stow®
storage solutions
Averys group

STORAGE SOLUTIONS

The high quality storage systems for all palletized goods, small goods and long goods.

STORAGE SOLUTIONS

STOW:
WHO & WHAT

The core activity of Stow is the development and manufacturing of top quality racking systems for the storage of pallets, small goods and long items as well as mezzanine structures.

Engineering, sales and on-site assembly are handled by the Stow branches in the key markets and by an extensive distributor network.

The most important customer segments include 3rd party logistic providers, large distributors, manufacturers and retailers.

Stow's expertise is focused on customisation, creative engineering and flexible storage solutions and the assembly of warehouse installations to high specifications.

Stow Storage Systems are made up of standard elements which are mass-produced in an almost fully automated factory.

Over the last 30 years Stow has expanded to become an international company with 3 production plants, affiliated companies throughout Europe and an extensive distributor network focusing on Europe, the Middle-East and Asia-Pacific.

To attain its growth targets, Stow develops innovative products, opens up new areas of application, diversifies its portfolio of activities and invests in new markets.

Stow is strengthening its distribution networks in nearly all regions, but above all in its traditional markets in Europe, the new EU member countries, eastern Europe, China and recently in South-Africa and South-America.

FROM DESIGN
TO REALISATION

Stow distinguishes itself from other rack manufacturers on 3 levels:

First of all, we produce the same product at several factories. "Made in" different countries but all "designed in Europe" at our headquarters in Belgium. We use state-of-the art software to process inquiries quickly and accurately. Each affiliate has its own team of skilled engineers, supported by the engineers at our headquarters. All focusing on providing safe and cost-efficient storage solutions.

Secondly, we put great emphasis on our production processes and the raw materials we use. Especially in Asia we pay great attention to the steel quality. After receipt of the mill certificates, we perform in-house tests of every mother coil in order to ensure that our products are capable to carry the loads they are required to. Once every month we perform a third-party test to make sure that our own equipment is correctly calibrated. Nowadays we refuse only a few percent of the coils we purchase, as our suppliers know that we double-check rigorously.

Last but not least, and probably most important, is the FEM certification. All components have been thoroughly tested in independent laboratories. All design and structural calculations comply with the stringent FEM regulations. We can say that we actually deliver what we promise.

FEM RACKING AND SHELVING PRODUCT GROUP
(European Racking Federation)
National Metalforming Centre
Avenue Ariane 5, B-1200 Brussels
West Flanders, BTE 407, UK
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Secretary General - Brian Hunley
E-mail: secretary@feminfo.com Website: www.fem-info.com

19 March 2012

TO WHOM IT MAY CONCERN

KardexStow

This is to confirm that Kardexstow are bonafide ordinary members of FEM, being members of the Belgian National Association, AGORA.

Brian Hunley
Secretary General, ERF

European Racking Federation, a company limited by guarantee and not having a share capital.
Registered Office: Furnace Metalforming Centre, Avenue Ariane 5, B-1200 Brussels, West Midlands BTE 407, UK.
Registered No. 05324574 England

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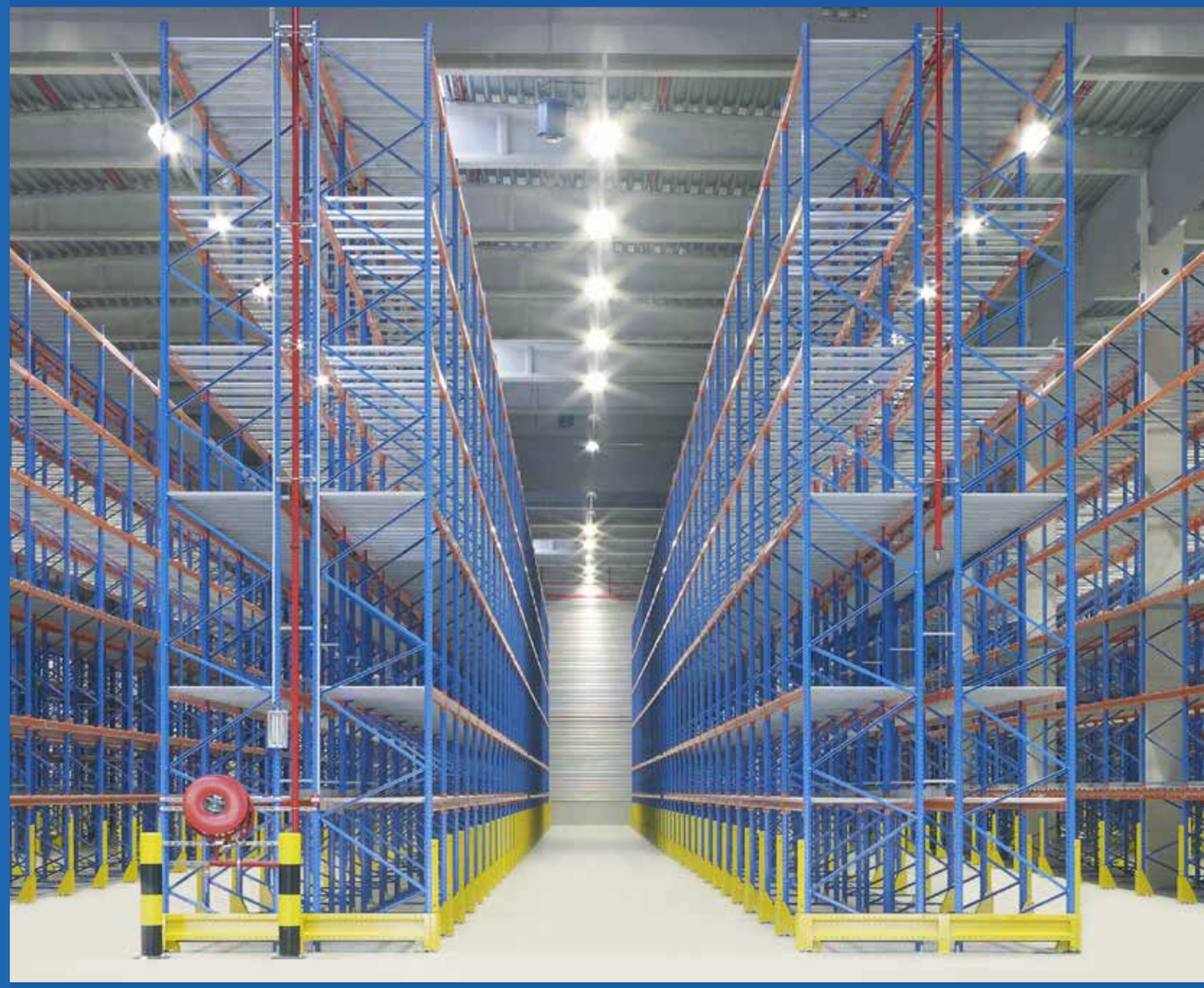


PAL RACK®

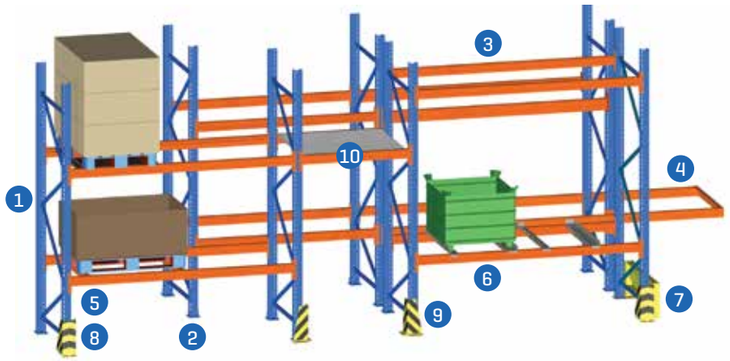
The high quality pallet storage system
for goods of all sizes and weights.

CONVENTIONAL PALLET RACKING

The Stow Pal Rack® system consists of a full range of basic components and accessories to fulfill all of your requirements. The system is designed for the optimised storage of goods of all sizes and weights. All components have been thoroughly tested in specialised laboratories to determine their mechanical properties. These are used to calculate the safe load capacity of each component and ensure that they meet the stringent requirements of the FEM code for pallet racking.

THE END CONNECTOR

The boltless connection allows a quick and efficient assembly. The stability of the unbraced rack is determined by the properties of the connector. The connector is made of high quality micro-alloy steel. The safety pin prevents accidental dislodge of the beam.



1/ The frame
2/ The footplate
3/ The beam
4/ The pick & deposit station
5/ The pallet support
6/ The container support
7/ The frame protector
8/ The upright protector
9/ The corner protector
10/ Fall through protection

THE FRAMES

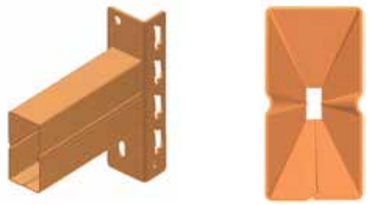
The bolted frames, in lengths of up to 15m in painted or galvanized finish, are composed of 2 uprights and a number of diagonals. The wide range of types of frames allows the rack construction to be optimized for heights of up to 40m and bay-loads of up to 45 T.

Type	Width	Depth
QPU 10	82,5	63
QPU 11, 12	85	65
QPU 14, 15, 16	100	65
QPU 29, 30, 31, 32	120	92,5
QPU 33	140	90
QPU 34, 35	140	92,5

THE BEAMS

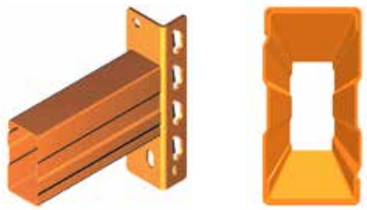
Several types of beams are available, to suit all possible configurations:

THE TUBE BEAM (LIGHT DUTY)



Type	Width	Depth
QPB 0486	60	50
QPB 0488	80	50
QPB 0480	100	50
QPB 0481	110	50
QPB 0482	120	50
QPB 0485	125	50

THE BOX – BEAM (HEAVY DUTY)



Type	Width	Depth
QPB 0448	80	50
QPB 0449	90	50
QPB 0440	100	50
QPB 0441	110	50
QPB 0442	120	50
QPB 0443	130	50
QPB 0444	140	50
QPB 0445	150	50
QPB 0446	160	50

The box-beam is composed of two cold-formed C-profiles. It is very resistant to torsion and provides great stiffness in both horizontal and vertical directions, with a load bearing capacity of up to 4.8 tonnes per beam level.

THE SHELF – BEAM (FOR PICKING LEVELS)

LIGHT LOADS
The light duty beam with integrated connector is equipped with a standard edge for shelves or panels of 28 mm thickness.

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THE PICK & DEPOSIT STATION

The Pick & Deposit station serves as an interface between the pallet handling equipment (such as VNA-trucks) and the trucks used for in- or outbound. The Station can be equipped with a centering device for a more accurate positioning of the pallets.

STRENGHTENING METHODS

1/ Adding **bracing** in the down-aisle direction of the racking will increase the load capacity of the frames. 2/ When the single rack is too slender it is connected to the adjacent double rack by means of a **top-tie**. 3/ Inductive **guidance** or the rail guidance is used with "very narrow aisle" trucks.

THE ACCESSORIES

THE FOOTPLATE AND LEVELLING PLATE

A range of dedicated footplates have been designed for specific applications: VNA-applications, High-Bay systems, etc... The load bearing capacity depends on the effective area of the footplate as well as the type of concrete slab.
The racking is adjusted by means of levelling plates, in accordance with the applied regulations. After levelling, the racking is anchored.

THE ROW SPACER

In double racks row spacers are installed between each pair of frames, these can also be used for fixing the sprinkler fire protection system.

For some applications single uprights are used in combination with frames. These are connected with the so-called "in-on" - row spacers.

THE CONTAINER SUPPORT

The container support is equipped with a side guidance and optionally with an integrated back-stop. It is recommended for safe storage of metal containers.

THE SPRINKLER SYSTEM

The sprinkler system is connected on the row spacers, which link the two frames of the double rack. The flue between the pallets depends on the local regulations (often 150 mm).

THE PALLET SUPPORT BAR

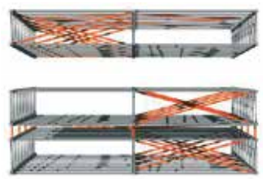
The pallet support bar is used to support pallets of poor quality or when pallets are placed with the 1200mm side facing the aisle. A pair of galvanised cold-rolled pallet supports can take a load of up to 1200 kg.

THE PICK AND DEPOSIT STATION

The Pick & Deposit Station is installed at the end of the racking aisles.

1/ THE BRACED RACKING

Adding bracing in the down-aisle direction of the racking will increase the load capacity of the frames. For AS/RS-systems the bracing is needed to meet the assembly tolerances.
The vertical bracing (called the spine bracing) is located at the back of the rack. It works in the xy-plane. The horizontal bracing (called the plan bracing) is located in between two beams giving stability in the xz-plane.



top view of the braced single and double rack

2/ TOP-TIED RACKING

When the single rack is too slender it is connected to the adjacent double rack by means of a top-tie. The top-tie is mounted on extended front uprights.
For automated racking the top-tie is also used to support the top-rail.

3/ VERY NARROW AISLE RACKING

This type of racking is operated with "very narrow aisle" trucks. They are guided through the aisle, allowing faster and easier operation. Inductive guidance often replaces the rail guidance. The design of the ground guidance depends very much on the type of lift-truck. The low guidance profiles allow placing pallets on the floor, the high guidance profiles require extra bottom beams.

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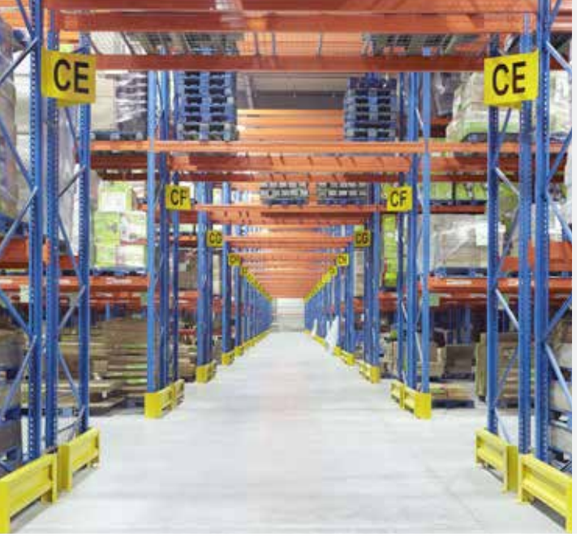


RACK PROTECTION

Protection of the racking against collision from a fork lift truck is important. The expected lifetime will be extended and repairs limited. A number of basic protectors are available and for specific applications dedicated protectors have been developed, for example fall through protectors.

THE PROTECTORS

THE CORNER PROTECTOR

The corners of the racking are vulnerable to damage caused by collisions. The corner protectors are anchored on both sides of the upright.

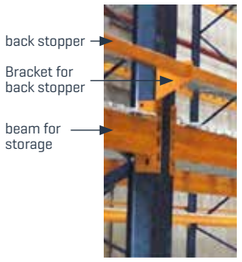
THE UPRIGHT PROTECTOR

The upright protector will reduce the damage caused by impact loads. Especially for installations with fast moving products or heavy products, upright protectors are essential for the safety and lifetime of the racking.

THE FRAME PROTECTOR

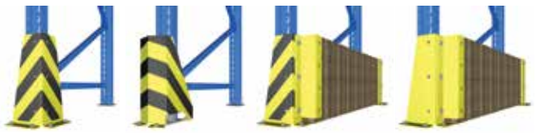
Constant traffic around the end-frames or the frames at the cross aisles often causes damage to the racking. The Stow frame protector is built with a sigma main beam, supported by two end protectors.
For longer runs intermediate supporting brackets are mounted.

PUSH THROUGH PROTECTORS



Push through protectors can be used in single and double entry racks. They are often used to protect the wall of the building, for instance in cold-stores, or to guarantee the space between the pallets in double racks for the sprinkler fire protection system. The stop beam can also be used to fix cladding on the back of the racking.

SPECIFIC CUSTOMISED PROTECTORS



Examples:
- Fall through protectors above passages.
- Wheel stops at the front of carpet racks or live storage systems.
- Full length upright protectors, often used for carpet racks and racks with a high risk of collision.

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DRIVE IN

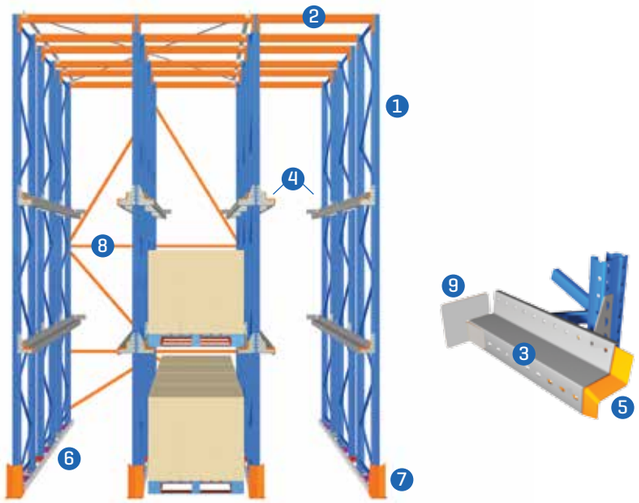
The high quality pallet storage system for optimized storage space.

DRIVE IN RACKING

The Stow Drive-in racks are designed for storing large quantities of similar pallets and increase the storage space utilization compared to conventional pallet racking systems. This is achieved by eliminating picking aisles. The system provides safe block stacking of goods, which are too fragile or unstable to be stacked one on top of the other.

LOADING PROCEDURE

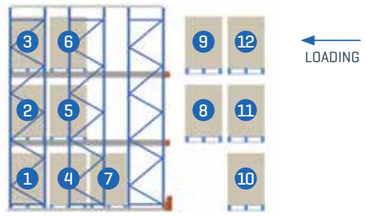
Drive-in racking can be subdivided in three types, based on the load and unload procedure and the accessibility: 1/ **Single Drive-in** and 2/ **Double Drive-in** are loaded and unloaded according the LIFO (last in, first out) principle. 3/ **Drive-through** installations are loaded and unloaded according the FIFO (first in, first out) principle.



1/ The frame (upright)
2/ The top-beam
3/ The pallet rail (RAL or GAL)
4/ The support arm
5/ The entry on the pallet rail
6/ The ground guidance
7/ The entry on the ground guidance
8/ The back-bracing
9/ The back-stop

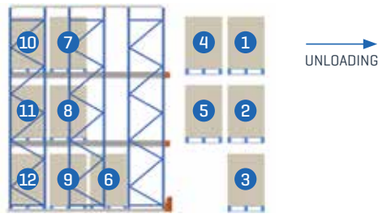
DRIVE IN

In a **single Drive-in** the first pallet is placed at position 1 and the rack is loaded from the bottom to the top and from the back to the front. The unloading follows the inverse procedure, from the front to the back, from top to bottom. The loading and unloading sequence follows the LIFO principle (Last In, First Out).



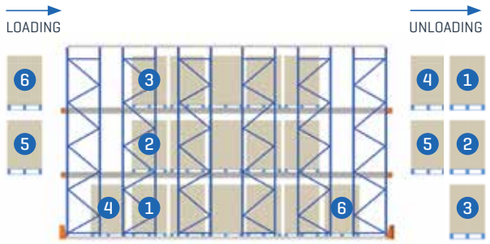
DOUBLE DRIVE IN

In **double Drive-in** installations the load and unload sequence is the same as in a single Drive-in racking. It is composed of two Drive-in racks, placed back to back.



DRIVE THROUGH

In Drive-through installations loading and unloading happens from opposite sides, according to the FIFO principle (First In, First Out).



MOST IMPORTANT FEATURES

- The non-welded arms, which are bolted onto the frame. The frame is continuously perforated at a pitch of 50mm so the height partitioning of each lane can be set individually!
- The pallet rails, incorporating strength with excellent pallet guidance thanks to its 100° design. Very user-friendly compared to a 90° design which could lead to tilting pallets.
- The separate 'nose', sticking about 15 cm out of the rack, to avoid collision. The user focuses on the 'outside' of the lane, instead of the beginning of the lane where the frames are located very user friendly.
- Efficient and minimal impact backstop. Connected to the rail instead of the frame, hence avoiding structural frame damages.
- The stand-alone upright protection and ground rails. It's a modular system, so each piece can be easily replaced without having to dismantle frames.

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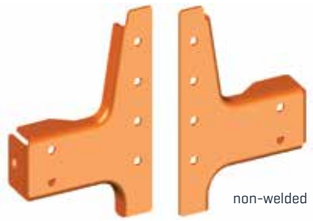
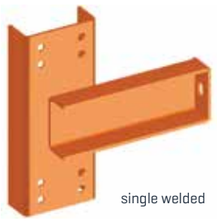
DRIVE IN RAIL DESIGN

The specially designed rail offers a safe and smooth surface. The rail can be produced in lengths of up to 9m, so almost no rail connections are needed. This special design ensures that it is hardly sensitive to torsion under load, allowing bigger spans between two supporting arms.

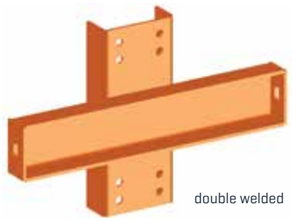
DRIVE IN ARM



non-welded



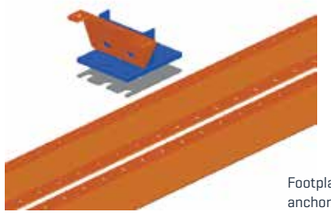
single welded



double welded

THE DRIVE IN GROUND RAIL DESIGN

Productivity and safety are increased by the use of high visibility upright guards and ground rails. The entry guides are not connected to the ground rails, allowing quick replacement in case of damage. Thanks to the shape of the entry guide damage to the pallets at ground level during storage or retrieval is avoided.



Footplates & ground rail are anchored together

MIDDLE OR END STOPS

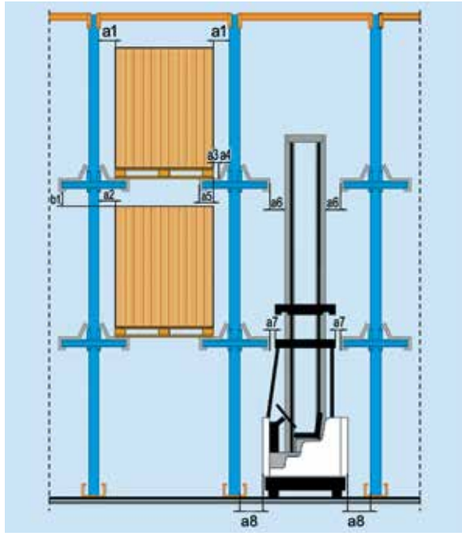
The middle or end stops are used to protect the wall or to position the pallets correctly in the lanes.

DRIVE IN CONFIGURATION

The clearances for the pallets and the handling trucks are very important and must comply with FEM-regulations.

Dimensions: according FEM 10.3.02

a1 ≥ 75 mm
a2 ≥ 50 mm
a3 ≥ 50 mm
a4 ≥ 50 mm
a5 ≥ 20 mm
a6 ≥ 100 mm
a7 ≥ 75 mm
a8 ≥ 75 mm
b1 ≥ 100 mm

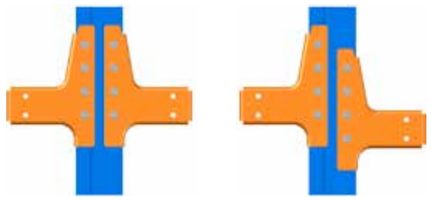


DRIVE IN ARM DESIGN

The height partitioning can be set per drive-in lane:

- Pallet width = 1200 mm
→ Lane width = 1350 mm

- High and deep drive-in systems or for pallets with max. 50 mm overhang: an extra of 50 mm should be added
→ Lane width = 1400 mm



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OPEN FACE RACKING

The high quality storage system for
storage of containers and pallets.

OPEN FACE RACKING

Stow's Open face racking is particularly suitable for storage of containers and pallets. As box containers are only supported in their four corners a safe storage in conventional pallet racking is not so easy. In Open face racking the containers or pallets are stored on depth supports, which are hooked in the side perforations of the frames. This type of racking provides maximum height utilisation by eliminating the horizontal beams as in Conventional pallet racking. The boltless height adjustment every 25 mm allows an optimised partitioning of the storage levels.

CONSTRUCTION

A very rigid construction is obtained by welding the profile onto the hooks. The rails are optionally equipped with a backstop.

The boltless assembly and future adjustments of levels is fast and easy. The inclined side guidance facilitates the correct positioning of the container on the rails.

Adding some specific construction elements, such as top-ties, top-rail and run-outs, the system can be serviced automatically by AS/RS-cranes.

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STOW MOBILE

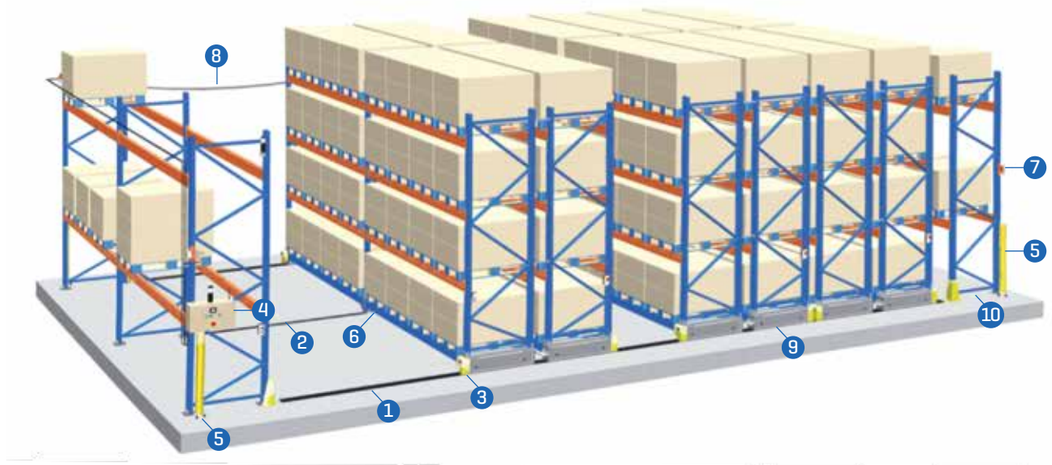
The ideal combination of compact storage and accessibility of all pallets.

MOBILE PALLET RACKING

Stow Mobile is a high-density storage system designed to install pallet racking onto automated mobile carriages, allowing opening and closing of the aisles. Conventional static racking requires fixed aisles between racks, causing quite some redundant space. A mobile racking system is very efficient and only needs one aisle, creating a much higher warehouse industrial storage capacity. Where compact storage is required whilst keeping a high degree of accessibility to the stored products, mobile racking may be the best solution, especially where storage space is expensive, for example in cold stores.

PHOTOELECTRIC SAFETY SYTEM

The safety of the operator is guaranteed by a photoelectric beam system, mounted on each side of each mobile rack and at the outer sides of the complete installation. It complies with the European Machine Safety Directives. When the equipment is put into motion, the safety light bar system is activated.



1/ Guiding rail

2/ Running rail

3/ Distance sensor & light barrier

4/ Main Control Cabinet
5/ Personal Detection System
6/ Motor/Drive
7/ Forklift counter
8/ Power supply cables
9/ Mobile rack
10/ Fix rack

INSTALLATION

- The mobile racking system moves on rail tracks installed in the concrete slab. The wheels of the mobile bases are running on at least two guiding rails and a number of flat rails.
- The rails are laid with high precision ensuring a long lasting operation. The mobile bases must run parallel so a very flat surface of the tracks is required.
- No need for welding on site during the installation.
- The system is easily expandable with additional aisles, thanks to its decentralised set-up and easy light cabling. From a software point of view, the controller will recognise new aisles automatically (plug-and-play).

OPERATION

- The mobile racking is operated **manually** (each aisle is opened sequentially), **semi-automatic** (one instruction on the rack controller opens a specific aisle) **or by remote control**. Several aisles can be opened simultaneously for picking purposes.
- Given commands are interrupted by selecting a new one (no need to finish the previous instruction).
- Intelligent lighting, with energy saving interface: only the opened aisle is lighted.
- **Stand by mode**: the system goes into stand by mode after 15 min. of non use.
- **Night parking**: all aisles open allowing air circulation in the whole system.
- Adding P&D-locations may further increase the warehouse efficiency, resulting in a higher return on investment.

ELECTRONICS

- Central PLC combined with individual controllers per mobile base, resulting in less cabling (60%), faster communication and flexible configuration (when expansion is required).
- Use of dedicated PLC, specifically developed for mobile racking applications, unlike generic controllers.
- The controller is prepared to interface with a WMS.
- Dedicated remote control, configured for each application.
- Use of a Stow-Bus for communication, only active if sensor or command is activated, not continuously sending data.
- Inverter technology: guarantees smooth operation (start, slow down, stop) and less wear.
- High use of plug-connectors, guarantee a better service quality and faster assembly.

CONSTRUCTION

- Mobile base with 4 bearing wheels, for better distribution of the load.
- Special attention towards fatigue and lifetime of the various components.

SERVICE

- Remote maintenance access with remote error diagnostics: simplifies servicing and problem solving as the system can be analysed from distance.
- Own service staff

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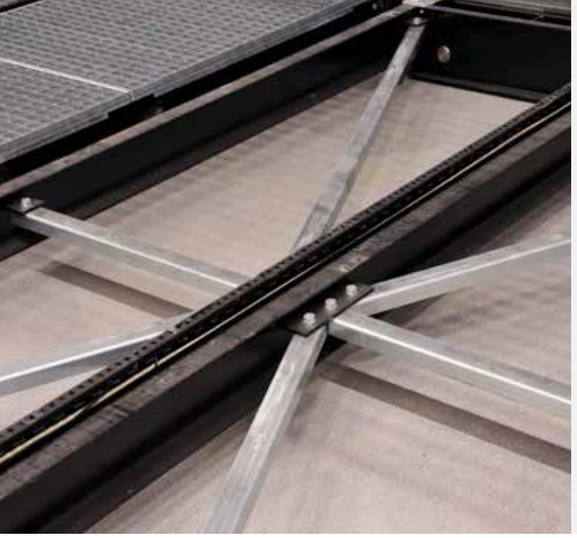
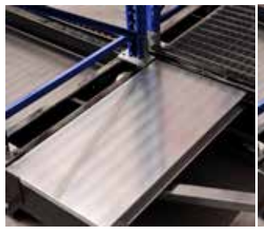


MOBILE BASE CONSTRUCTION

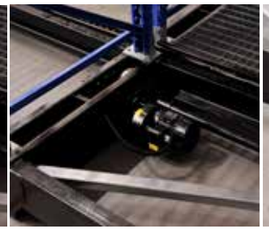
- Mobile base with 4 bearing wheels, for better distribution of the load.
- Use of crane rails: type A45 and S14
- Complete construction calculated by means of 3D- FEA modelling. Special attention towards fatigue and lifetime of the various components.

MOBILE SAFETY SYTEM

- Into motion, the safety system is activated.
- Safe for multiple fork lift truck entries: the number of fork lift trucks in one open aisle is counted; the aisle only closes if all trucks have left the aisle.
- Approved personal detection system.
- Safety stop on the racking.
- Safety warning (sound and light).



Cover plate



Motor

Connection

Corner protector with sensors

Remote control from an RF-terminal installed in the lifttruck or from a hand-held device.

Optional link to the WMS system of the customer.

ADVANTAGES OF THE MOBILE SYSTEM

- Optimisation of available space:
  High density storage and floor utilisation; 80% compared to 40% in conventional pallet racking:
  - More storage capacity
  - Reduced costs per m² (heating, cooling, lighting)
- High degree of occupation (90 %), similar to conventional pallet racking, but higher than other compact storage systems, such as drive in (average of 70%).
- Different pallet sizes can be stored more easily, compared to other high density storage solutions, where high demands are imposed onto the pallet dimensions and quality
- The installation can be configured to optimise space in existing buildings, and can be easily expanded with new blocks.

The mobile system is the best logistical solution where a combination of compact storage and individual pallet accessibility is required.

Lighting control system

Other racking systems installed on mobile bases, e.g. Cantilever mobile

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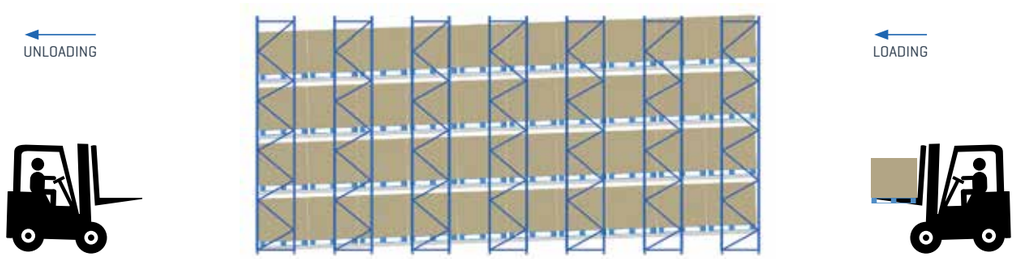
PALLET LIVE STORAGE

The efficient and ultra dense storage system
for palletised goods.

PALLET LIVE STORAGE SYSTEM

Stow's Live storage system provides efficient and ultra dense storage of palletised goods. The roller tracks can be built in Conventional pallet racking. The wide range of pallet racking frames and beams is available for the optimal design. The beams are fitted giving a fall of approximately 4%. The roller tracks lay on the beams and are fixed using special clamps.

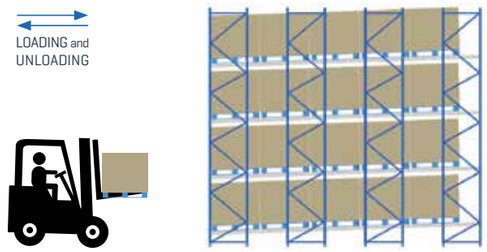
FIFO (FIRST-IN / FIRST-OUT) LIVE STORAGE SYSTEM



Stow's Live storage system provides efficient and ultra dense storage of palletised goods. The goods are inserted at the on-load face and travel down under the force of gravity. At the off-load face the pallets can be removed. With this system pallets are stored according the first-in/ first-out principle (FIFO). It can also be used to avoid internal transportation.

LIFO (LAST-IN / FIRST-OUT) LIVE STORAGE SYSTEM

The Push back system, also realised with roller tracks, provides a last-in/ first-out operation (LIFO). In this case the pallets are loaded and unloaded from the same side. The lift truck pushes the pallets into their storage location and they return under the force of gravity.



DESIGN CRITERIA

THE PALLETS / AMBIENT CONDITIONS

- The shape, the handling direction and the quality of the pallets are the determining factors for the design of the Live storage system. For some pallets only twin track rollers may be applied.
- The ratio maximum load to minimum load is max. 3 to 1.
- This type of racking is not suitable for wet conditions, outside use, extreme dust, oily conditions or pallets in poor condition.
- For normal applications blank steel rollers are used; sometimes galvanised rollers are provided.

THE SLOPE AND THE PITCH OF THE GRAVITY ROLLERS

The slope depends on the shape of the pallet and the load range of the pallets to be stored. Preferably it must be verified under test conditions, using pallets supplied by the customer. The roller pitch depends on the quality of the pallets, the handling direction and the load.

Brake rollers along the lane control the speed of a traveling pallet. A pallet separator mechanism within the roller track isolates the first pallet, to facilitate the removal of pallets. Lifting the pallet will release the separator allowing the next pallet to roll into "unload-position".

THE RACKING DIMENSIONS

The length of the lane

- The length is the number of pallets stored in one lane, multiplied with the pallet-depth (+ possible overhang), adding 350 to 400 mm for clearance and for the separator mechanism.

The bay width

- The net clearance between the pallets (+ possible overhang) is min. 200 mm; the clearance between pallet and frame is min. 100 mm.
  E.g. 2 Euro-pallets without overhang result in a lane width of 2000 mm

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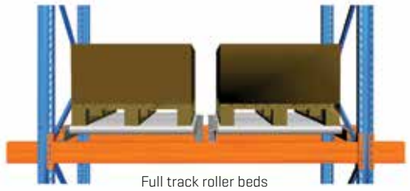
› All components have been thoroughly tested in specialized laboratories.
› Fully automated production to a high quality standard and in a cost - effective way

PUSH BACK SYSTEM

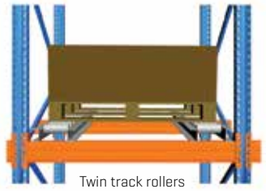
On top of the rack a push back system provides the back-up stock. On the picking level the FIFO Pallet Live storage system allows picking of large quantities of items. A manual separator facilitates removal of the empty pallet. The small roller tracks are for tote picking.

FULL ROLLERS VERSUS TWIN TRACK ROLLERS

The shape, the handling direction and the quality of the pallets are the determining factors for the design of the Live storage system. For some pallets only twin (triple) track rollers may be used (for instance handling pallets at their 1200 mm face for picking operations). The twin track rollers are also used at the loading and unloading sections if the forks of the lifttruck cannot be inclined.



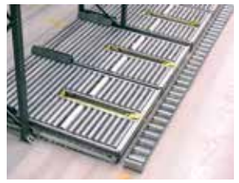
Full track roller beds



Twin track rollers

OPTIONAL FEATURES

- Small pitch of gravity rollers: e.g. when pallets are used in their cross direction.
- Entry guidance at the loading side helps the lifttruck-driver positioning the pallet correctly onto the roller tracks.
- Manual pallet separator: hand- or foot-release mechanism for picking applications.
- Safety features at the picking side for manual picking on raised flooring levels.



Front roller track for moving empty pallets

Wiremesh between twin roller tracks; manual separator with hand-release.

BENEFITS OF THE PALLET LIVE STORAGE SYSTEM

- Fewer aisles are needed, so increasing storage capacity.
- Back-up stock can be stored in each lane facilitating order processing.
- Reduction of travel time between locations.
- Stock rotation automatically, as product is handled on a FIFO-basis.
- Large volumes of common products may be handled using the long storage lanes.
- Reduced energy costs: lighting may be reduced to the load and unload areas, the refrigerating costs in cold stores are reduced as they are related to the cubic volume of the warehouse.
- Pallet live storage can also be used for picking applications or for the compact preparation of shipments.

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ASRS RACKING

The high quality pallet storage system serviced by cranes.

ASRS RACKING

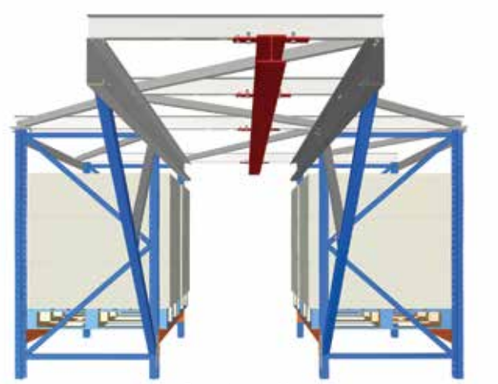
Pallet racking serviced by cranes requires special arrangements for tolerances in manufacturing and erection. Perfect positioning and levelling are vital for such installations. The cranes are running on a floor mounted rail and stabilised at the top of the mast by a top guide rail. The pallets can be placed "single deep" or "double deep".

MEZZANINE CONSTRUCTION

The modular Mezza-stow flooring system can be applied in most situations. Mezzanine constructions are often needed at the front and rear zones to support the conveyors. They can also serve as visitor's or maintenance platforms.

BASIC CRANE CHARACTERISTICS

- Crane height: distance from highest point of the floor to the top-tie
- Height of the bottom level and the top-level
- Crane aisle width: distance between the front of opposite pallets
- Design of the run-outs at both ends of the aisle
- Type of top rail and its fixation
- Crane horizontal forces in z- and x- directions
- Racking classes:
  100: crane operated without fine-positioning system at the unit load
  200: crane operated with fine-positioning system at the unit load



Run out assembly

SPECIAL ARRANGEMENTS FOR CRANE OPERATED SYSTEMS

ERECTION TOLERANCES

The erection tolerances depend on the racking class (FEM 9.831).

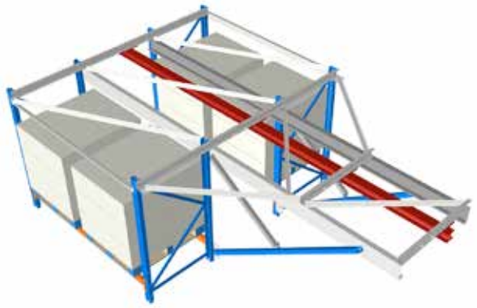
- X-direction — Length of up to 40 m: rack length ± 20mm
  More then 40 m: rack length ± 0.05% of overall length
- Y-direction — Class 100: All beam-levels within ± 5mm
  Class 200: First beam-level within ± 5mm
  Other beam-levels within ± 10mm
- Z-direction — The outer extremity of the uprights must lie within ± 15mm

STRUCTURAL DESIGN OF THE RACKING

The structural calculation is based on the FEM 10.2.02 – norm.
In particular the allowed frame deformations in x- and z-direction, wich take into account the initial out-of-plumb, the horizontal forces imposed by the crane and the pallet loads.
The beam deflection depends on the applied racking class:
Class 100: L/300 or max. 10mm // class 200: L/200 or max. 15mm.

ACCESSORIES

- The frames are top-tied by a portal beam.
- At both ends run-outs are provided.
- The racking is braced in horizontal and vertical planes.
- The footplates are fine adjusted and supported by a non-shrinkage grouting.
- Safety fencing with interlock-doors and back cladding ensure safe working conditions.
- At the P&D-locations mezzanine constructions are often needed to support the conveyors.
- Visitor's platforms.
- Maintenance platforms.



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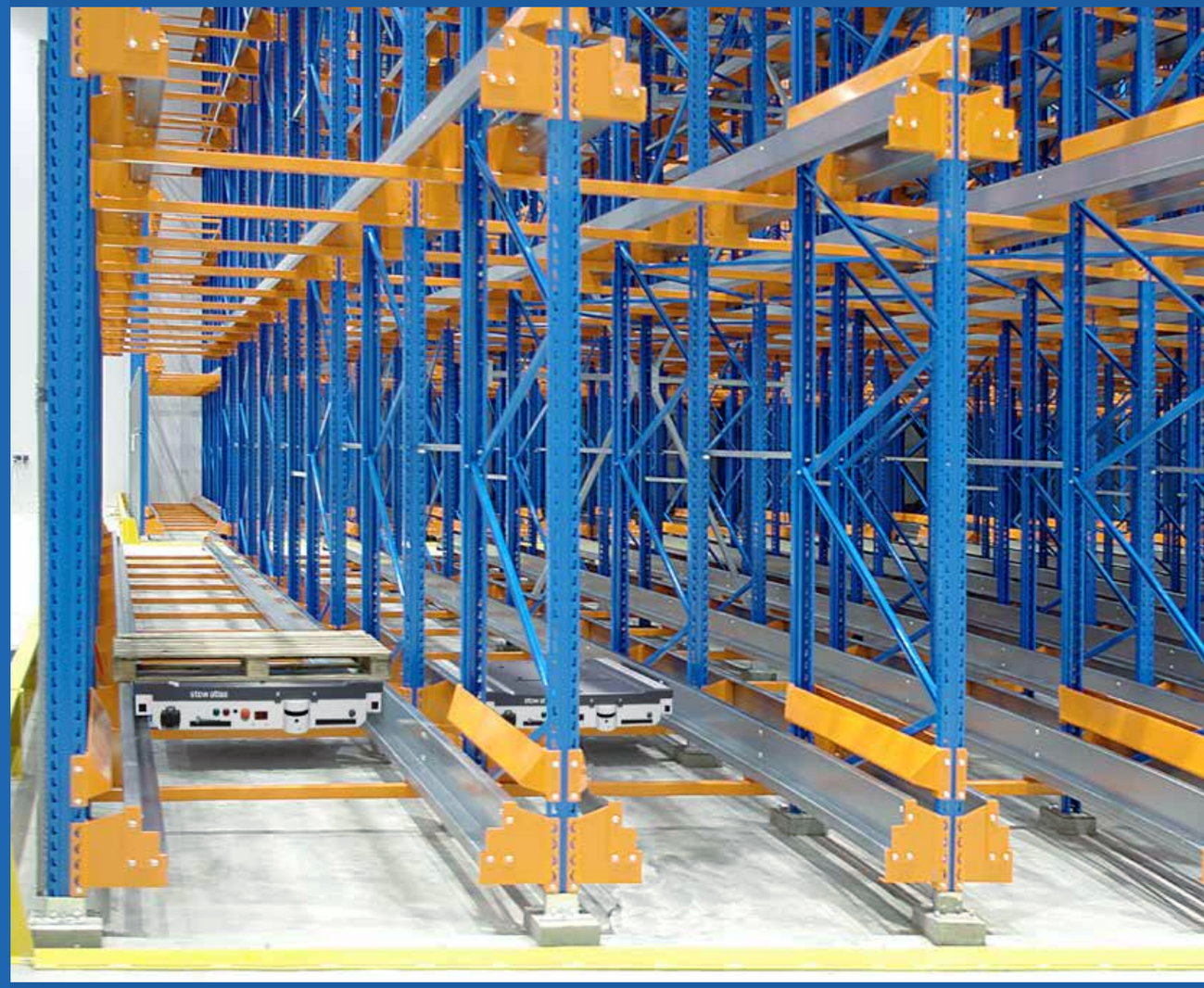

STOW ATLAS®

The integrated deep lane storage and retrieval pallet shuttle system.

STOW ATLAS®
PALLET SHUTTLE

The Stow Atlas® pallet shuttle system is a deep lane storage and retrieval system. The heart of the system is a carrier used to move pallets within a specifically designed racking structure. This results in an optimized storage capacity.

Stow Atlas® II is the new generation of the Stow shuttle, with a higher performance level and a top reliability, thanks to high quality components and a simple design.

1/ Platform 2/ Running wheels 3/ End buffer 4/ Battery cover with handles 5/ Non-slip coating

THE OPERATION

The pallet shuttle system consists of a specific rack and a mobile shuttle. This shuttle is a self-powered device that runs on rails in the storage lanes to load and unload pallets. The forklift will place the Stow Atlas® in front of the lane where the action is. From its home position, the shuttle performs the loading and unloading tasks without any further human intervention.

These tasks are communicated by the forklift driver using a remote control. Once the task is completed the shuttle returns to its home position and is then ready to be transported with a forklift truck to a new lane for a new task. Each shuttle unit runs on lithium batteries with a long autonomy (up to 16h) and a short charging time (max 3h).

THE HIGHEST POSSIBLE STORAGE DENSITY

By introducing more shuttles into your racking system, the performance will increase. The system can be used for new installations as well as for refurbishments, and is independent from the number and the depth of the lanes. The automated system guarantees the highest possible storage density.

YOUR PROFIT

- Max. storage capacity for a min. investment.
- Higher performances with a fast R.O.I.
- Flexibility & reliability: racking & shuttle from 1 supplier.
- For performant storage:
  - standard: euro, industry & combined
  - adaptable: for multiple pallet types, also big bags
- The system is designed to work in temperatures from -35° C upwards.
- The lane depth is unlimited.
- Long lasting batteries are included, guaranteeing a maximum autonomy.
- The electro-mechanical lifting device is as good as maintainance free, and ideal for cold store applications.
- The operator is free to work LIFO or FIFO at every moment in every lane.
- CE certified.

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MIDI RACK®

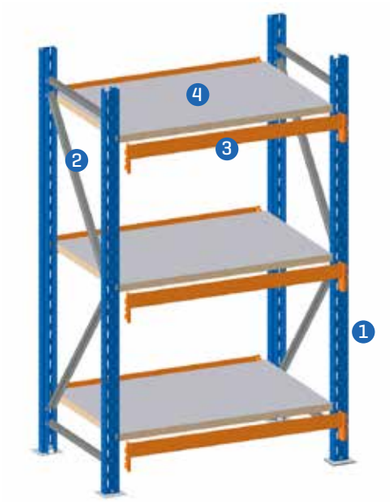
The high quality storage system for goods of low to medium weights.

MIDI RACK®
LONG-SPAN RACKING

The fully adjustable Midi Rack® long-span racking system is designed for storage of light to medium loads. It lends itself to use in almost any situation: shelving racking, long span racking, multitier and high rise constructions. The system offers the benefits of quick assembly, good stability and low cost. Midi Rack® is dedicated for the storage of hand loaded heavy products, such as machinery equipment and tools. The system is also suitable for the construction of multitier constructions.

LONG-SPAN RACKING

The construction of Stow's longspan racking system is similar to pallet racking. It comprises frames, beams, a full range of accessories and wooden or metal shelves. The main benefits of this shelving and racking system are: the quick assembly, the good stability and the low cost.



1/ The frame
2/ The framebracing
3/ The beam
4/ The decking

THE FRAMES

The upright is perforated at a pitch of 50 mm allowing boltless mounting of the beams. The tapered shape of the hook guarantees a stable and rigid design, even without back bracing.

The pyramidal side-perforations allow mounting of Stowshelf® shelves using the same shelving clips. This light duty system can be combined with the Midi Rack® system as the perforations are on the same level and pitch.

Height (mm)	1500	2000	2250	2500	3000	3500	4000	4500
Depth (mm)	300	350	400	450	500	600	800	

THE BEAMS

Two types of beams are being used: the Tube-beam and the Step-down beam.

THE TUBE-BEAM

These beams are designed to construct floor-over mezzanines or are used as middle beam in a 3-post Midi Rack® frame configuration.

Type		Height	Design
Tube-beam	MIB 0040 MIB 0050 MIB 0060	50 mm 60 mm 80 mm	
In case shelving is needed for the tube beam, we add an L-angle to provide the necessary support.			

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THE STEP-DOWN BEAM

These beams are designed with a recess to support chipboard or galvanised shelves.

Type		Height	Shelf-thickness	Design
J-beam	QMB 1952 QMB 2555 QMB 2565	52 mm 55 mm 65 mm	19 mm 25 mm 25 mm	

THE SHELVES

chipboard

melamine coated chipboard

mesh shelf

galvanised shelf

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MULTITIER RACKING

The intelligent industrial flooring system to equip the Stowshelf® shelving system and the Midi Rack® long span racking.

MULTITIER FLOORING SYSTEMS

This application is highly customizable. Main differentiators are the weight and dimensions of the goods (as always) and the load requirement on the walkway. This is measured in KG and is determined by mode of operation.
Multitier installations are mostly used to store (smaller) spare parts and documents. Depending on number of levels and height, the components are either conventioal pallet racking or long-span shelving.

FLOOR DECKING

In general a wooden decking or a grating floor is applied. The wooden decking is a high density chipboard, with an optional white finish at the underside and optionally an anti-slip coating at the upperside.

ACCESSORIES

We provide all accessories upon request, such as staircases, handrails, safety gates, etc.

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CARTON LIVE STORAGE

The high quality dynamic storage system for the order picking proces.

CARTON LIVE STORAGE

Carton Live is Stow's dynamic storage system that offers many advantages in the order picking process:

- Reduced walking
- First-in / First-out stock rotation is guaranteed with Carton Live
- Carton Live saves space by eliminating walkways
- Picking speeds and productivity will improve with Carton Live

The standard Midi Rack® system is combined with flow-beds with built-in roller tracks. Using the general adapter profile, which is fixed on front of each Midi Rack® upright, the roller-beds can be adjusted in height to guarantee the optimum slope (generally 7 to 10°).

ROLLER TRACKS

The roller tracks are used in a number of combinations, depending on the carton sizes, the quality of the carton and the weight. The roller beds are developed to allow a maximum flexibility in the positioning of the tracks. They can be installed at a very small pitch.

ACCESSORIES ARE NUMEROUS

- Brake clips to control the speed of the carton
- Lane separators at entry or along the full depth
- Roller protection and integrated stops
- Ergonomic presentation tables

ORDER PICKING SYSTEMS

For ergonomic picking the roller-beds can be equipped with a presentation table.The angle of the presentation table is adjustable so that the best access to the goods can be obtained. The powered picking conveyor can be integrated in front of the racking.

A pick-to-light system is another attractive option to improve productivity and reduce picking errors.

In any case it is recommended that a prototype using the customer's cartons or totes is set up to optimize the construction.

In some cases full width roller tracks are needed to ensure a smooth operation. This is particularly needed for totes without a flat bottom.

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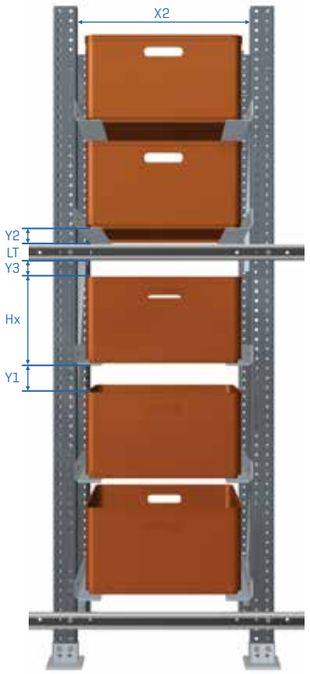
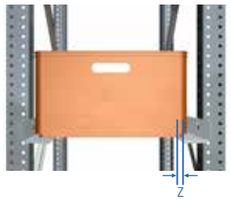
MINILOAD single-store

The automated storage and retrieval system (AS/RS) for storage of small goods.

MINILOAD
SINGLE-STORE

The automated storage and retrieval systems (AS/RS), type Miniload single-store are used for storage of small goods, mostly totes or cartons, with loads varying from 5 to 300 kg/unit. The goods are handled automatically by unmanned AS/RS-cranes. The cranes, guided at both top and bottom, retrieve the totes from their location and present them at the picking location or deliver them directly onto the picking conveyor.
Stow has built large installations with most system integrators. The system is adaptable to any type of AS/RS - handling device, equipped with telescopic forks, with side grips or with an extracting system.





GOODS

The shape and quality of the plastic bin or carton is very important for a good design of the racking. The width, the depth and the height of the totes determine the dimensions of one level.

Different sizes of totes may be combined. The final dimensioning must take into consideration the specific requirements of the AS/RS crane.

SYSTEM CONFIGURATION

The design of the tote, carton or slave tray and the handling device of the AS/RS-crane determine the basic dimensions of the rack location.

The minimum dimensions for Y1, Y2 and Y3 depend on the crane handling device, whether it is equipped with telescopic forks, with side grips or with an extracting system.

To optimise the number of levels in height, a variable pitch is possible.

Even with an asymmetrical position on the L-carriers, Z should be a minimum of 5 mm.

L-CARRIER

The design of the L-carrier depends on the load capacity and eccentricity of the loading.
The standard pitch in the height is 12.5 mm.

SUPPLEMENTS

The top guidance is fully supported by the top construction. Bracing in horizontal and vertical planes ensure the required stability and erection tolerances.

Other essential components are maintenance platforms, sprinkler supports, safety fences, interlock doors and interfaces with the picking conveyors.

Run out design

Back bracing and plan bracing ensure the required erection tolerances (FEM 9.832).

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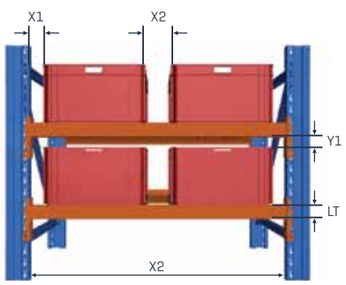
MINILOAD multi-store

The "beam type" automated storage and retrieval system (AS/RS) for storage of cartons and totes in large quantities.

MINILOAD
MULTI-STORE

The "beam" type automated storage and retrieval system, called the Miniload multi-store system is most commonly used for storing cartons and totes in large quantities. The system fulfils the requirements of most system integrators. It is used for AS/RS handling devices equipped with side grips or an extracting mechanism, pulling-out cartons or totes at their front or back. The totes may be stored single or double deep, depending on the technique used and the required system throughput.
The dedicated front beams, back beams and depth panels are perforated and profiled on the automated production lines, ensuring the very high quality needed for this type of installation.



GOODS

The shape, in particular the bottom design of the plastic bin or the quality of the carton box, are the basis for the design of the racking.
The width, the depth and the height of the totes determine the dimensions of one level.

Different sizes of totes may be combined. The final dimensioning must take into consideration the specific requirements of the AS/RS crane. In particular the minimum for the dimensions X1, X2 and Y1 are depending on the handling device.

DEPTH PANEL DESIGN

The depth panels are available in various sizes depending on the dimensions of the stored goods.
They are mounted in the slotted holes in both front and back beams, without bolts.

Back side, fits in front or back beam

Front side, fits in front beam

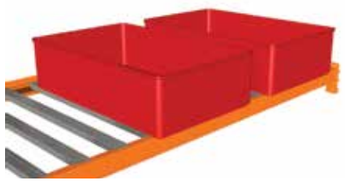
Cross section
Width: 130 to 190 mm

Using the locking feature, the panel is locked securely

SYSTEM CONFIGURATIONS

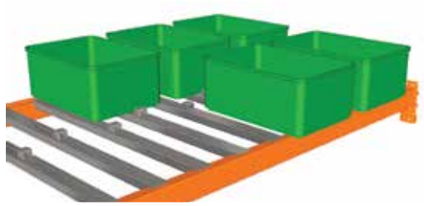
SINGLE ENTRY SYSTEM

- Goods are stored from one side only.
- Single deep or double deep stored.
- Consists of a front beam and back beam with integrated stop.



DOUBLE ENTRY SYSTEM

- Goods are stored from both sides.
- Single deep stored.
- Consists of 2 front beams with plastic middle stop.



The construction is based on the Stow pallet racking system.

The stringent FEM 9.832 regulations are the basis for the design, production and installation tolerances.

All components are fully adaptable to fulfill the specific requirements of the installation.

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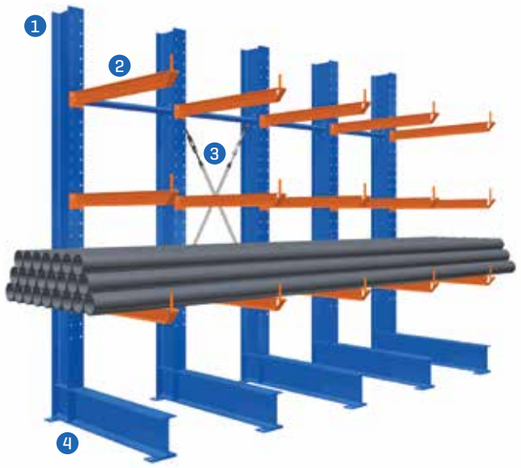
KANTI STOW®

The complete range of cantilever racking systems for the storage of long goods.

KANTI STOW®
CANTILEVER SYSTEMS

Kanti Stow® offers a complete range of cantilever racking systems for the storage of long goods. For loads varying from 50 to 2500 kg per cantilever arm and for most types of long goods an optimised storage solution can be provided.

Typical long goods are metal and plastic tubes, wooden boards, hot rolled steel profiles, ...
The construction is made of hot rolled steel profiles (HEA or IPE) in various sizes.



1/ Column IPE 140
IPE 160
IPE 180
...
IPE 330

2/ Arm IPE 80
IPE 100
IPE 120
IPE 140
IPE 160

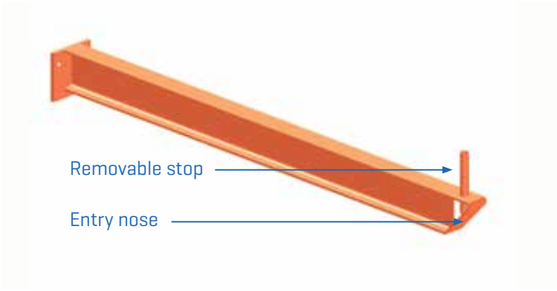
3/ Vertical bracing

4/ Levelling and anchoring

TECHNICAL CHARACTERISTICS

- The column and foot are welded or bolted together.
- The cantilever racks can be used single or double sided.
- Column heights of up to 9 meter, perforated every 100 mm (or 50 mm optional).
- Suitable for forklift and crane handling.
- Ground guidance can be provided as an option.
- The beams are bolted and adjustable per 100 mm, corresponding with the sizes of the stored goods.
- Arm lengths from 600 to 2500 mm.

The arm end can be equipped with a removable front stop, integrated in the entry nose (option).



[CLEAR BENEFITS FOR EVERY APPLICATION]

› Complies with the European FEM and EN regulations; quality assured to ISO 9001.
› Computer aided design ensuring the best solution for every application, including static calculation
› All components have been thoroughly tested in specialized laboratories.
› Fully automated production to a high quality standard and in a cost - effective way

STOW
CUSTOMER CARE

Our aim is to service our customers wherever, whenever! Our Service Department serves our customers all over Europe in a professional and coordinated way. The highly qualified Stow service technicians ensure the good functioning of your Stow Mobile pallet racking installation and Stow Atlas pallet shuttle system.

SAFETY AND SECURITY

Safety and security are priority n°1: small shortcomings can lead to complete and unexpected standstills or severe damages, if not taken care of in good time.

We secure the operational safety of your Mobile pallet racking installation and Stow Atlas pallet shuttle system.

The Stow Service covers:

- Service intervention
- Preventive maintenance
- Periodical inspection
- Service reporting
- Training
- Maintenance on older installations
- Spare parts mobile racking
- Spare parts pallet shuttle

It goes without saying that we have a spare parts center to react adequately and by return when you experience a technical problem with the installation.

Our Stow service technicians have regular training workshops to keep up to the most stringent requirements, meeting the Stow quality standards and customer expectations.

THE STOW INSPECTION SERVICE REVEALS HIDDEN DANGERS!

The importance of logistics in general, and the speed with which work has to be completed in a warehouse today, is so big that inspecting the condition, the perfect geometry and robustness of storage systems is not a thing that should be neglected any longer.

PERMANENT AND SYSTEMATIC MAINTENANCE

Systematic maintenance of pallet racking systems is essential in keeping them safe. A pallet rack needs to be checked regularly and used carefully. Periodic inspections are better defined, and damaged components should in each case be replaced after the inspection.

Be able to demonstrate that your storage racks are correctly and regularly maintained and as such are safe, will also be of crucial importance if, in the event of a serious accident, there is an investigation into the cause. Often it is yet another handling error on an already badly maintained system that is the cause.

In addition to the responsibility for monitoring the user and the warehouse staff around him/her on a regular basis for components that are hit or for overloading of the system, it is strongly recommended that the installation should be inspected by a trained technician.

STOW
INSPECTION SERVICE

- Inspection in accordance with local standards!
- In-house, qualified inspectors!
- Detailed inspection report!

THE STOW INSPECTION SERVICE REVEALS HIDDEN DANGERS!

The inspection is performed by a trained inspector, and takes place up to a maximum of 12 months. Following this inspection, a professional report is presented containing the description of the general condition of the installation (floor, usage, lifting device, load), and an overview of the measures to be taken, classified into risk categories depending on the severity of the damage and the urgency of the repair.

The inspector is in fact familiar with the materials, and based on a number of objective criteria stipulated by the standard, will be able to classify and evaluate certain forms of damage and deformation (protection systems, anchoring system, safety pins, yokes and beams).

Contact us for more information!

STANDARD

In addition to imposing standards on how storage systems must be designed and calculated by the manufacturers, the same European standard, EN 15635, also clearly and explicitly defines the responsibilities that the user of the storage racks has in his/her daily use of them. As the rigidity of racks is not only an issue in terms of their design, but is to a large extent influenced by the conditions of use and the regular maintenance, these aspects are also described in detail in the standard. A regular inspection is clearly the responsibility of the user.

Many users, however, are unaware of the hidden dangers. Regular and proper checking of the racks is a must. Small defects, which are not repaired in good time, may lead to higher costs later, or serious accidents if completely neglected.

The core task of every manager is to exercise due diligence in avoiding risks and unnecessary costs.

RISKS ASSOCIATED WITH STORAGE SYSTEMS

Storage systems are metal storage structures of which the dangers are often very greatly underestimated by the users.
One of the greatest risks is the structure itself collapsing. Such systems in fact tend to suffer from a problem that is two-fold:

- The structural rigidity is calculated under perfect conditions;
- The collective negligence of users.

COLLECTIVE NEGLIGENCE OF USERS

A pallet racking system may look strong and sturdy due to its solid appearance when loaded, however it is nothing more than a free-standing skeleton structure of which the stability is only ensured by the rigidity of the separate components, the soundness of the joints and floor anchoring system.
To ensure that the forces and loads are properly taken up and distributed, the structures must retain their almost perfect overall geometry from the moment of construction, and the components must retain their initial characteristics.

Indeed, all the racks are subject to a large number of forces on a daily basis: local impacts, shocks, vibrations by the forklift truck or by pallets, pushing and pulling forces exerted during loading, rough placement of pallets, minor collisions, etc.

For all these reasons, it would be surprising if these structures were to remain in perfect condition for long. As a result of the action of these exceptional loads they will gradually be subject to damage and deformation, will lose their geometric structure that makes them stable and so very gradually start to lose their capacity for absorption and resilience. Without really taking proper note!

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