floors can be placed in the shelves **with or without guides**. For highly uneven floors, we generally recommend an embedded steel grooved rails. That allows pushing the trolley with correspondingly little force. In conveyor floors with guides, a **latch** can be offered in the recessed position. The latches can be unlocked with a foot pedal, rod or Bowden cable.

The **draw rods** can be made rigid or hinged, straight or offset.

Conveyor floor systems Model 4007



Ball-bearing shelving at a crane manufacturer with a load of 6,500 kg per level

- For sheet or plate storage
- High load-bearing capacities
- Low space requirements by using hinged projection

With floor conveyor systems, **heavy loads** (up to 3,000 kg manual, higher load-bearing capacities with electric drives) can be comfortably placed with a crane or forklift from above onto the floor.

Floor conveyor systems have proven themselves as sheet-metal racking towers near the **production facilities** right next to the machines. But appliances, templates, machine parts, etc. are also effectively and compactly stored here.

Welded, stable floor conveyors with the corresponding bearings or rollers ensure long service life. Mounting the guide bearings transversal to the direction of pull facilitates **flawless guidance** with low force.

The lateral guides can be attached rigid. **If space is tight**, e.g., on guideways, the lateral guides can also be folded onto the floor conveyor system.

Two-sided, retractable floor conveyors are also possible. These naturally also in a folding version.





Conveyor floor shelf with space-saving, folding projection, shelf capacity 2,000 kg

Depending on the requirements, the **effective areas** can be manufactured with sheet covering, with edges in any desired height one or multi-sided, with wood plankings, with positioning guides, centering rails or as simple support frames, flush with the supporting profile or embedded for height optimization (possible when loading with a magnet traverse, for example). Also **front-to-rear** members for loading with forklifts if

the stored goods are not palletized are possible. Depending on the stored product, correspondingly rigid or plug-in sub-dividers, prism mounts or similar can be attached to the floor space.

In case of high load-bearing capacities, the levels can also be extended with **electric drives**. Optionally, in case of higher storage or higher frequencies, the conveyor floors

can also be retracted with the aid of a draw rod. That allows the operator to move the load in the most favorable height.

Additional accessories such as crane systems or ladder systems, used to reach the higher storage locations, can also be offered together if desired.

Sheet metal rack for forklift service Model 5005



- For high storage density
- Robust

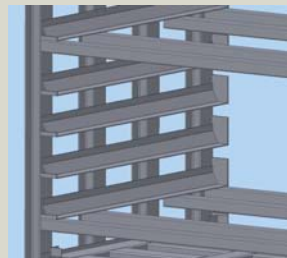
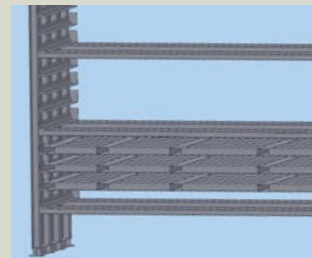
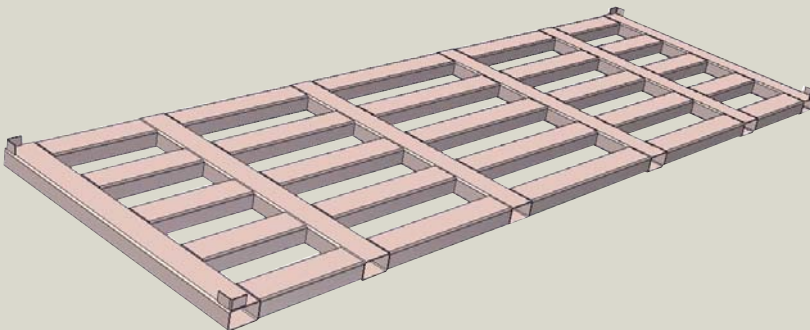
Shelf system for mounting in closed facilities or for outdoor erection.

The rack uprights are made of hot-rolled H-profiles acc DIN 1025 and are welded to the base plate.

All **support rails** have a 150 mm high rear stop plate and a limit stop in the front that is 20 mm high. An anchored centering for easy storage is placed on the side.

The **load boxes** are welded out of stable rectangular-section tubes. The bay length of two or more forklift pockets can be individually stipulated. The boxes have a limit stop at the useful height on all corners and, if desired, also on the long and cross sides.

You can find **additional accessories** in the "Accessories for Palette Shelf Systems" section.





Sheet metal rack for aisle stacking equipment Model 5006

- For the highest storage density
- Very high load-bearing capacities

Shelf system for mounting in closed facilities or for outdoor erection.

Just as with Model 5005, the **rack uprights** are made of hot-rolled H-profiles acc DIN 1025 and are welded to a base plate.

The **support rails** are made as slide rails for loads <1,000 kg. For loads > 1,000 kg, a roller guide is used.

The **load boxes** are welded out of stable rectangular-section tubes or other section types. Including corresponding grooves for the aisle stacking equipment's gripping and pulling technology. If desired, any kind of limits can be welded on at the useful height. Accessories for transport securing devices are also possible (plug-in parts and similar).

Depending on the model, the bearing profiles can be placed rebated to achieve greater height usage. Depending on the design, placement and retrieval can be accomplished directly from the **extending table**. However, longitudinal and cross conveyors can also be arranged to be able to operate external placement and retrieval stations. When linked to automatic machinery, e.g., laser cutting plants, transfer stations can be defined from which individual sheets can be taken from the box.



Sheet metal rack with aisle stacking equipment with a shelf load of 6,500 kg for 4 x 2m sheets. Total capacity 2 x 19 x 6,500 kg = 247,000 kg.

A whole series of permanently installed or mobile **depalletizing aids** are available with which the sheet packs can be stored without the bulky outer packaging.

You can find **additional accessories** in the "Accessories for Palette Shelf Systems" section.



Veneer wood panel storage for the picking area for veneers up to 3.2 x 1.4 m

Metal sheet storage for individual sheets Model 506

- Upright individual or plate storage

Shelf system for mounting in closed facilities or for outdoor erection.

The shelf system is ideal for storing individual metal sheets, which can be placed upright manually or with a crane.

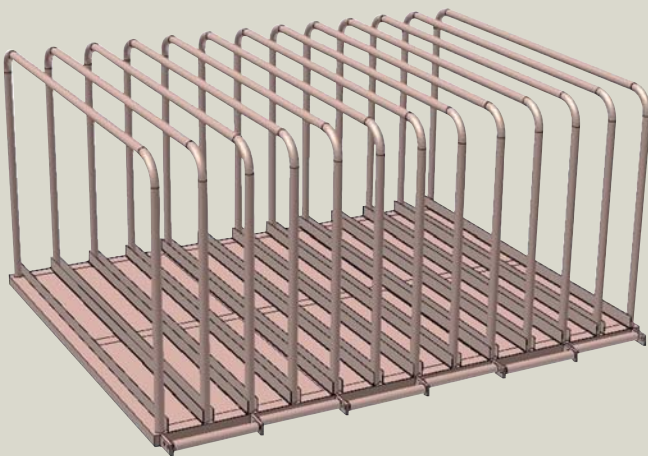
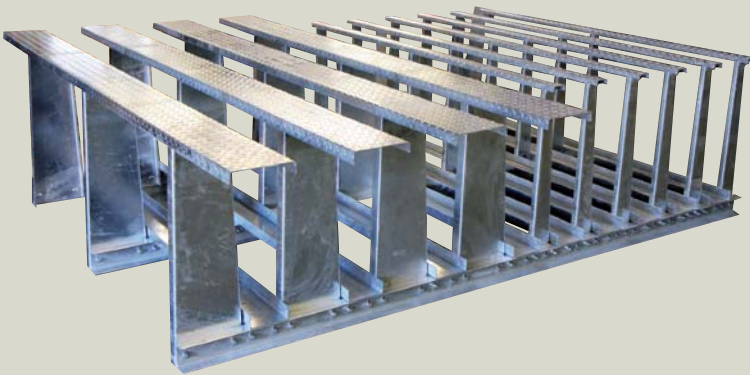
The **base frame** is made of square tubes or U-profiles. If desired, with advanced roller for simple extraction and retraction of the metal sheets.

The **dividers** are made of round tubes or plate edge components. Bolted or welded depending on the frame size and type.

For wide sheets and for crane removal, the dividers can be made accessible. That means the sheets can be easily slung for comfortable removal.

Bottom plates are placed on the base frame to spare the supported sheet edges.

For manual removal, we recommend attaching an **extension roller** in front of the bottom plates. That permits pulling an individual sheet gently forward with little effort.



Sheet-metal cover storage up to 2.300 mm diameter and 230 mm wall thickness



Cantilever shelf system Model 5002



Component warehouse in the area outside a machinery manufacturer

- **Versatile**
- **Robust**

Shelf system for mounting in closed facilities or for outdoor erection.

The **rack uprights** are made of hot-rolled IPE sections acc DIN 1025.

From IPE 100 to IPE 140 they are made unperforated, the arms are clamped. All other section sizes are perforated. **Standard structural** module 100:100 mm

Foot rests are bolted or welded to the shelf frame post. Standard version without **tire protection**. Optionally, tire protection can be made with half-round profile section.

A **forklift guide** track can be very inexpensively and stably attached directly to the footrest. There are various variants available here (angle,

U-, flat or H-tracks), which are implemented depending on the forklift.

The **cantilevers** are fabricated from square tubes, round tubes or IPE section. Depending on the application, the arms can be made with a roll stop or head braces. The arms can be arranged diagonal and flexibly extended, facilitating crane operation (s. Photo 2, p. 17)

With square tubes, subdivision with slip-in holes can be implemented; with other section types, lateral plug-in sleeves can be welded on.



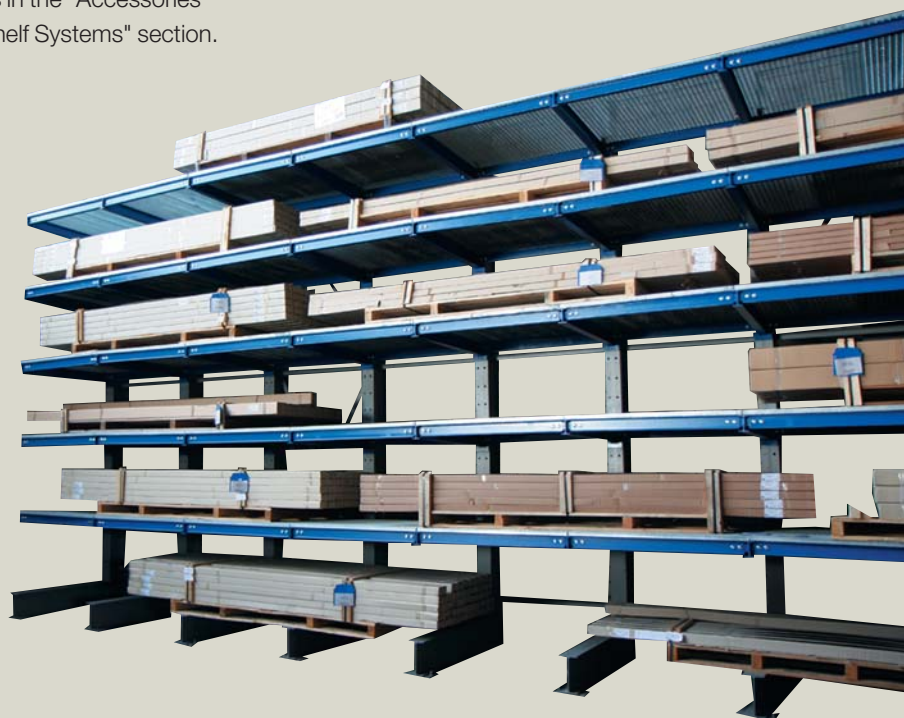
Photo 1: Scrapped car storage at a recycler • Photo 2: Bundle storage in a shelf with extendible cantilevers Photo 3: Building material storage • Photo 4: Manual storage with roof, wall and illumination • Photo 5: Profile storage in a DIY

We offer cart stops or subdividing facilities such as mandrels. They can also be offered divided (e.g. 2 x 300 mm for 600 mm total length). Depending on the size and weight of the goods, various dimensions are possible here.

For palettes or similar goods cantilevers can be bolted between the **arm bridges**. They are usually flat and flush with the cantilevers. Optionally, they can also be shaped like a prism.

The levels can be equipped with grates. Other types of covers (e.g. with chipboard) are also possible.

You can find **additional accessories** in the "Accessories for Palette Shelf Systems" section.





Heavy-duty roll-out shelves Model 5003



Long goods storage with diverse accessories right next to the sawing area.



Storage for hydraulic parts intended for reprocessing

- For storing long goods with a crane
- Makes full use of the hall height

Shelf system for mounting in closed facilities or for outdoor erection.

With heavy-duty roll-out shelves, **heavy long goods** or **machine parts** can be comfortably and safely placed from above using a conventional crane.

By using the **many variants and accessories**, a solution can be worked out that is ideal for every operation. For **large warehouse heights**, an integrated ladder can also reach levels stored far above.

The individual cantilevers are extended at the push of a button with electric drives by a **central** steering

column. The corresponding safety equipment underlies the current European standards.

The components are mounted on site in the shortest possible time. The controller is wired ready-to-be-plugged-in for immediate use.

The following accessories can be adjusted to every purpose:

- Steel troughs
- Profile boxes
- Plug-in compartment partitions with fixed or variable clearance
- Stop pins for extendible arms
- Covers for roof storage
- Plug-in cart stops for roof storage



Honeycomb racks for individual rods Model 505



Photo 1: Storage for individual rods next to a honeycomb shelf Model 4004 WM for bundles • Photo 2: Honeycomb storage with various section types • Photo 3: Plastic section storage

- **For individual rods and small bundles**

Shelf system for mounting in closed facilities or for outdoor erection.

The **base frames** are welded as U-profiles. The supporting traverses are **fabricated and bolted at the desired height** and width.

If required, sendzimized-galvanized **metal trays** are inserted in the honeycomb and secured against slipping with an extension safeguard.

The side edges are also individually stipulated.

As working effectively at over 2,000 to 2,200 mm is hardly possible, many honeycomb shelves, Model 505, are put above **storage platforms**.

You can find additional accessories in the "Accessories for Palette Shelf Systems" section.

Honeycomb shelf with manual lift truck Model 4004 WM



Photo 1: Honeycomb storage for 2,000 kg heavy bundle · Photo 2: Honeycomb storage both sides extendible 12 m

- For material bundles and heavy individual rods
- High storage density

The honeycomb shelves are perfectly suited for long-goods storage for **small and medium-sized warehouses**. The box honeycombs are lifted and pulled out with a **manual lift truck**. Optionally, they can also be implemented

with existing industrial trucks. When pulled out, the load can be unloaded upwards, e.g. with a crane. Individual rods can also be manually removed from the front.

The boxes are welded, **inherently stable constructions**.

Corresponding to the requirements, the boxes are equipped with accessories such as compartment dividers or front-to-rear members. Track rollers with maintenance-free ball bearings are used in the shelf. The boxes can be retracted **from one side or both sides**.

Additional accessories such as crane systems or ladder systems, used to reach the higher storage locations, can also be offered together if desired.





Honeycomb shelf with aisle stacker LGLS Model 4004 WR



Profile section storage with 180 boxes at a window manufacturer

- **Greatest storage density**
 - **Ergonomic handling**
 - **Most compact**
- long-goods storage**

The honeycomb shelves are perfectly suited for **long-goods storage** for medium and large size warehouses.

Using the aisle stackers, which traverse in front of the long-goods honeycombs, every box can be brought to a **transfer point** without any great effort. In manual solutions, the load can be directly removed from the table of the aisle stacking equipment. When using transfer tables, they can be equipped compliant with the requirements, e.g., with **depalletizing equipment**. That means the load can also be placed in the boxes with forklifts. This is often practical in the receiving department.praktikabel.

It is also possible to use extant box systems. The boxes can also be manually unloaded from the front with manual controllers, so **small orders** can be processed without the help of aisle stacking equipment.

The aisle stacking equipment used requires only very little installation space. In the lower section, installation space of merely approx. 300 mm is required. In the head area, a clearance of bottom edge, top box to top edge, aisle stacker of approx. 500 mm is available (specifications at 3,000 kg nominal load).



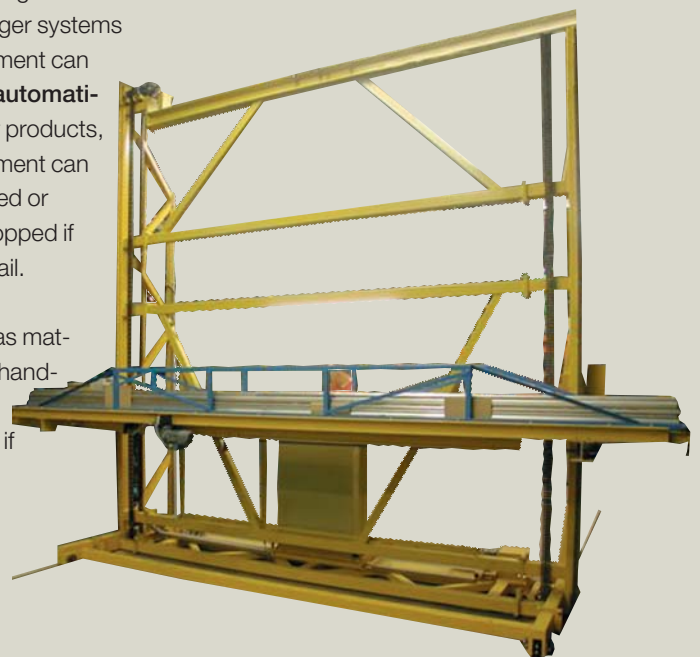
Photo 1: The operator can precisely monitor the placement process on a screen • Photo 2: The compact layout means even low room heights are ideally used • Photo 3: One-sided honeycomb storage placed directly in front of a saw • Photo 4: 226 boxes stored at only 3.6 m room height in the production area • Photo 5: Compact controller with semi-automatic control processes

The load-bearing capacities are normally 1,000 kg to 15,000 kg. For higher load-bearing capacities and for larger load widths, two or four mast aisle stackers are used. If desired, a **picking platform** can also be attached. The user can then handle the picking jobs directly in the warehouse without transporting the boxes.

In areas up to about 250 storage locations, manual control is the most inexpensive alternative. The operator then drives along and can exactly observe the placement and removal process through a camera system. The aisle stacking equipment controller also relieves the operator here through **semi-automatic** procedu-

res such as fine positioning in front of the compartment. In larger systems the aisle stacking equipment can also be controlled **fully automatically**. As in nearly all our products, the aisle stacking equipment can still be manually controlled or manually emergency stopped if individual components fail.

The **accessories** such as matching crane systems or handling trolleys can also be offered from one source if desired.





Palette shelf as multi-station system Model 4003



Photo 1: Spare parts storage at an electrical appliance importer • Photo 2: Receiving warehouse at a vehicle manufacturer
• Photo 3: Spare parts storage in a light-weight hall

- Reasonably priced
- Versatile
- Shelf load up to 4,500 kg
- Shelf load up to 22,250 kg

Shelf system for mounting in closed facilities or for outdoor erection.

Palette shelf systems are the most common system form for storing parts. A great **range of accessories** make these systems attractive for nearly every kind of stored goods. The Model 4003 is a **highly price conscious series**.

Various rack upright types and traverses provide every customer the perfect solution.

The rack uprights are made of cold-rolled sigma sections and are bolted to the base plate.

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Dispatch warehouse with secure area for high-grade components

Various section widths (80, 100 and 120 mm) and material thicknesses provide the best size for every application. That means load-bearing capacities up to 22,250 kg per rack upright can be implemented as standard. If these load-bearing capacities are not sufficient, higher load-bearing capacities can be realized through additional measures.

Standard structural module 50:50 mm The horizontal rack beams are suspended easy to install with a special support. The section types are selected based on the shelf loads and shelf widths requested. They are normally manufactured from square tubes. If desired, we can also offer hot-rolled IPE beams.

You can find **additional accessories** for this and other pallet shelf systems in the "Accessories for Pallet Shelf Systems" section.



Palette shelf as multi-station system Model 4004



Unmachined and semi-finished parts storage at a lathery with 4,500 kg shelf load



Photo 1: Plastic and wood panel storage at an equipment manufacturer

Photo 2: Slide-in roller conveyor (operation only from front) through a buffer area

- **Robust**
- **Versatile**
- **Shelf load up to 4,500 kg**
- **Shelf load up to 24,200 kg**

Shelf system for mounting in closed facilities or for outdoor erection.

Palette shelf systems are the most common system form for storing parts. A great range of accessories make these systems attractive **for nearly every kind of stored goods**. The palette shelf system Model 4004 is a highly **robust series**. The welded rack upright profiles provide great resistance to most impacts that occur during operation caused by forklifts, etc. by using sufficient material thicknesses.

Various rack upright types and traverses provide every customer the perfect solution. If the load-bearing capacity is not sufficient, we recommend checking our shelf types 5004, 5005 or 5006 for their applicability.

The **rack uprights** are made from 4 mm thick, rolled U-profiles. The base plates are welded on.

Two different profile widths (70 and 100 mm) and reinforcement profiles provide the best size for every application.

That means load-bearing capacities up to 22,200 kg per shelf can be implemented as standard. If these load-bearing capacities are insufficient, higher load-bearing capacities can be realized through additional

measures. höhere Tragfähigkeiten erreicht werden.

Standard structural module 50:50 mm

The horizontal **rack beams** are suspended easy to install with a special support. The profile sections are selected based on the inquired shelf loads and shelf widths. They are normally made from hot-rolled IPE beams. Hollow sections or similar are used for lighter shelf loads. However, all other applications can also be perfectly dealt with using adapted profile section forms.

You can find **additional accessories** for this and other palette shelf systems in the "Accessories for Palette Shelf Systems" section.



Palette shelf as single-station system Model 4001



Photo 1: Finished parts storage with aisle stacker equipment · Photo 2: Order picking warehouse with special containers at a tool manufacturer Photo 3: Model pattern storage in a foundry

- **Flexible**
- **Robust**
- **Ideal for container storage**

Shelf system for mounting in closed facilities or for outdoor erection.

Single-station pallet shelf systems are advantageous because the **optimal height grid** can be individually adjusted for any kind of stored goods. That is often used, e.g., for tool storage. The **varying support profiles** allow storing not merely Europalettes and box pallets, but also all kinds of containers and trays.

By using sufficient material thicknesses, the welded rack upright profiles provide sufficient resistance to most of the impacts caused by forklifts or

similar. Various rack upright types and supports provide every customer the perfect solution. If the load-bearing capacity is not sufficient, we recommend checking our shelf types 5004, 5005 or 5006 for their applicability.

The **rack uprights** are profiled from 4 mm thick, rolled U-profiles and are welded to the base plate and the longitudinal and diagonal struts.

Two different profile section widths (70, 100 and 100 mm) and reinforcement sections provide the perfect size for every application. That means load-bearing capacities up to 24,200 kg per rack upright can be implemented as standard. If that load-bearing capacity is not sufficient, higher load-bearing capacities can be achieved through additional measures.

Standard structural module 50:50 mm

The support rails are suspended easy to install with a special console.

The profile section types are selected based on the desired shelf loads, shelf widths and materials to be stored. They are fabricated from hot-rolled angle sections or from sheet metal. Special accessories such as cable drums or coil supports create optimum storage forms for special types of stored goods.

You can find **additional accessories** for this and other pallet shelf systems in the "Accessories for Pallet Shelf Systems" section.

Accessories for pallet shelf systems

- **Safety and labeling accessories**
- **Also for external systems**

Floor anchors:

Starting from a ratio of the height to depth of 5 to 1 or if it is expected that, due to the load the shelf base might lift up (e.g. in drawer systems), the shelves have to be secured against tipping with a suitable stud anchor or similar. However, we also recommend anchoring even with smaller height ratios.

To accomplish that we recommend these components:

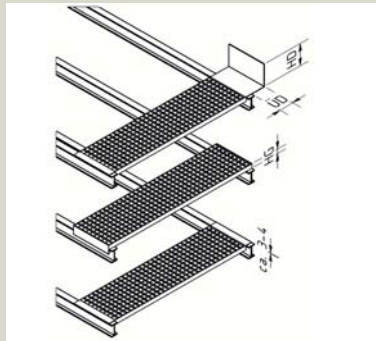
- Stud anchors (for non-cracked concrete):
- Forced expansion bolt (for cracked and non-cracked concrete):
- Resin bolts
- Earth pins

In structures on floors containing magnesite, the rack upright bases are not allowed to come into contact with the substrate (oxidation). To accomplish that, insulation slabs made of plastic are required. In floors containing magnesite, a stainless steel anchor or adhesive anchor must be used!

Shelves:

As standard, chipboard shelves are fixated in position with Z-sheets. Optionally, chipboard can also be placed on front-to-rear members. As an alternative to chipboard shelves, shelving with steel panels can also be placed. Various panel widths, sheet thicknesses and edge heights enable perfect adaptation to your wishes and needs. The position

is secured by chamfering front and rear.



One high load-bearing variant is grid trays. As a standard, these are placed with one chamfer front and rear to the position fixation. The height of the grating (HG, s middle sketch) is structurally dependent on the loads. Optionally, the grating can



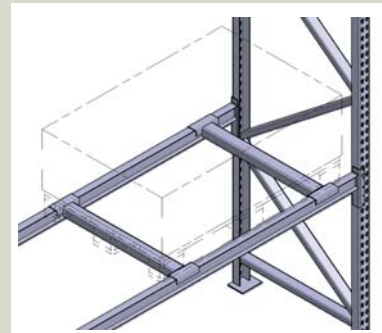
also be inserted. The height loss is then merely approx. 3 -4 mm depending on the load (see sketch below). If necessary, inserted grates can be made with molded load stops (see sketch above). To accomplish that, please state the desired excess length over the horizontal rack beam UD and the height of the load stop HD.

Mesh width:

The mesh width is variable; normal is size 60/40 and 30/30 mm.

Depth support:

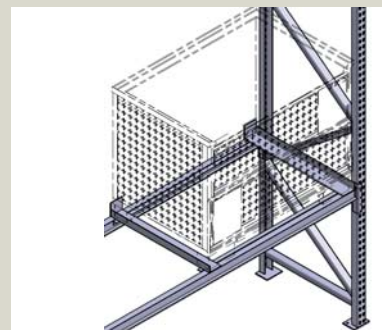
Depth supports are required for pallets stored crossways.



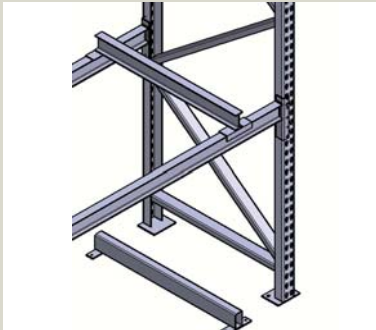
and the load, the ideal size for your application is determined using various profile sections. Every pallet requires at least 2 depth supports.

Angle frame:

When storing boxes without runners in the cross-aisle direction or as an

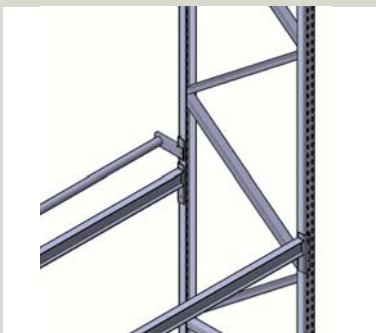


aid for exact storage, angle frames can be used. These are simply placed on the horizontal rack beams. The welded frames come standard with a load stop compliant with BGR 234 with 100 mm height. On request, these can be omitted or be given a different height. Likewise, the angle frames can project front and rear if the standard depth is insufficient in order to meet the modified demands.



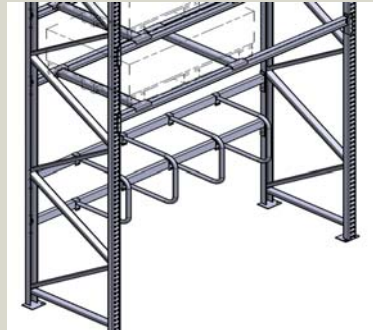
Floor clearance supports:

Floor clearance supports are suitable for placing long goods, wooden crates, laminated cores etc. in the pallet shelves. They also solve the problem of insufficiently high wooden beams. The floor clearance supports are simply placed on the horizontal rack beams. A floor variant can be placed on the floor and anchored as needed. They can be manufactured as needed depending on the height and load made out of IPE or tube sections and, if required, can be provided with a load stop.



Load stops:

Load stops are necessary for double shelves if the loads need to be stored with less than 100 mm clearance to each other. In single shelves, the stops prevent pushing through to the rear. The load stops are always manufactured to match the shelf depth and the stored goods. Assembly is screwless.



Separators:

Separators are used to vertically store cartons or individual rods such as doors, battens, etc. The separators are put on two vertically placed rear horizontal rack beams and secured with a bolt. That allows adjusting to any width. Tube diameter, height and depth are selected based on your requirements. For large and unstable goods, additional horizontal rack beams can be suspended as supports for the goods.

Rear wall grate:

The reverse sides of individual shelves must, if it is possible that individual parts could fall off of the pallets (e.g. loose cartons), be secured with rear wall grates:



Grids:

For existing single-station warehouses, grids are a cost effective alternative for putting small load carriers in a storage location.

Prism mounts:

With prism mounts, drums or other round goods can be secured against rolling.

Catch trays:

When storing water hazardous substances, catch trays underneath the storage locations of the substances is mandatory. The size of the tray needs to be stipulated for each case. The design (with floor clearance pipes, grating covers or drain screws) can be varied as desired.

Heavy duty drawers:

You can find more information about heavy-duty drawers in the "Heavy-duty slide guides for Palette Shelf System Model 1000" section.

Roller conveyors:

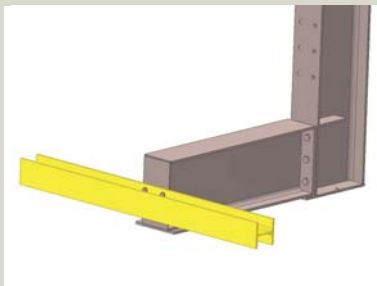
Roller conveyors are often the best solution for dynamic storage. They facilitate stowing high quantities of pallets or containers. As so many variants are available, we ask you to clarify your needs with our technical consultants.



Lowerable roller conveyors:

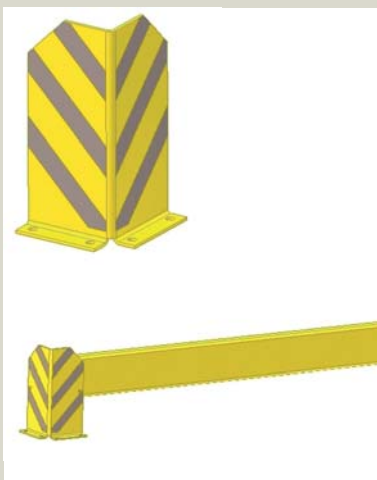
Lowerable roller conveyors are a special feature. These are recommended for the order picking and assembly areas since both full containers are buffered and can be conveyed downwards without strain.

That means the order picker / mechanic is relieved from strenuous and time consuming work.



Guide rails:

Guide rails are needed for shelf aisles depending on the forklifts being used. They can comprise simple angles between which, e.g., the area is sealed. Also stable rails made of HEA profile sections for heavy four-way reach trucks in cantilever racking shelf warehouses are an often used variant. Please clarify which is the best for you with your technical consultant!



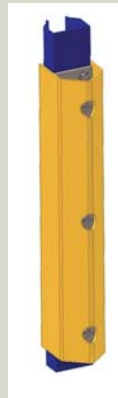
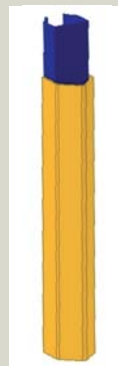
Upright protection posts and guardrails:

Standard upright protection posts 400 mm high with 4 anchor holes for stable attachment to hall floors. Shaped from extra-tough hot plate. The anchor holes are located in the upright protection post tension zone. That securely ensures protection of

the shelf parts. If you want to protect a whole shelf side, we recommend guardrails for bolting to upright protection posts.

Support collision guards:

For support collision protection for pallet shelf systems, we recommend frontal sheet metal covers in various heights. These are simply put over the front post and bolted.



Resilient collision protection:

However, resilient-supported collision protection makes even more sense than this simple variant. In this version, tractive forces are converted into the deformation of a rubber spring. That more effectively protects the supports.



Rating plates:

In accordance with BGR 234, every piece of warehouse equipment needs a rating plate which includes certain information (year of manufacture, manufacturer, load-bearing

capacities, etc.) The rating plates are supplied in various dimensions for each shelf type.

Storage location numbering:

Whether numbers, letters or bar codes, every warehouse needs clear identification of the storage locations. We offer every conceivable solution for that, whether magnetic, adhesive or plug-in labels.



External wall cladding:

Cladding a shelf system can be accomplished with Makrolon walls, trapezoidal sheet metal or sandwich sections.

For outdoor erection, the corresponding wind loads need to be considered in the stress analysis.

Even roof covering is possible. Roof systems can be supplied with rising or falling roofs or hipped roofs. Accessories such as eaves gutters, etc. can also be supplied if desired. For outdoor erection, the corresponding wind and snow loads need to be considered in the stress analysis.

Gate systems can be supplied as entrance or weather protection.



Peak-load pallet shelf Model 5004



Left and right above: Finished goods storage for fork arms, shelf load up to 6,500 kg. Right, below: 3 shelf posts with horizontal rack beams for increasing the bay load and the pallet load-bearing capacity

- **The highest load-bearing capacities**
- **Highly robust**
- **Up to 18,000 kg shelf load**

Shelf system for mounting in closed facilities or for outdoor erection.

The **rack uprights** are made from hot-rolled U-profiles acc DIN 1026 and are bolted to the base plate. As standard, load-bearing capacities up to 41,520 kg per rack upright at a max. shelf load of up to 18,000 kg can be implemented. **Standard structural module 100:100 mm**

The **horizontal rack beams** are placed and bolted easy to install with

a special support. That produces increased **load-bearing capacities**. The profile sections are selected based on the inquired shelf loads and shelf widths. They are normally made from hot-rolled IPE beams.

You can find **additional accessories** for this and other pallet shelf systems in the "Accessories for Palette Shelf Systems" section.

Shelf system for containers Model 4008



Photo 1: Kanban shelf on an assembly line • Photo 2: Finished goods storage at a hydraulics manufacturer • Photo 3: Mobile racking for dye hobbos • Photo 4: KLT bin warehouse at a transmission manufacturer • Photo 5: Kanban shelf at a machinery manufacturer

- **Highly compact design**
- **Up to 150 kg shelf load**
- **Bay load max. 2,500 kg**

Shelf system for mounting in closed facilities or for outdoor erection.

The especially **width-optimized** and light Model 4008 shelf system is distinguished by the narrow installation width of only 30 mm at shelf loads of up to 150 kg. The tight matrix and various bearing profiles mean the system can be perfectly configured for every type of stored goods.

The welded rack upright profiles with sufficient material thicknesses provide great resistance to most of the impacts caused by forklifts, etc. during operations.

If the load-bearing capacity is insufficient, we recommend checking our Shelf type 4008 S for its applicability.

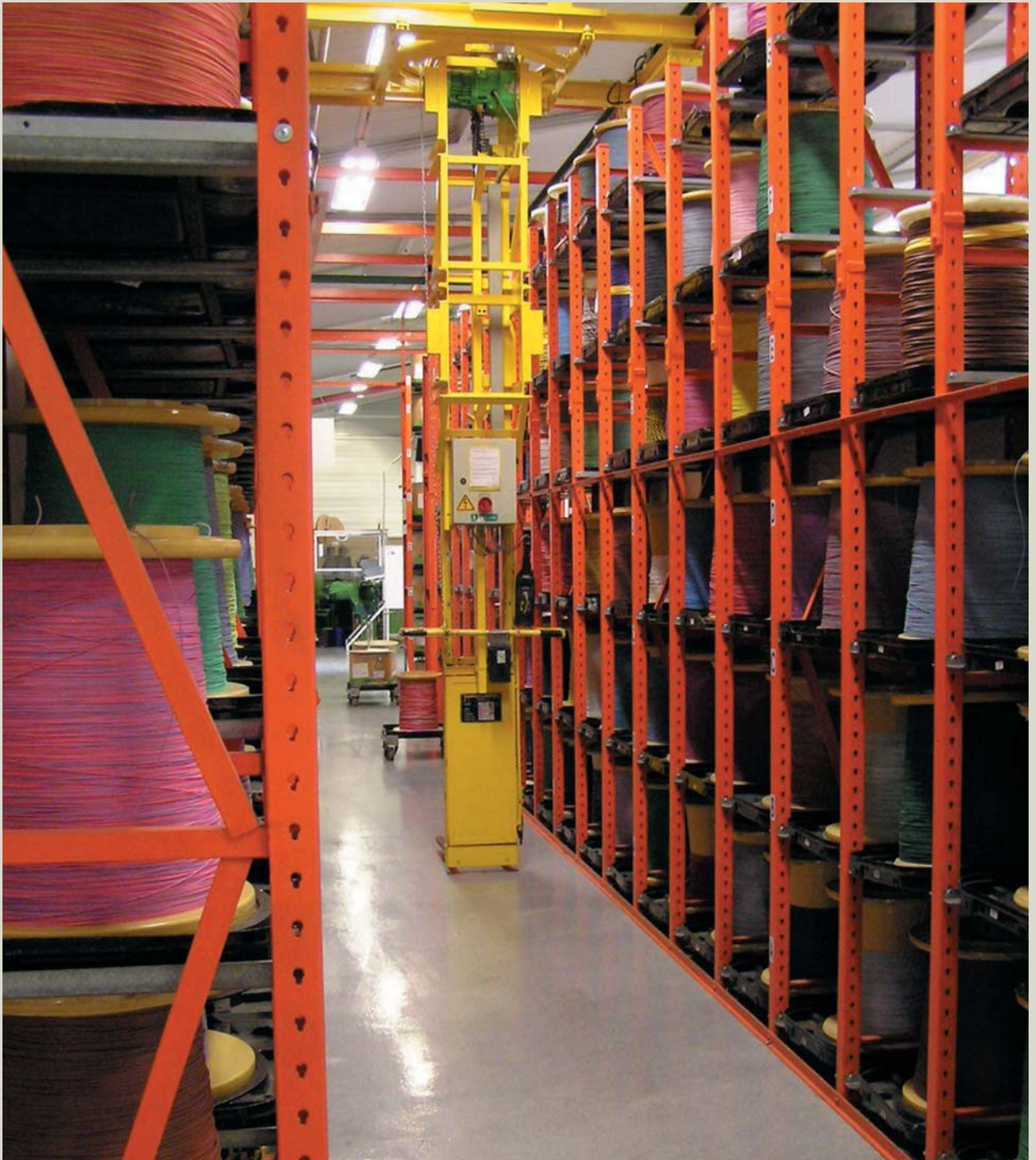
The maximum load-bearing capacity per rack upright is 2,500 kg. If this load-bearing capacity is not sufficient, higher load-bearing capacities can be achieved through additional measures.

Standard structural module 50:50 mm, if desired, 25:25 mm is also feasible. The **container supports** are suspended easy to install with inserted posts. The support rails are selected based on the inquired shelf loads, shelf widths and stored goods. They are fabricated from hot-rolled angle sections or from sheet metal. Special accessories such as cable drums or paper rolls create optimum storage forms for special types of stored goods.

You can find **additional accessories** for this and other palette shelf systems in the "Accessories for Palette Shelf Systems" section.



Shelf system for containers and trays Model 4008 S



Cable bobbin storage at automobile component supplier

- Compact construction
- Up to 300 kg shelf load

Shelf system for mounting in closed facilities or for outdoor erection.

The especially width-optimized and light Model 4008 S shelf system is distinguished by the narrow installation width of only 50 mm at shelf loads of up to 300 kg. The tight matrix and various bearing profiles mean the system can be perfectly configured for every type of stored goods.

The welded rack upright with sufficient material thicknesses provide great resistance to most of the impacts caused by forklifts, etc. during operations.

If the load-bearing capacity is insufficient, we recommend checking our Shelf type 4001 for its applicability.

Maximum load-bearing capacity per post upright: 4,500 kg. If this load-

bearing capacity is not sufficient, higher load-bearing capacities can be achieved through additional measures. Standard structural module 50:50 mm, if desired, 25:25 mm is also feasible.

Container supports:

Rivets make it easy to install. The support rails are selected based on the desired shelf loads, shelf widths and materials to be stored. They are fabricated from hot-rolled angle sections or from sheet metal. Special accessories such as cable drums or paper rolls create optimum storage forms for special types of stored goods.

You can find **additional accessories** for this and other pallet shelf systems in the "Accessories for Pallet Shelf Systems" section.



Drum reel storage with pull technology accessories including roller conveyor and crane system for packaging delivery pallets



Mobile racking system Model VSR



Special paper roll storage near the production facilities

- Only one access aisle required
- Suitable for all shelving systems
- Electric or manual
- Also without rails in the floor

Mobile racking systems facilitate storing storage goods even **more compactly** since only one aisle needs to be available. That often saves **40%** and **more warehouse space**, leaving room for other areas saves building space in the first place.

Modern controllers and components such as remote controls keep the time for traversing the shelves as short as possible.

The controllers naturally also include all the components required by the

applicable European standards and directives.

Optionally, the shelf can also be **manually** traversed. With light trolleys up to 2,000 kg trolley load, that is even possible without a crank. For trolleys up to 5,000 kg trolley load or with few cycles, the shelf can be pushed with a crank. All heavy trolleys, or if you desire, all trolleys can be electrically driven.

Normally, running rails are inserted in the substrate which, depending on the weight of the trolley, has



Photos 1 and 2: Receiving warehouse at a window manufacturer • Photo 3: Manual mobile rack for pattern plates
Photo 4: Tool storage at a foundry with covered excavation area • Photo 5: Dispatching warehouse at a controller manufacturer

various cross-sections and structures. For new buildings, the rails are attached to the foundation strip. Or, a corresponding slot is milled into the floor.

The least expensive variant is found during the course of the project together with the participating partners, e.g., the architects.

An alternative solution for light trolleys is also possible without **running rails**. Then the shelves run on the hall or office floor. Guidance can then be implemented on the front (wall

side) or on the ceiling.

All kinds of shelves can be mounted on the mobile shelf trolleys.

Another interesting variant is cross-mobile shelves. In this variant, the shelf moves in the forklift access aisle.

This is a good alternative for extremely heavy goods and also for long-goods storage. The shelves stand, e.g., in unused hall niches.



Shelving systems Model 4100



Spare parts storage at a vehicle manufacturer



Photo 1: Dispatching warehouse at a tool manufacturer • Photo 2: Order-picking warehouse at a repair shop • Photo 3: Tire warehouse • Photo 4: Small parts storage at a car repair shop

- **Single or multi-storey**
- **Great range of accessories**
- **Highly robust**

Whether single or multi-storey, shelving system systems can be found in nearly all sectors of industry and commerce. Wide-ranging accessories enable complex, sensible solutions for many companies. Please ask our technical consultant. We will make you a long-range offer

for a compilation that makes sense for you. The shelving system Model 4100 impresses with extensive accessories.

The shelving system systems can also be combined with conventional platform construction.



Platform system as steelwork, Model 2001

- Robust
- Large span lengths
- Few crossbonds

For high loads with very few bothersome stanchions.

The simplest and fastest way to expand the warehouse or production areas is with platform systems. Depending on the loads and task, manufactured from hot and cold-rolled profile section steelworks, these can carry **all kinds of loads**. Versatile accessoriesThe simplest and fastest way to expand the warehouse or production areas is with platform systems. Depending on the loads and task, manufactured from

hot and cold-rolled profile section steelworks, these can carry all kinds of loads. Versatile accessories such as pallet transfer points, fences, sliding gate systems up to lighting, receptacles etc., produce the suitable and complete solution for every requirement. The installation of crane systems, conveyors, etc. is also possible.

The **floor covering** can be made of wood, grates or high-load bearing capacity combinations made of trapezoidal sheet and wood.



Platform system with passage, pallet transfer barrier and grate fencing.

Platform system mode of profile section system Model 2002

- Reasonably priced
- Quickly and easily assembled

The simplest and fastest way to expand the warehouse or production areas is with platform systems. Model 2002 is a platform construction made of profile systems which can cover every room material-optimized and very flexibly. The accessories are just as extensive as in the Model 2001, so here also every customer demand such as

pallet transfer points, fences, sliding gate systems up to lighting, receptacles, etc. can be implemented.

The **floor covering** can be made of wood, grates or with high-load bearing capacity combinations made of trapezoidal sheet and wood.



Photo 1: Platform for light cartons over an order picking area · Photo 2: Platform with platform life · Photo 3: Retracted pallet transfer point



Platform lift



- Very inexpensive solution
- Low space loss in the floor level

With platform lifts, all platform warehouses can be operated **quickly, effectively and space-saving**. It is exactly in small warehouses, spare-parts areas but also large tire warehouses that platform lifts quickly make sense.

The standard platform for hand feeding is 700x700 mm. Naturally, other dimensions can also be made. The standard size for traversable stage lifts is 1300x900 mm. Here, the platform is lowered to approx. 60mm over the existing floor. Using a **hinged ramp** on the platform, the palettes can then be removed with a pallet stacker. This is also a common solution for transport trolleys.

With the platform lifted, nearly the entire floor area is then available again. No work area is restricted through blocks or partitions.

The lift is delivered ready-to-be-plugged-in. Customer assembly is also possible. Erect, anchor and plug it in - finished. Through the **permanent power connection** there are no downtimes for battery charging or battery replacement. And in later years, there is also no need to replace them with new, expensive batteries.

A platform lift can also be retrofit on an existing system. The horizontal forces merely need to be transferred into the platform construction using suitable materials.

As an alternative, platform feeding is also possible with aisle stacking equipment or pure freight lifts. Get in touch with us! We will offer you the best solution.



Transport trolley

- All variants and designs can be individually implemented

Goods are moved in all sectors of industry and trade and commerce. And that is often performed with transport trolleys. Often, a transport trolley needs to be adapted to the operational requirements, whether they are a large track roller because the floor to be traversed is so uneven, or the exact height of a roller conveyor that is intended to take up the trays from a production machine.

We can offer you a great number of variants for this. Stainless steel components for the foodstuffs sector, high temperature-resistant components for a painting line, etc., we can implement every customer demand. Also trailers for in-house transport will be fabricated if desired.



Pallets and transport cradles



Diverse core shelves in a foundry

- **Robust**
- **All variants and designs can be individually implemented**

A large portion of the material flow that is dealt with today is processed with standard pallets and similar items. But that doesn't make much sense for a lot of applications. In many tool warehouses, a wooden tray with or without metal sheet covering is sufficient. Furthermore, due to the non-existent floor clearance, a great deal of space is saved in terms of height. But also heavy tools that need to be brought to the tool warehouse with pallets for the processing machines

means standard wooden pallets often don't make sense since they are often not designed for the loads.

We provide you every pallet with every attachment just as you need it. And that once again, just as with all other products, already starting with a quantity of one.

Welded special pallets with the highest load-bearing capacities, integrated fork-lift pockets, special coverings, pallets with and without

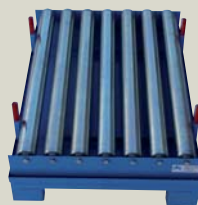
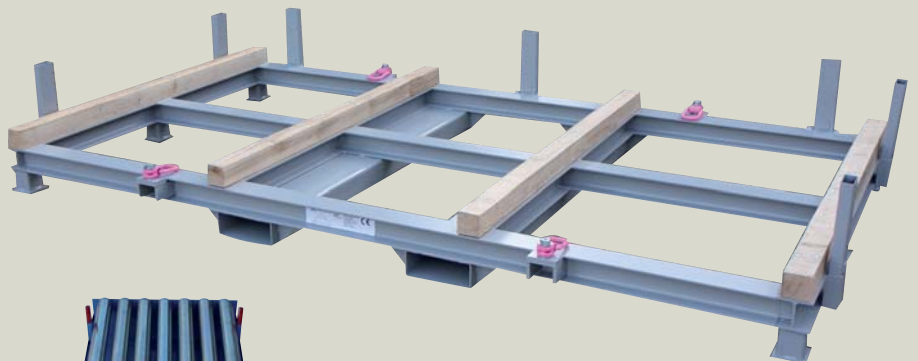
... solves your storage problems



Photo 1: Block storage with core shelves • Photo 2: Tire pallets stacked in block Photo 3: Tire pallets in the shelf • Photo 4: Long-goods pallet with centering aids

anti-slip device – you can get your specific solution from us.

A specialty of our company: Core shelves as transport unit with support rail profiles, hinged floors, drawers can be retracted from one or both sides. The core shelves have various clearance facilities, e.g., for clearance heights adapted to platform mules.



Container with double-wall oil pan for mobile transmission oil change





System rooms Model 501



... solves your storage problems



- Flexible room planning
- Can be altered any time

In many parts of industrial and trading companies, office accommodations for social rooms need to be subsequently built into or in front of previously erected halls. System rooms are often the best solution for that. The modular construction

can be easily dismantled later during alterations and re-mounted at a different spot. Every furnishing detail is individually fulfilled here also. After a short installation time, the rooms are ready to be handed over.





Steel construction and machine constructions

Along with our company and warehouse equipment, we also manufacture steel construction and machine construction based on your desires and needs.



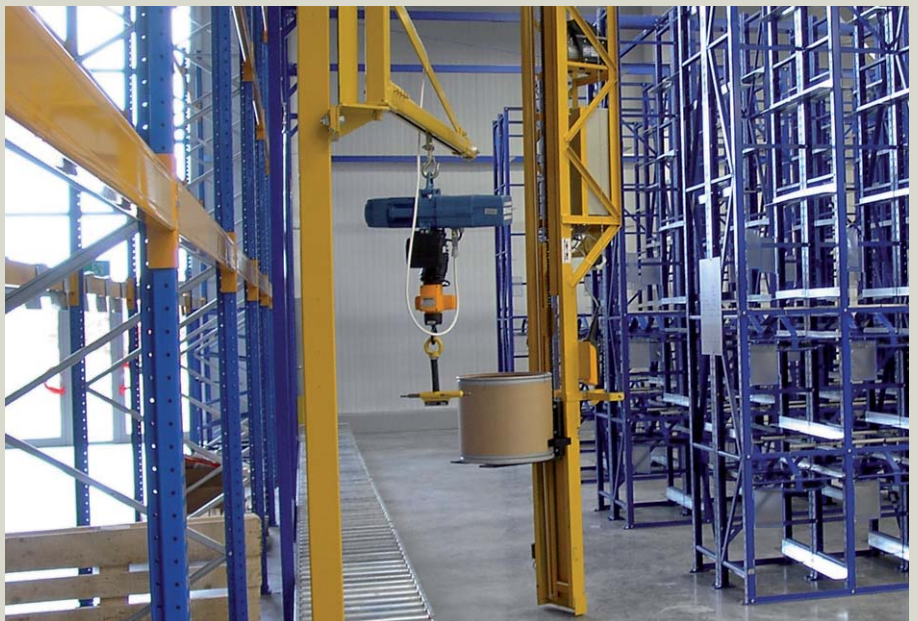
... solves your storage problems

Complete solutions

Complete solutions from a single source – with us, that is reality. From the crane system, roller conveyor, shelving system, aisle stacking equipment and a wealth of accesso-

ries for letting the stored material move immediately into production – we can provide you with complete packages from a single source. From the planning, manufacture and

assembly, you are offered a fixed price for everything all together – no problems with interfaces between the various participants.



Used shelf systems

Used shelf systems are naturally attractive because of the low price and nearly immediate availability. The disadvantage here is the often extensive compromises due to the used parts available on the market. But we can help you retrofit the missing or unsuitable used parts, achieving the required attributes you specifically need.

Contact work

With our comprehensive machine fleet and highly qualified employees we are able to perform all, even very extensive, contract work. As a certified welding shop (DIN 18800 T7- Class E), we are also allowed to weld and process dynamically loaded components such as in crane construction.

Services and financing

New shelving systems and other equipment are mounted globally by our specialist mechanics in the quality you demand. If the shelving systems need to be converted or dismantled later on, we would also be glad to help you out. And naturally, we do not provide this service merely for our own shelving systems; also systems from other manufacturers can be erected quickly and uncomplicated according to your requirements. As a manufacturer, we also offer inspections of shelving systems and aisle stacking equipment (need to be performed at least once annually by a specialist). That means possible damage can be expertly assessed and quickly repaired. We can also immediately offer you the necessary financing. Using a bank

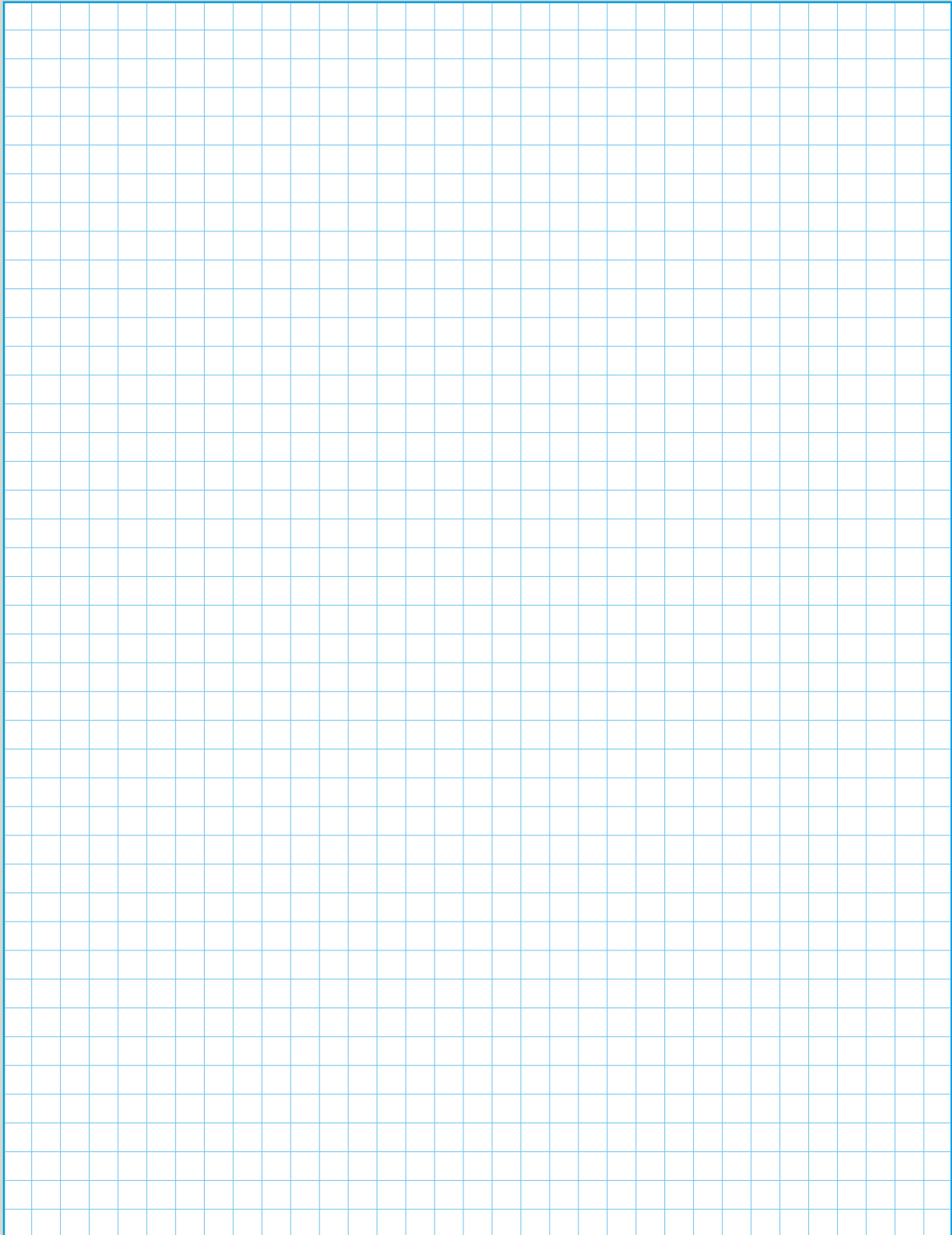
that has been active in this sector for many years, we are able to propose a leasing offer that is customized just for you.

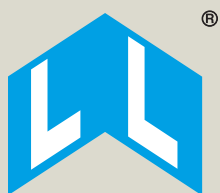
Haven't found anything?

Even if you haven't found the products that meet your wishes and ideas in our overview please contact us. We will solve your storage problems too!



For your notes





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... solves your storage problems

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