

ELVEDI PALLET RACKING – INDUSTRY SOLUTIONS WITH A SYSTEM DESIGN



- The multi-position system
- The single-position system
- The drive-in and drive-through racking
- The automated small parts warehouse (AKL)



PALLET RACKING



THE PALLET RACK – PART OF EFFECTIVE LOGISTICS CONCEPTS

The demands that modern logistics make on warehousing require new, intelligent solutions. Further developed rack systems which, when used flexibly, meet the requirements of a wide range of applications form the basis. Many years of experience throughout Europe form the basis for state-of-the-art technology – from practice, for use in practice.

Euro pallets, disposable and special pallets, mesh boxes and other containers, even with oversized goods, are stored safely

and clearly in ELVEDI pallet racking. Tailored exactly to your space conditions, the functional process and the operating units in use.

Quality is the top priority for all optimisation tasks at ELVEDI. We never carry out extensive, marginal reduction of materials.



Pharmaceutical dispatch warehouses



Pallet racking on carriages



Cable drum racks



Pallet racks for outdoor storage



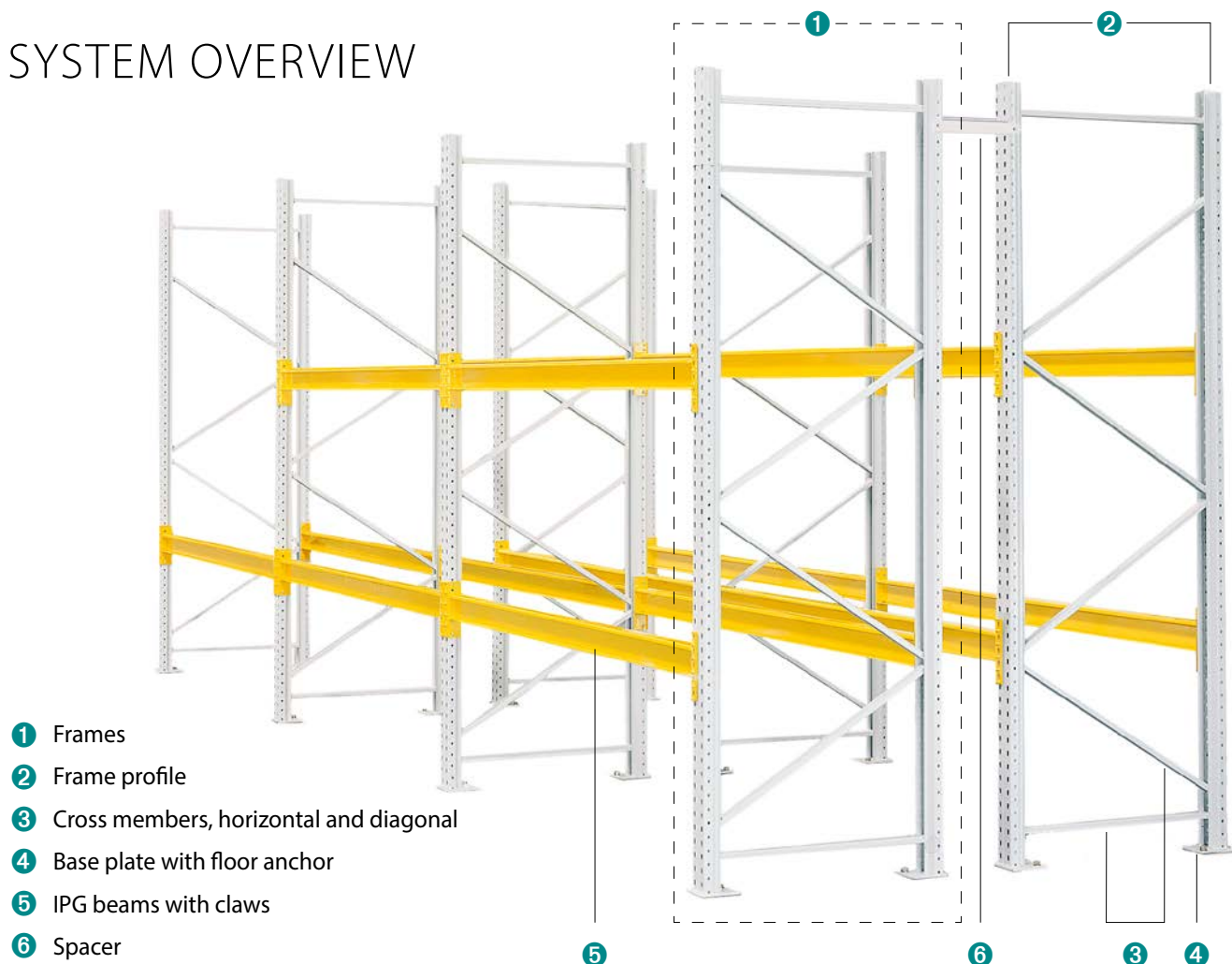
Building materials trade



Timber trade

PALLET RACKING

SYSTEM OVERVIEW



- 1 Frames
- 2 Frame profile
- 3 Cross members, horizontal and diagonal
- 4 Base plate with floor anchor
- 5 IPG beams with claws
- 6 Spacer

PERFORMANCE CHARACTERISTICS

- Structurally optimised and stable profiles.
- Bolted, sendzimir galvanised frame constructions as an alternative to standard racks up to a height of 12,000 mm.
- Welded frame designs for high loads with the lowest tolerances for automated warehouses.
- Shelf loads (per shelf) of up to 5000 kg.
- Pallet carriers can be adjusted in increments of 50 mm.
- Correctly dimensioned accessories such as crash protection corners and crash barriers, grid back panels with frame and precise guide rails.
- The surface technology with a cathodic dip painting system (CDP) coats all painted components. Following a comprehensive pre- and post-treatment (degreasing, cleaning, activating, zinc phosphating, dip coating and burning in), the racks are protected against corrosion with a light-grey coating (approx. RAL 7035).
- Other colours (RAL) available upon request.
- Fully hot-dip galvanised racking systems are also available for outdoor areas.
- In-house warehouse planning, design and statics done by experts.
- Competent advice through our sales offices.

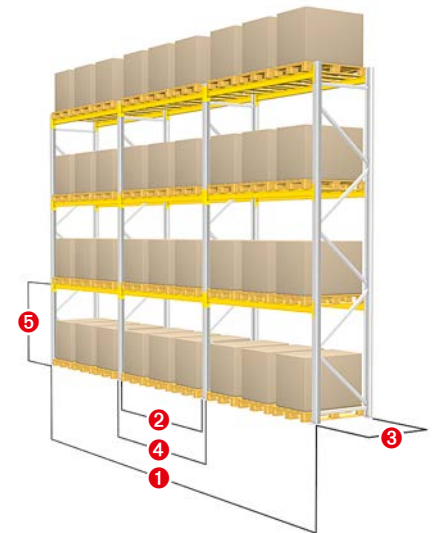
CHECKLIST FOR YOUR PALLET RACKING

Please complete all fields to the greatest extent possible. Attach sketches as required.

Fax: +49 (0)7702 4382 0

E-mail: info@elvedi.com

Description of stored goods	<input type="text"/>			
	<small>Type of pallets or goods</small>			
Stored goods	Width (mm)	<input type="text"/>	Height (mm)	<input type="text"/>
	Length (mm)	<input type="text"/>	Weight (kg)	<input type="text"/>
1 Rack rows	Height (mm)	<input type="text"/>	5 Buckling length (mm)	<input type="text"/>
	Single-sided (number)	<input type="text"/>	Number of shelves above one another without floor level	<input type="text"/>
	Double-sided (number)	<input type="text"/>		
2 Shelf width	Length 1,800 mm, number	<input type="text"/>	Other length (mm)	<input type="text"/>
	Length 2,700 mm, number	<input type="text"/>	Other length, number	<input type="text"/>
	Length 3,600 mm, number	<input type="text"/>		
	Chipboards, inlaid between IPG beams	<input type="checkbox"/>	Grating, laid on IPG beams	<input type="checkbox"/>
	Guide rails	<input type="checkbox"/>	Entry guide	<input type="checkbox"/>
3 Frame depth	Frame depth	800 mm <input type="checkbox"/>	1,100 mm <input type="checkbox"/>	1,200 mm <input type="checkbox"/>
Pallet storage direction	Transverse storage 1,200 mm	<input type="checkbox"/>	Longitudinal storage 800 mm	<input type="checkbox"/>
Colour	Standard colours	<input type="checkbox"/>	Hot-dip galvanised version	<input type="checkbox"/>
Other colour	Frames	<input type="text" value="RAL"/>	IPG beams	<input type="text" value="RAL"/>
Accessories	Stacking support	<input type="checkbox"/>	Depth stay	<input type="checkbox"/>
	Drum support	<input type="checkbox"/>	Display rails	<input type="checkbox"/>
	Mesh box support	<input type="checkbox"/>	Guard rail	<input type="checkbox"/>
Company	<input type="text"/>			
Industry / contact	<input type="text"/>			
Tel./fax.	<input type="text"/>			
Email	<input type="text"/>			
1 Rack row length	Total length of the racking			
2 Shelf width	Clear width between the frame profiles			
3 Frame depth	Frame profile / frame profile outer edge measurement			
4 Field width	Shelf width + upright width			
5 Buckling length	Distance from floor to upper edge of 1st IPG beam			



Shelf



Field



Single-sided rack



Double-sided rack



Transverse storage



Longitudinal storage

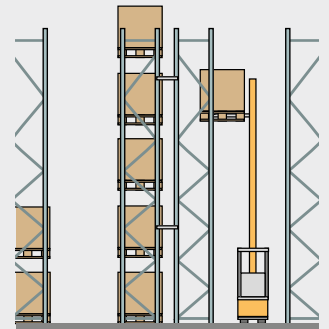
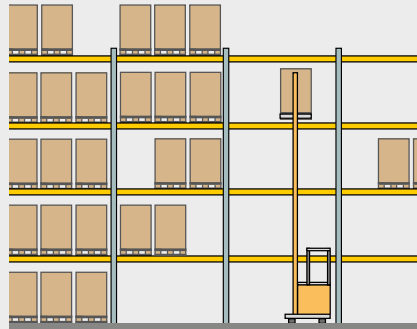
PALLET RACKING

OVERVIEW OF SYSTEMS

MULTI-POSITION SYSTEM

Usually 2, 3 or 4 pallets (or mesh boxes, steel boxes, etc.) are loaded per bay on an IPG pair of beams.

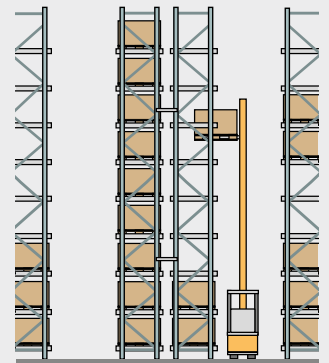
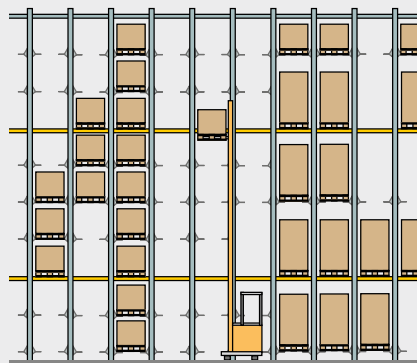
The system provides direct access to each pallet and is standard in forklift and AS/RS warehouses. Space is used in an optimal way with proportionately little frame, especially lengthwise (X direction).



SINGLE-POSITION SYSTEM

Only one pallet (or mesh box, steel box, etc.) is stored per bay on a pair of pallet supports.

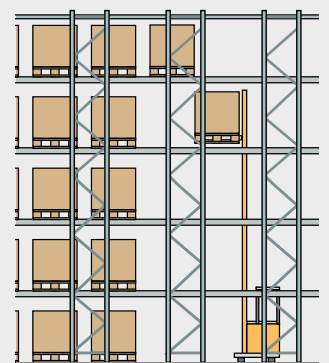
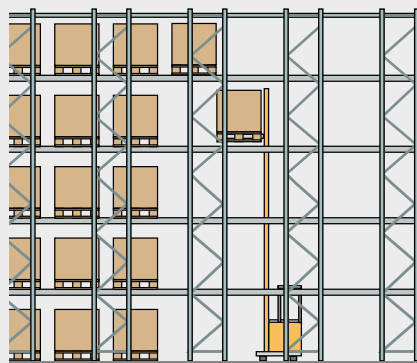
The height of each pallet bay can be individually adjusted to accommodate different good sizes and use space optimally. Each bay can of course be directly accessed.



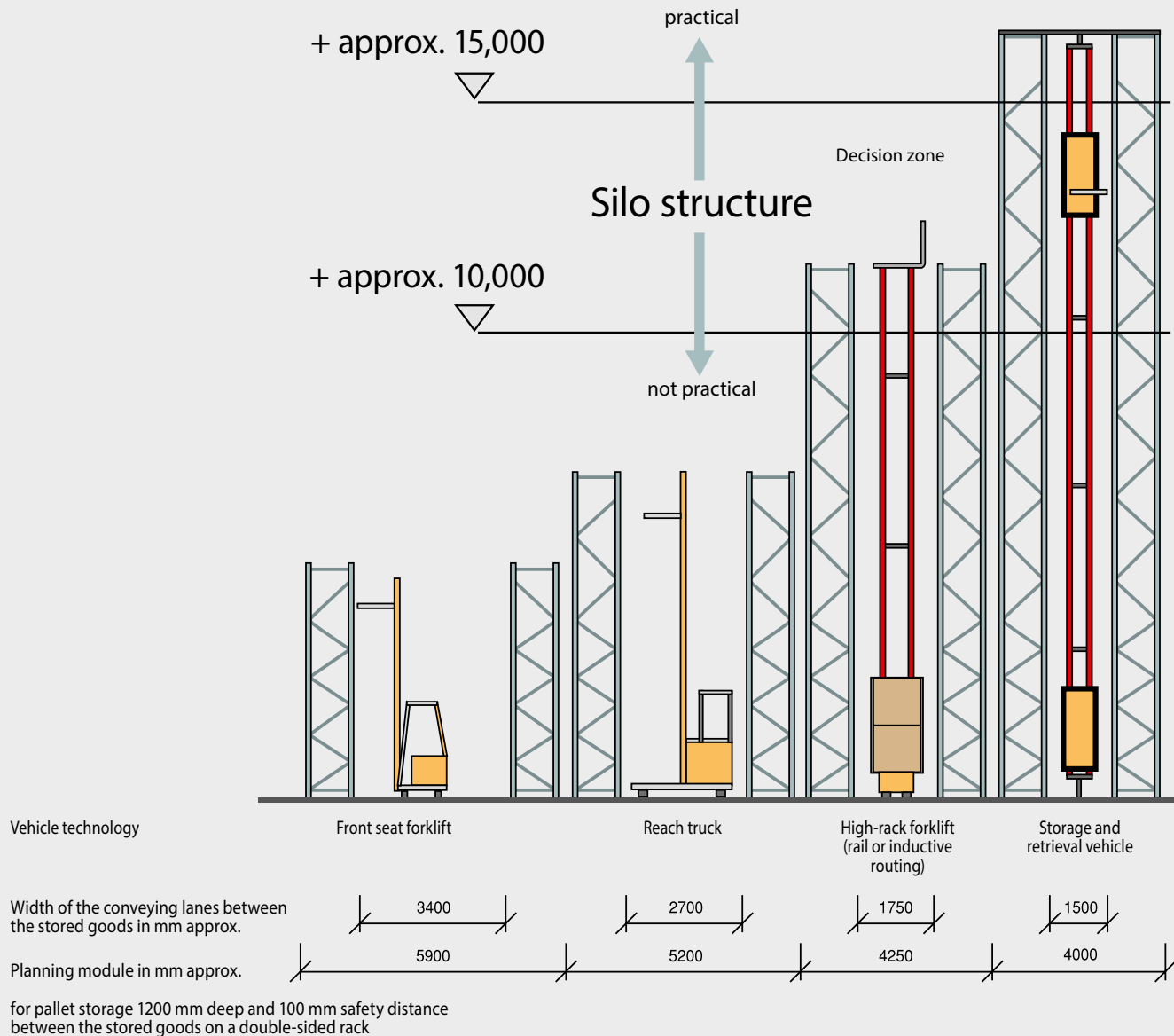
DRIVE-IN / DRIVE-THROUGH RACKING SYSTEM

Both systems are characterised by high use of space since on each channel up to 15 pallets and more can be stored per level.

In the drive-in system, the goods are loaded and unloaded on the same side (last-in first-out) while in the drive-through system, the goods are loaded on one side and unloaded on the other (first-in first-out).



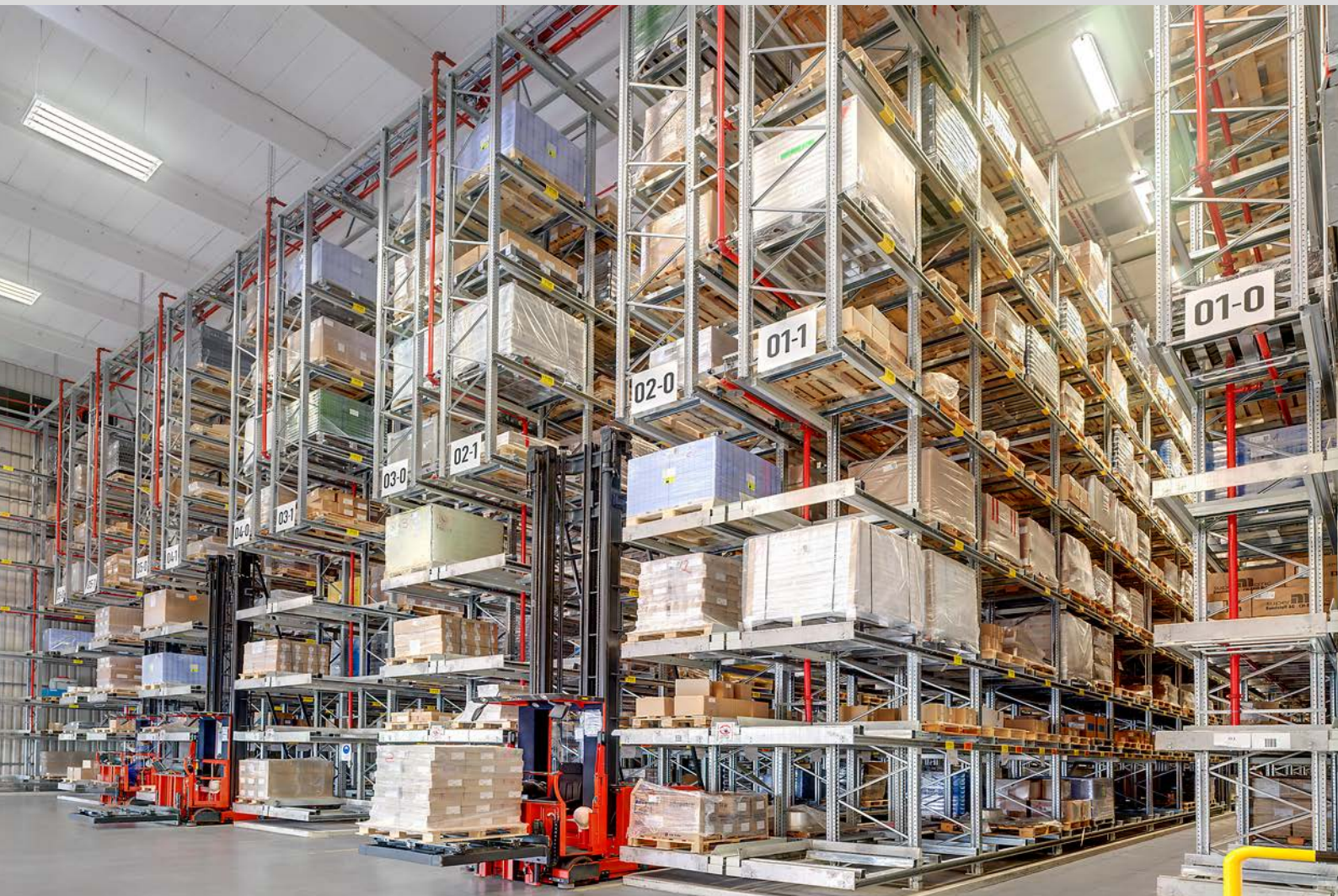
AISLE WIDTHS AND EQUIPMENT



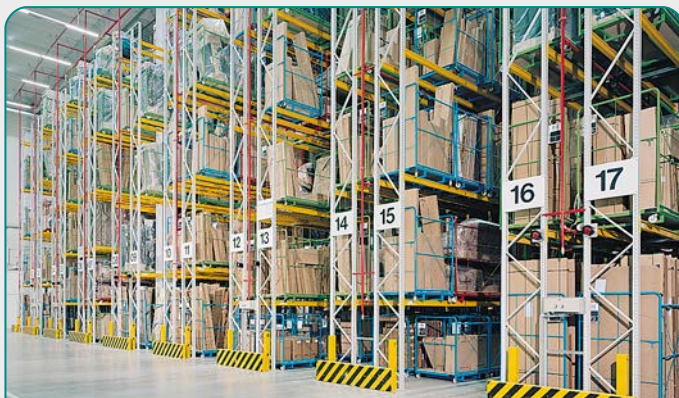
Various equipment, aisle widths and heights are compared here for rough planning. For a silo structure and with high pallet racking systems in the hall ($\geq 12,000$ mm), the planning module must be raised by at least 200 mm owing to braces and, generally, sprinkler lines.

A conventional hall with separately installed racks is generally recommended for an installation height of up to 10,000 mm. Installation heights of between 10,000 and 15,000 mm should be reviewed on a case-by-case basis as to whether a separate hall or a roof and wall-supported rack design (silo) should be planned. We generally recommend the rack silo for installation heights over 15,000 mm.

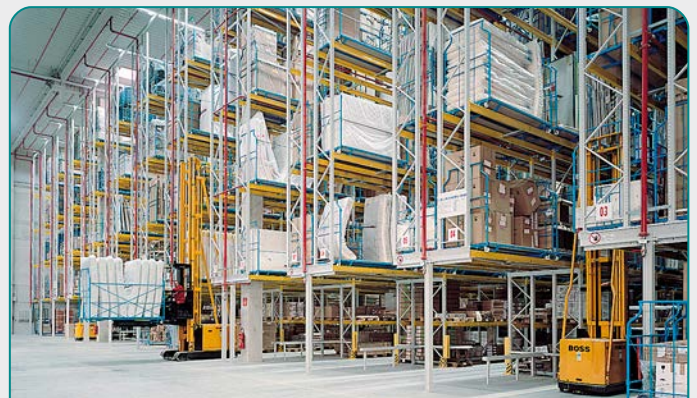
PALLET RACKING



THE MULTI-POSITION SYSTEM



Freight warehouses with high-rack forklifts that can move freely

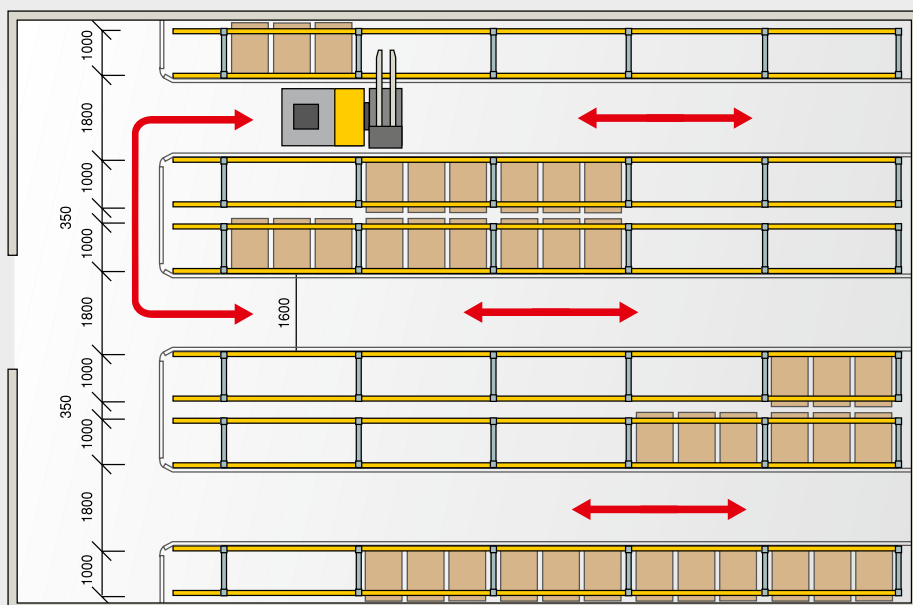
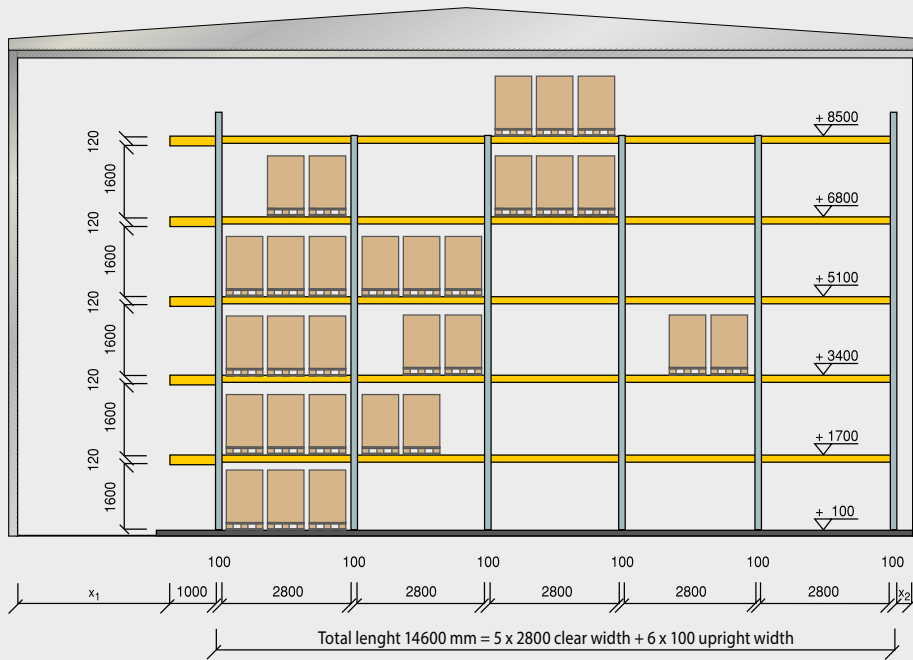


Furniture warehouse with inductively controlled high-rack forklifts

ELVEDI PALLET RACKING, COMPLETE

PLANNING EXAMPLE

For a three-bay system with rail-guided high-rack forklifts for Euro flat wood pallets (1200 mm) and deep storage.



PALLET RACKING

THE MULTI-POSITION SYSTEM

SYSTEM DETAILS



Pallet station

Pallet station

created as standard with as cantilever station with cantilevered IPG flow beams.



Top guide rail for AS/RS

Top guide rail

with low tolerances mounted on a projecting structure at the aisle bridges and in the drive-over area.



Sprinkler line

Sprinkler lines

Routed in the shadow of the beams (horizontal) and the frame (vertical).

SYSTEM ACCESSORIES



Special pallet supports for transversely stored Euro flat wood pallets

Special pallet supports – flat version – attached with 52 mm support width for supporting transversely stored Euro flat wood pallets. Continuously adjustable at the side.



Drum supports

A complete welded structure. It lies on the pallet carriers, held in place by angled profiles. The bracket welded in the depth direction centres the drum.



“Z” profile pallet supports

Pallet supports with side push-through as centring and slide guard. Attached using compression fitting. Lateral adjustment for different storage widths is possible.



Crash protection corners

Height 400 mm, made from 4 mm steel sheet, anchored in the floor with plugs (chemical anchor). Painted in black / yellow stripes in accordance with the employers' liability insurance associations' requirements.



Tilt protection device

For large widths, each shelf gets a tilt protection device which is screwed on between the front and rear beams. It prevents the beam profiles from twisting.



Collision guard crossbar

Collision guard crossbar placed and screwed over the rack crossbar as frame reinforcement. U 111/45/5 mm, 800 mm or 1000 mm tall (or reaching the bottom pallet carrier). Light grey RAL 7035.



Crash barriers

Made from 4 mm wall and 8 mm floor sheet, attached to the floor with plugs (chemical anchor). Black/yellow striped surface.

The 400 mm tall wall elements are attached at the sides with the crash protection corners and in the middle with screws. The crash barriers can easily be adjusted to the actual rack depth thanks to fitting pieces which can be inserted in the middle.

PALLET RACKING

THE MULTI-POSITION SYSTEM

SYSTEM ACCESSORIES



Spacer

Fixing of the frame distances in the depth direction for double racks.



Type plate

(Type, year of construction, commission number, load capacity/shelf, max frame load, max. shelf height)



Frame connector, interior U, bolted

Therefore useable for beams even in the joint area. Load capacity for the levelling frame with this connection maximum 3,000 kg.



Space label, alphanumeric

Adhesive film for alphanumeric space labelling.



Frame connector

For higher loads, we use welded joint plates.



Load sticker

(Commission number, frame type, shelf spacing, field load, support type, shelf width, shelf load, year of construction).



Push-through protection

Continuous C profile push-through protection Mounted centrally between the racks using a holder for double-sided pallet racking (Fig.). The pallets are thus prevented from being pushed through.

For sprinkler systems, two such push-through protections can be mounted in parallel with a clear distance of at least 100 mm.

On single-sided racks, the push-through protection is attached with a holder screwed on at the rear.

SYSTEM ACCESSORIES



IPG beams
With chipboard decking placed on top and Z sheet locking.



Continuous aisle cover



IPG beams
With grating decking placed on top and screw attachment.



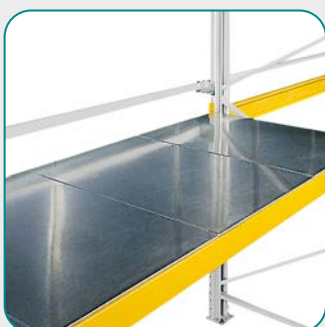
Drive-through cover transverse aisle



GF beams
With inlaid wooden or chipboard decking. Flush connection to the top edge of the support possible.



Rear grating (protective grating)
Frame structure with grating fill which is screwed to the rack structure with special holders.



GF beams
With inlaid sheet panels and flush connection to the top edge of the support.

PALLET RACKING



THE SINGLE-POSITION SYSTEM



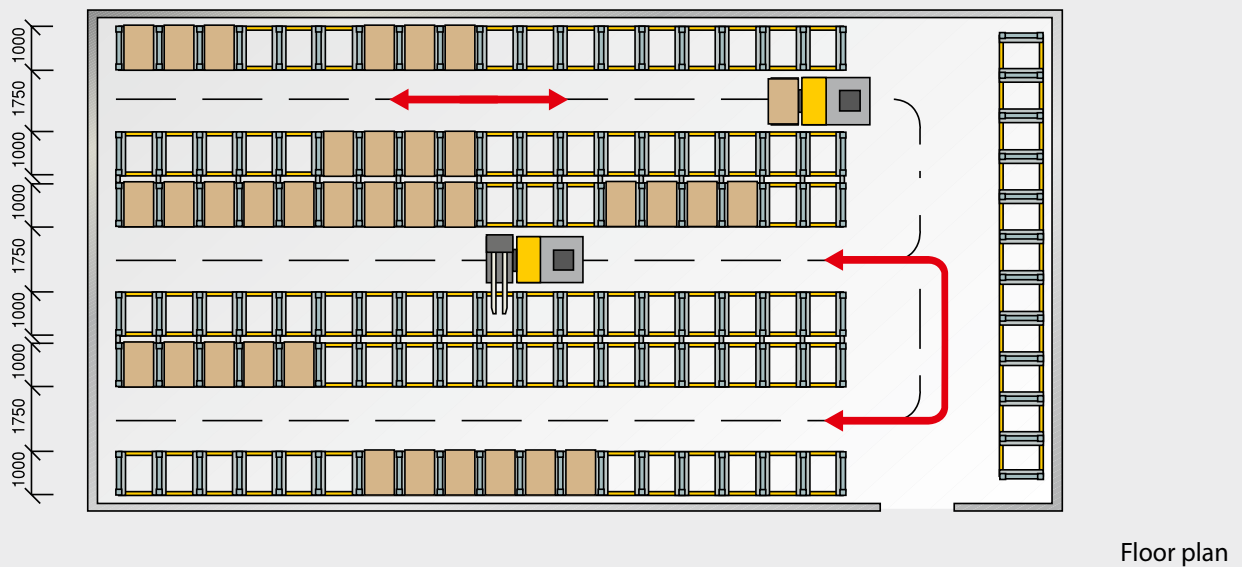
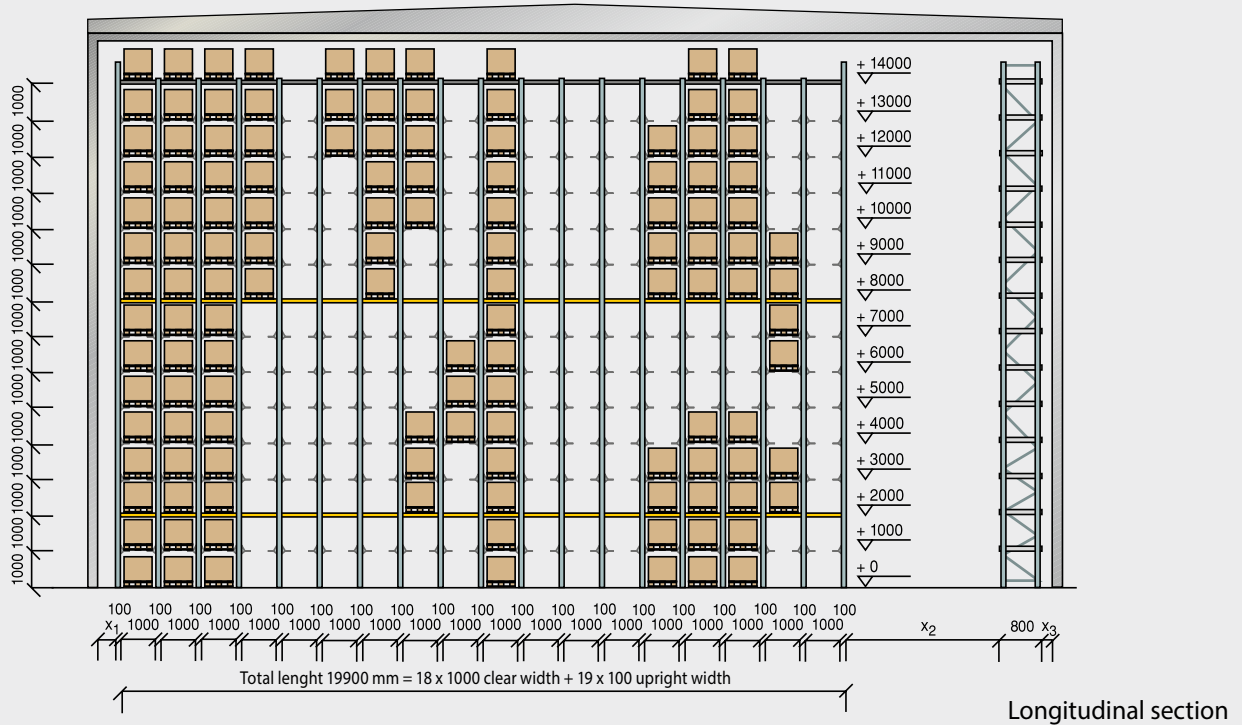
Warehouse for assembly parts in the automotive industry



Warehouse for vehicle parts

PLANNING EXAMPLE

For steel box pallets stored 1,000 mm deep. Loading with inductively guided high-rack forklifts.



PALLET RACKING

THE SINGLE-POSITION SYSTEM

INDIVIDUAL SYSTEM PARTS



G hook pallet supports

G hook pallet supports

G hook with welded pallet supports (front view).



G hook pallet supports

G hook pallet supports

The pallet supports are mounted in the side slots on the frame profiles using two welded-on loading arm hooks and can be adjusted from 50 : 50 mm according to the hole spacing. The side push-through at an angle of approx. 170° stops the pallet during storage.

At the rear, the continuous push-through protection is mounted on a bracket.



G hook pallet supports / PP

G hook pallet supports / PP

As above, but with push-through protection (PP) welded on.

INDIVIDUAL SYSTEM PARTS

Pallet supports on stringer

Pallet supports on stringer

For structural reasons, the single-position rack must be reinforced at the top and – depending on the installation height – on one or more levels using stringers. Here, the pallet support is screwed onto the stringer. Once again, there is continuous push-through protection at the rear.



Pallet supports on stringer / PP

Pallet supports on stringer / PP

As above, but with push-through protection (PP) welded on.



Pallet support with screws at the sides

Pallet support with screws at the sides

Angled profile pallet support, screwed directly to the rack frame at the sides. Adjustability of 50 : 50 mm according to the hole distance.

PALLET RACKING



THE DRIVE-IN DRIVE-THROUGH RACK

Drive-in racking is another flagship product from ELVEDI.

Based on the ELVEDI pallet racking, it was possible to develop a system which meets the specific demands of drive-in or flow storage in a particularly economical manner.

Pallets of a single type are stored and retrieved one behind the other in one rack shaft per type using forklifts. This gives rise to structural options, almost entirely in the depth direction of the rack, for ensuring the performance and stability of the rack. Thanks to the ideal static values of our racking systems, adjustment is easy even for challenging tasks such as the storage of over width special pallets.

And because collisions with the rack body happen from time to time when using forklifts, it is a key advantage that ELVEDI always builds something robust and stable.

ELVEDI drive-in and drive-through racking stands out with a perfect flow of materials and increased stock turnover.



Spice warehouse



Detail: goods support rail



Shipping for detergents



Industrial warehouse for recycling materials



Cold storage for food



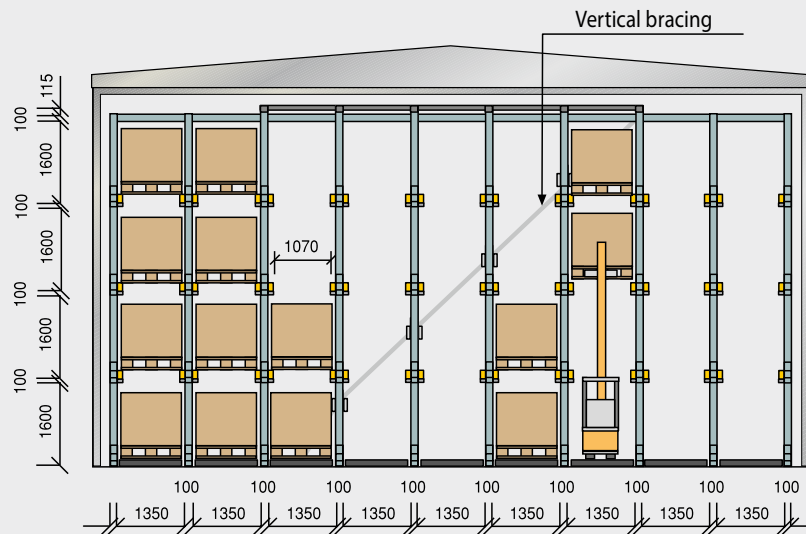
Animal feed warehouse

PALLET RACKING

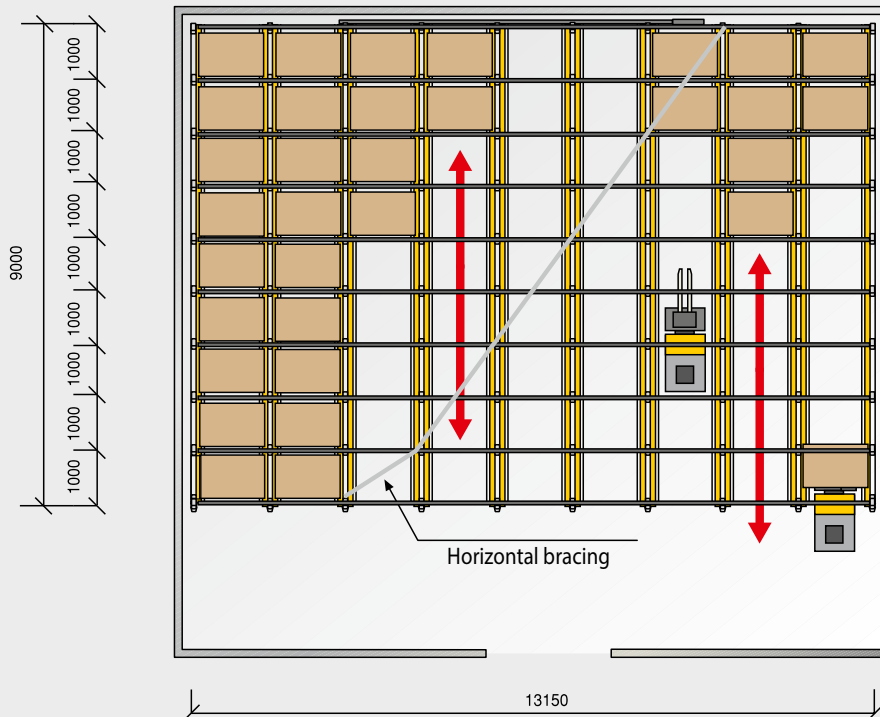
THE DRIVE-IN AND DRIVE-THROUGH RACK

PLANNING EXAMPLE

Drive-in racking for Euro flat wood pallets operated by counter-balance or reach trucks.



Front view



Floor plan

INDIVIDUAL SYSTEM PARTS AND SYSTEM ACCESSORIES



Pallet support with centring

Special profile support rail (modified Z profile), support width 100 mm, total profile height approx. 165 mm. Side attachment, so no obstructive screw heads on the support surface.



Pallet bumper

Pallet bumper, mounted above the pallet support. As a result, the pallets to be stored do not damage the frame profiles.



Rack bumper

Flat steel clip at the pallet shelf level, attached to the bracket, as a bumper and baffle plate.



Guide rails

Comprising a C profile mounted on the floor. They run along the full depth of the channel. Entry curve at the front for safe entry into the channel.



Push-through protection

Straight version for normal area.



Push-through protection

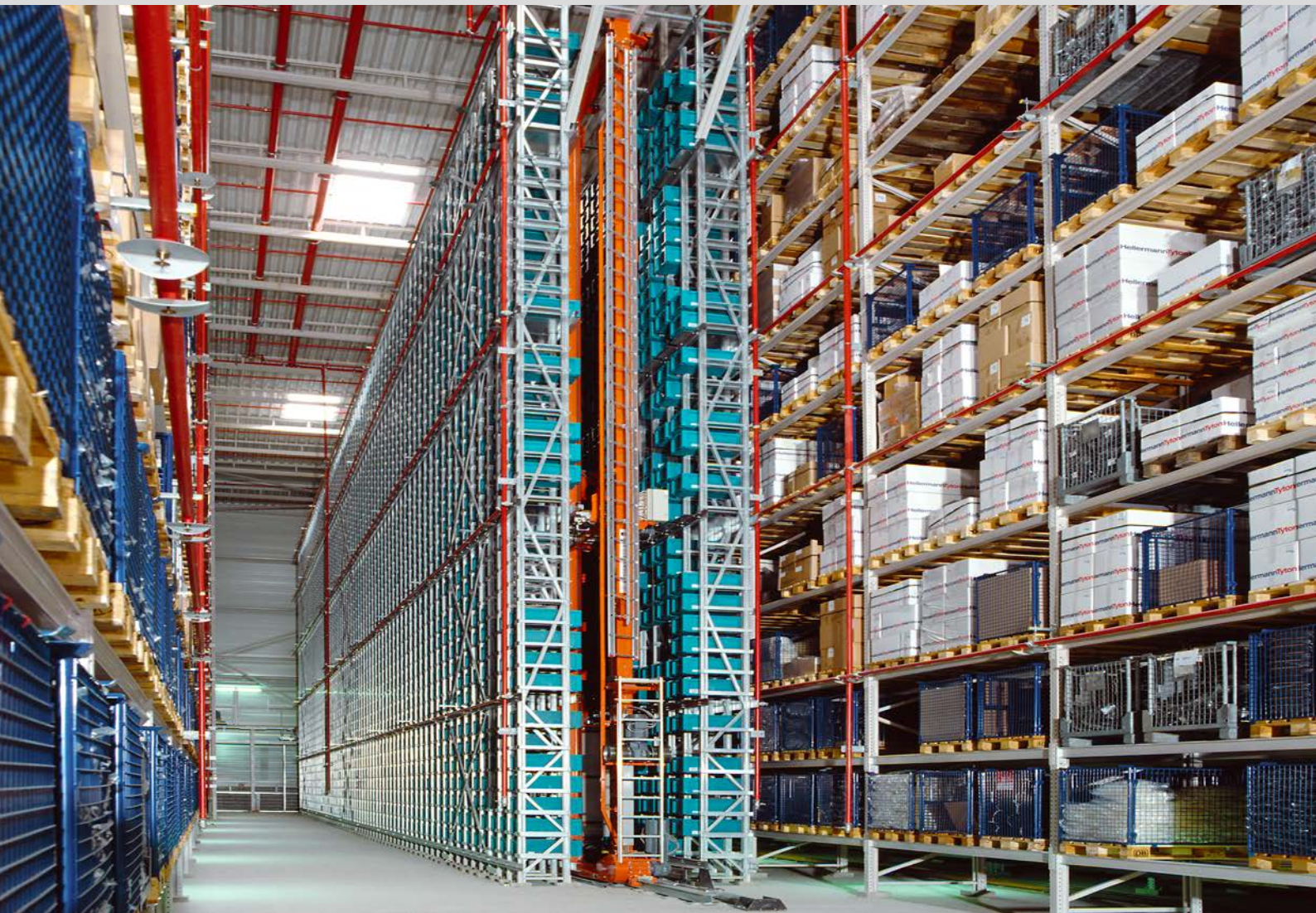
Elbowed version for cross-fields.



Top stringer

Required for drive-in and drive-through racking for static reasons. It is mounted in the frame profiles above the top pallet space with the claw, one per channel, and screwed in to secure. Thanks to mounting per channel, the system is very variable with regard to attachment, modification or removal.

PALLET RACKING



AKL - AUTOMATED SMALL PARTS WAREHOUSE

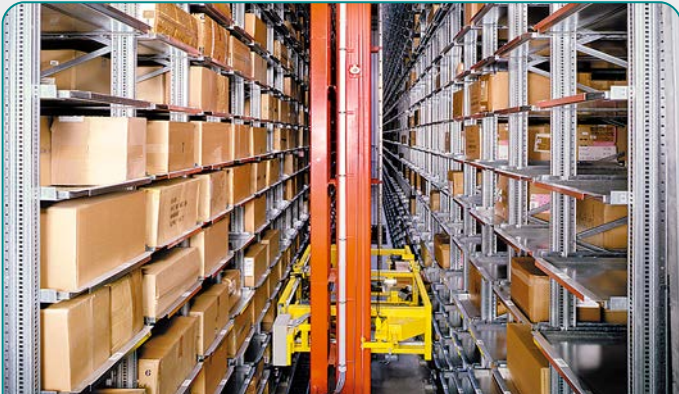
The storage of small units of goods in boxes, cassettes or trays in automated small parts racks is among the dynamic growth fields in storage technology.

Without staff walkways, employees can concentrate on time-saving, fatigue-free, ergonomic order picking with a low error rate.

For many years, ELVEDI has been operating in this field as one of the leading rack manufacturers. ELVEDI rack technology allows for optimal use of space up to 18 metres in height thanks to very narrow supports, the least possible adjustment in the shelf heights, and centring aids and guides for the storage boxes.

High-precision rack manufacturing with the tightest tolerances and subsequent expert installation guarantee an automatic operation that functions reliably.

With the ELVEDI rack system, roof and wall attachments, and therefore the AKL warehouse as a silo structure, can also be planned. With a wealth of common reference projects, ELVEDI is also the perfect partner for essential coordination between rack construction and the storage and retrieval machine manufacturers.



AKL as tray storage



AKL with order picking levels



AKL as mesh box storage



AKL as a custom solution



AKL as channel storage



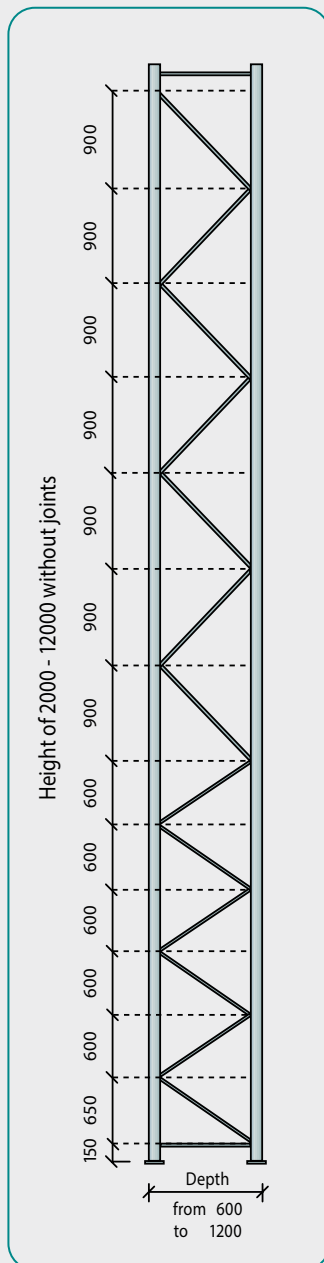
AKL as cassette storage

PALLET RACKING

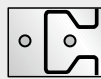
STANDARD PARTS AND DIMENSIONS

WELDED "S" FRAME

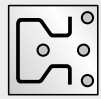
The welded "S" frame is welded in equipment with low tolerances as standard and then undergoes cathodic dip painting (CDP), or is fully hot-dip galvanised for outdoor use.



110 x 110, 10 thick



110 x 150, 10 thick



140 x 140, 10 thick



120 x 300, 10 thick



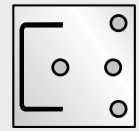
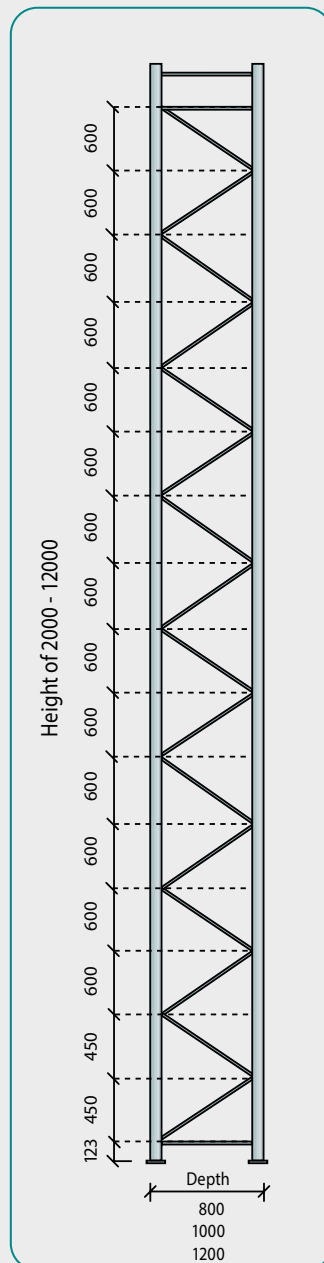
120 x 300, 10 thick

Standard base plates

BOLTED "M" FRAME

The bolted "M" frame is an installation system that is first bolted together on the construction site. This results in space-saving storage and low transport costs.

Frame profiles, horizontal and diagonal beams are strip galvanised, base plates are electrolytically galvanised.



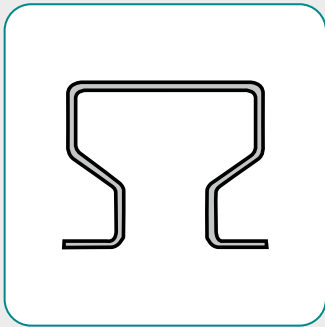
140 x 140, 6 thick

Screw foot



Standard base plate and frame connector for the bolted "M" frame

STANDARD PROFILES AND COMPONENTS



Frame profile



Standard profile

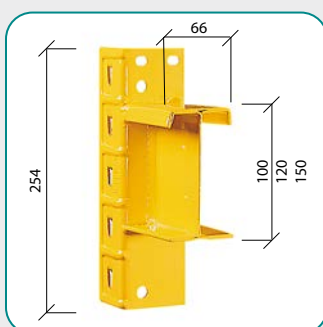
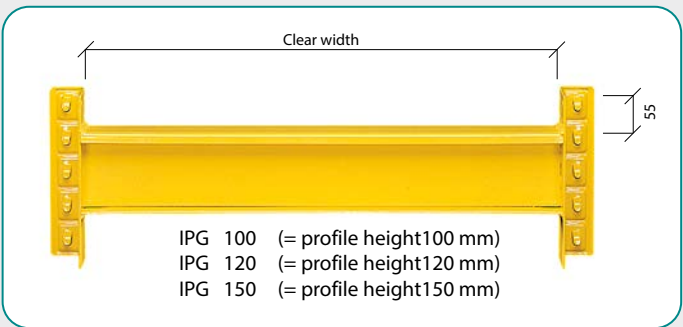


Standard profile with slots

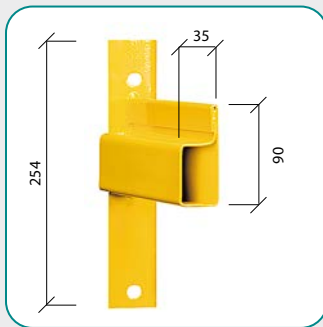
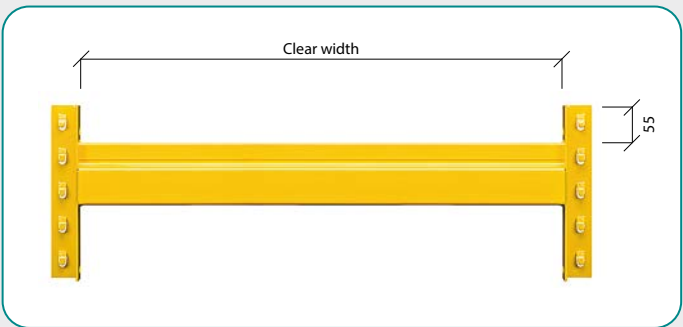


Standard profile with round holes

IPG BEAMS

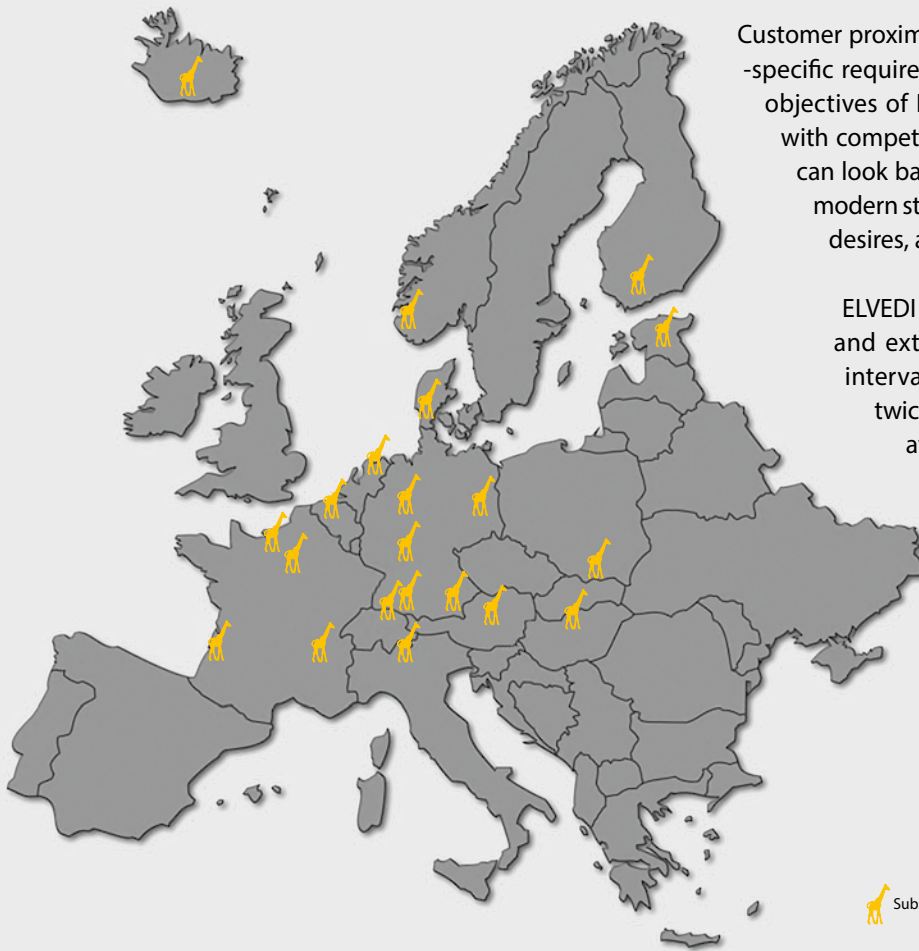


GF BEAMS



The IPG and GF beams are manufactured in sheet thicknesses of between 1.75 and 2.50 mm depending on the support type and the various load requirements.


ELVEDI SUBSIDIARIES CAN BE FOUND THROUGHOUT EUROPE ...



Customer proximity and best possible meeting of the industry-specific requirements of each industry are the predominant objectives of ELVEDI. Our subsidiaries and regional offices with competent consultants and planning engineers, who can look back on many years of experience in the area of modern storage solutions and are open to your individual desires, are available to you throughout Europe.

ELVEDI will notify you of new product developments and extensions of your system solutions at regular intervals in the ELVEDI newsletter being published twice a year. We keep you up to date and are always available to you on our trilingual website, which is based on a modern Intranet.

Of course you will also find contact partners of the ELVEDI Group at all important European trade fairs.

 Subsidiary / Regional Office

... AND CERTAINLY NEAR YOU AT LEAST ONCE

ELVEDI GmbH

Aitlingerstrasse 18
D-78176 Blumberg

Phone +49 (0)7702 4382 0
Fax +49 (0)7702 4382 10
info@elvedi.com

Mandatory annual inspections for warehouse equipment according to DIN EN 15635

Racks and shelves are work equipment. The European standard DIN EN 15635 defines the inspection procedure for storage equipment/racking.

