

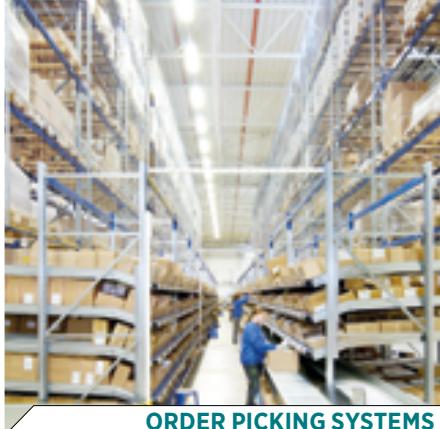
PROJECT GUIDE

BITO
STORAGE SYSTEMS
NORDIC

STORAGE AND ORDER PICKING SYSTEMS



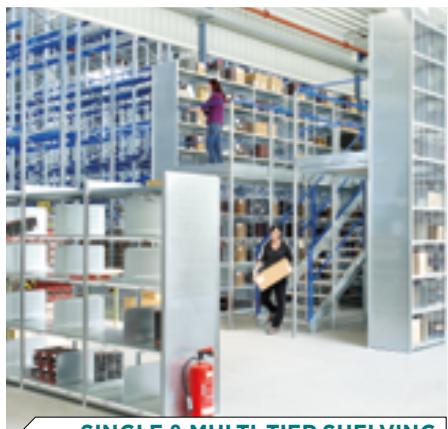
BINS & CONTAINERS



ORDER PICKING SYSTEMS



MEZZANINE FLOOR



SINGLE & MULTI-TIER SHELVING



PALLET RACKING



PALLET LIVE STORAGE



PICKING TOWERS



TRANSPORT ROBOTS



AUTOMATED SYSTEMS



*“The user fuels our pursuit of innovation,
quality and safety.” F. A. Bittmann*

» LOGISTICS IS THE KEY TO SUCCESS «

Dear Business Partner,

Over the last years, we have seen a world in constant change. Logistics challenges, shortage in supply of raw material, but also new technologies, products and commercial patterns have seen the light of day.

Efficient logistics management is fundamental to any business that wants to stand out from competitors and inspire their customers.

General providers and key account customers throughout the world count on us as their competent and reliable project partner. BITO is known for providing a comprehensive service portfolio, from the initial contact through customized project planning to successful implementation. Together with our customers and partners, we are entering new markets in all regions of the world. We are proud of our strong, international sales and projects teams who have helped us realize projects in North and South America, China, Australia, and many other parts of the world.

Are you looking for a strong partner?

It is our mission to contribute to the success of our customers through innovative storage and material flow solutions. Our tools are high quality products and services to help you achieve durable and sustainable results and offer you real added value in all areas of your application.

We look forward to supporting you and wish you lots of success!

Sincerely yours,
BITO Storage Systems Nordic



We realise your projects.



With a competent team.

With a solution-oriented approach.

With ecological responsibility.

	Who we are & what we do +++ SPECIAL FEATURE: GREEN LOGISTICS +++	6-35 8-19 262-266
	Multi-system storage solutions	36-39
	Single tier and multi-tier shelving	40-63
	Mezzanine floor systems	64-75
	Carton live storage »CLS«	76-105
	PRO Pallet racking	106-129
	PROflow Pallet live storage Full-width roller lanes Roller tracks, light-duty / heavy-duty Pallet live storage access kit	130-157 136-140 141-143 144-145
	PROmobile pallet racking	158-173
	Drive-in racking PROmotion shuttle racking	174-181 182-189
	Cantilever racking	190-201
	Automated small parts storage »AKL« Automated carton and pallet live storage Automated pallet racking BITO LEO AGV	202-221 210-211 212-213 222-227
	Plastic bins & containers	228-261

That's us:



Team BITO Storage Systems Nordic 2023

Experienced. Committed. Friendly.



LEO locative - our digital colleague

We operate sustainably.

A frequently quoted definition can be found in the 1987 Report of the United Nations World Commission on Environment and Development:

Sustainable development is defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

Sustainability is a complex concept with closely interlinked goals: Sustainable development promotes economic growth, ecological diversity, human health, social justice and societal well-being. These goals require a long-term strategy that is based on the acknowledgement that our resources are limited. This is why we need to use our resources carefully in order to secure a future worth living.

In simple terms, sustainability is about what we want the world to look like when we leave it to our children and grandchildren.



Generations in conversation –
sharing and passing on knowledge



Why should we buy sustainable products?

Products can have a wide range of potential impacts on the environment and on human health, starting from damage to the ecosystem through overexploitation, soil, air and water pollution, improper waste disposal to toxic exposure of staff and residents.

Negative impacts can occur at any point in the life cycle of a product: during raw material extraction, manufacturing, packaging, distribution, product use, repair, maintenance or disposal/recycling.

By choosing eco-friendly products, we contribute to the protection of the environment and health of everyone involved in the value chain.



BITO Lauterecken – Plant for plastic bins & containers



BITO Meisenheim – Headquarters and plant for steel shelving & racking

The best place to start is at the beginning.

Sustainable solutions



This is why we give preference to manufacturers and suppliers who comply with ecological standards. When selecting our raw materials and auxiliaries, we always opt for materials that are not harmful to health and that allow environmentally friendly processing. Another equally important question is how far materials need to travel to reach our plants. Keeping shipping routes short also helps to protect our environment which is why we source 90 % of our materials from the EU market.



PRODUCT GROUP SHELVING & RACKING

Uprights and beams of our steel shelving and racking are either galvanised or come in various colour options.

- We opted for electrostatically applied powder coating instead of conventional liquid paint which needs an evaporating solvent.
- We only use colour pigments that are ecologically safe and release a very low amount of volatile organic compounds during the coating process.
- Typically, powder coatings are cured at temperatures of 140 - 200°C. We use advanced low bake thermosetting powder that cross-links at temperatures of less than 140°C.
- Powder-coated workpieces are extremely impact-resistant and weatherproof.

Coating powder – a thermoplastic polymer that melts in the heating process and permanently cross-links with the surface of the workpiece, thereby creating a hard finish that is tougher than conventional paint.

PRODUCT GROUP

BINS & CONTAINERS

Our plastic bins and containers that are intended for food contact are made from food safe material in compliance with EU law.

This is certified by our declaration of conformity for plastic consumer goods in accordance with Regulation (EU) No. 10/20112.

(End) consumers can easily identify our plastic bins & containers designed for food storage and transport by the wine glass and fork symbol which confirms legal conformity and suitability for the purpose.

Did you know that the annual per capita paper consumption in the European Union is higher than that of South America and Africa together?

Reusable packaging instead of disposable cardboard packaging will help reduce deforestation and its negative impact on our climate. Our multi-trip BITOBOXES are extremely durable. During their long service life, MB distribution containers will each save more than 1 ton of cardboard!



BITOBOX MB Food & Delivery

helps last mile logistics to provide best grocery home delivery services

Our BITOBOX “ECO-CHAMPIONS”

C-ITEM BIN, CTB SERIES

This new material is a mixture of PP and sunflower seed shell fibres, a food industry waste product that is now used for further processing.



MULTI-PURPOSE CONTAINER, SERIES MB

Extremely hardwearing and durable. Clever alternative to one-way packaging. Minimises impact on environment and resources.



MB CONTAINER FOR HAZARDOUS GOODS

Supplied with drop-on lid complete with metal snap locks.



GREEN PRODUCTION

The goal of sustainable production processes is to minimise negative impacts on the environment by saving resources and by using or producing regenerative energy. Energy efficiency is not only a top priority in our production plants. By using modern lighting and plumbing technologies, we are also saving resources in our offices and workshops. Buildings and products also have a carbon footprint. Modern manufacturing technologies, thermal insulation building materials and a sustainable energy concept help us reduce our CO₂ footprint.

IMPROVING ENERGY EFFICIENCY

By contracting another energy supplier who operates with a significantly higher share of renewable energies in their electricity portfolio, we were able to reduce CO₂ emissions by 40% in 2020 compared to 2018.

In 2006, we commissioned our first photovoltaic system to generate our own renewable electricity. In order to increase our own power generation from renewable energies, two more solar facilities were added in 2021, so that we now generate over 1 million kWh/a of "green" electricity.

With the photovoltaic panels currently in operation, we would be able to supply 88 average households (3,000 kWh/a) with electricity or drive an electric car 1.3 million km. By exchanging

all conventional lighting sources in our offices and plants against modern LED technology, we were able to reduce our energy consumption by 60%.

This corresponds to some 700,000 kWh/a or to the electricity consumption of 233 average households. Our CO₂ emissions have reduced by 163 tons/a which equals the carbon dioxide absorption capacity of 13,000 deciduous trees.

In our plant in Lauterecken we have equipped the latest generation of our injection moulding machines with eco-drives. Their specific energy consumption (SEC) for processing one kilogram of polymer is 12-20% lower compared to conventional machines: 20% for the 1,500 ton machine, 12% for the 2,700 ton machine.

Depending on the machine, this saves approx. 60,000 kWh/a, equalling the electricity consumption of 20 average households.



BITO Meisenheim - Photovoltaic panels on plant roof

Direct (SCOPE 1) or indirect emissions (SCOPE 2) at our Meisenheim and Lauterecken sites, and from 2022 also at our Zimna Wodka plant in Poland, are offset to a very large extent by the purchase of 100% green electricity from renewable sources.

FACTS AT A GLANCE

97%

In 2019, we recycled 96.76 % of our waste.

60%

of lighting energy saved by replacing traditional lighting sources with LEDs.

12% - 20%

less energy needed for our new injection moulding machines.

> 1,000,000 kWh/a

of solar energy will soon be generated in Meisenheim and Lauterecken.

SAVING WATER AND HEATING ENERGY

By switching to a closed-loop water system and by installing free coolers instead of cooling towers, we were able to reduce our water consumption by 60%.

In addition to that, we installed continuous flow hot water heaters at all points of consumption in production and office areas. They heat the water as we use it and only as much water as is actually needed. With the smaller pipe length between the continuous flow heater and the wash basin, the water does not lose any heat, thereby reducing electricity usage for heating or cooling water by 65% compared to typical electric storage tank models.

WASTE HEAT RECOVERY

Heat exchangers help us use the waste heat from injection moulding machines to heat workplaces.

WASTE MANAGEMENT

We only contract licensed waste disposal companies to collect waste materials. In 2019, for example, as much as 96.76% of our waste was recycled. Only 3.24% was reported as mixed packaging (thermal recycling).

REDUCING CARBON EMISSIONS

Particular attention is given to exhaust-free production processes, in the metal forming as well as in the injection moulding process. The (energy-intensive) generation of compressed air has also been optimised. Air compressors shut off automatically after pressure has reached a certain level, which results in a 10% reduction of energy consumption and CO₂ emissions.

By increasingly using recycled materials or admixtures such as Sunflower Compound, we will be able to reduce the tonnage of very energy-intensive plastic granules (PP) in the future. This will also reduce our carbon emissions.

The remaining emissions are offset by voluntary compensation certificates. The proceeds are used to finance strictly audited projects (Gold Standard).

THIS MEANS THAT ALL BITO SITES ARE CARBON NEUTRAL.



Sustainability in business

SHELVING & RACKING: ANNUAL SAFETY INSPECTION

Our dedicated customer service includes more than delivery, installation and start-up of your storage facility. We want your shelving or racking system to function perfectly throughout its entire service life and we want to enable you to provide a safe working environment.

Occupational safety and health regulations stipulate that employers must take all reasonable steps to ensure the health, safety and well-being of their staff. In compliance with the national safety at work act DGUV 108-007 as well as the European standard DIN EN 15635, operators of steel storage systems must have their storage facility inspected at least once a year by a competent person.

In order to ensure that our customers do not have to worry about safety, we recommend to conclude a maintenance contract. Adding the fact that measures carried out in good time also increase the service life of a storage installation and help to prevent expensive repairs.



Members of our After Sales Service team on an inspection visit

OUR SERVICE OFFER:

BITO SHELVING & RACKING INSPECTION

- One inspection per contractual year; date as agreed upon with the customer
- Visual inspection for deformations and damage to racking components (made from floor level height without using access equipment such as lifting platforms etc.)
- Functional testing of live storage racking
- Observation of load capacity signs and loadings with reference to manufacturer guidelines
- Compliance check of parts and components with current state-of-the-art requirements
- Damage analysis, full documentation of any structural defects and risk assessment report
- Marking of damaged parts and components as required
- If required, recommendations to the customer (operator) on how to prevent future damage; proposals of any action necessary
- Inspection label confirming that the annual inspection has been carried out
- Detailed rack inspection protocol
- Appointment scheduling

Sustainability in business

BINS & CONTAINERS FROM POST-CONSUMER RECYCLED PLASTIC (PCR)

Sustainability does not only focus on reducing emissions and complying with legal requirements. Acting sustainably also means to develop and implement a concept for the entire life cycle of a product.



Multi-trip MB ECO containers are the environmentally friendly alternative to virgin materials!

Already today, our bins and containers contain 20% recycled material. Production surpluses are regranulated in our own recycling facility and returned 100% into the production cycle. On request, almost all bin and container series can be made from regranulate (post-process plastic).

Particularly sustainability-minded customers can also opt for our MB distribution containers made from certified post-consumer plastic derived from end products that have completed their lifecycle.

Although process engineering limits colour options to black for the body of this MB box, customers still have the possibility of colour coding by fitting their MB box with lids in blue, yellow, green and red. Optional equipment such as hinged lids or stacking rails are the same as for the BITO MB standard series.

There is still another advantage: The new MB ECO is a good alternative not only from an ecological, but also from an economic point of view, as it is somewhat cheaper to manufacture and therefore has a lower selling price than the standard MB container.



BITO MB ECO
nests when not in use,
stacks when full

OUR RECYCLING OFFER:

BITOBOX MB ECO

Our service special: Although our products are designed for a long service life, we want to make sure they are properly handled when they are no longer in use. This is why we offer our customers to return plastic bins to us that have completed their service life. These are recycled into regranulate which is used for producing new bins and containers. Check out this clever solution!

Sustainability in business

Our products help customers and partners to embrace sustainability in all areas of business, from procurement over order processing to in-house logistics.

OUR CONTRIBUTION TO ECONOMIC SUSTAINABILITY WITH BITO SHELVING & RACKING

In a globalised world, more and more goods have to be moved, stored and distributed. Logistics costs are on the rise in almost all industries. Recognising opportunities and reducing spending is vital for the economic success of a company.

Choosing the right storage system will result in significant time and cost savings: Compact storage and a clear product presentation help reduce order throughput times and coordinate logistical processes. This avoids downtime, increases warehouse productivity and reduces storage costs.

BITO shelving & racking solutions cater for any storage requirement, taking into account building constraints as well as a customer's operational organisation. Upgrade your warehouse and save on space, time and money!



The pull-out front pallet position is the ideal solution for ergonomic off-pallet picking at floor level height.

OUR EXAMPLE PRODUCTS: BITO LIVE STORAGE RACKING

- improves order picking efficiency
- increases picking ergonomics
- improves work environment
- FIFO stock rotation is particularly useful when products must be supplied in use-by-date order
- improves picking accuracy
- fosters employee well-being, thereby reducing sick leave numbers and staff fluctuation

PULL-OUT PALLET POSITION

The BITO pull-out mechanism is particularly user friendly. Operators can pull out the entire front pallet into the racking aisle. There is no need to reach deep into a bay, because the pallet can be accessed from three sides. Loads can be picked while taking a comfortable and ergonomic stance. Once the order is picked, the front pallet position is pushed back into the racking.



OUR CONTRIBUTION TO ECONOMIC SUSTAINABILITY WITH BITO BINS & CONTAINERS

Plastic bins help speed up any company's logistics processes, thereby raising productivity levels and saving money and natural resources.

BITO offers a large range of bins & containers: practical storage bins, open-fronted picking bins, stacking containers in European standard sizes, space-saving folding boxes, Kanban bins for small items, large-volume and heavy duty containers as well as bins and trays for automated storage. There is the right BITOBOX for any application!

Our bins and containers have been designed for a long service life. Accordingly, you will find our 5-year warranty symbol on many products of our bin range informing you of our 5-year quality promise over and above the legal warranty.

Sturdy and versatile, with many ergonomic features, available in a wide range of standard versions or built to individual standards: BITOBOXES guarantee maximum protection as well as easy, cost efficient and environmentally friendly handling.



OUR EXAMPLE PRODUCTS: BITO MULTI-PURPOSE CONTAINERS MB

BITO MBs are the ideal answer to the demands of sustainable development throughout the entire value chain. They support manufacturers, logistics providers and end consumers alike in achieving their sustainability goals. MB containers come in European standard sizes and are an excellent alternative to disposable packaging. Compared to one-way cardboard packaging, our MBs have a lot of benefits:

- sturdy and hardwearing for a long service life
- suited for storage, order picking and shipping
- no packaging waste
- environmentally friendly and resource conserving
- empty container nesting on return trips saves up to 75% of freight and storage costs



Perfectly safe
for shipping
pharmaceuticals:
MB container with an
integrated thermal
insulation set.

Standard MB containers can be complemented with a wide range of useful accessories. Combined with a snap-lockable drop-on lid and security seals, MB containers are ideal for shipping valuables as well as hazardous substances.

Professionalism creates trust: Our products and services are certified.

In a broader sense, sustainability is also about the impact of processes and practices on the environment and on people. Our customers can be confident that our products are manufactured in accordance with the latest environmental protection, occupational safety and quality assurance regulations.



The German Materials Testing Institute *Materialprüfungsamt Nordrhein-Westfalen* confirms that the BITO quality management for product engineering, manufacturing and distribution of shelving & racking, operational equipment as well as for plastic bins & containers complies with all requirements of DIN EN ISO 9001:2015.



BITO has been holding this quality seal for more than 30 years. It not only stands for quality that exceeds the legal standards. It also signals to the consumer that products and services have been created by competent personnel, with top-quality technical equipment and in compliance with laws and regulations aimed at protecting health and the environment.



As a prerequisite for approval for the manufacture of hazardous goods packaging, the German Federal Institute for Materials Research and Testing (BAM) has defined requirements that ensure self-monitoring of the manufacturing process as well as monitoring by third parties.

The BITO multi-purpose containers for hazardous goods from our MB series have been approved by BAM as external packaging for hazardous goods from packaging groups II and III.



Systematic quality management leads to reliable product quality, as processes become more transparent and can therefore be better managed. This facilitates the response to complex requirements and to market changes. BITO-Lagertechnik Bittmann GmbH is certified according to DIN EN ISO 9001 for product engineering, manufacturing and distribution of shelving & racking, operational equipment as well as for plastic bins & containers.



RENEWABLE ENERGY CERTIFICATE

Certificate No. 2019-3190-0001



We hereby confirm
BITO-Lagertechnik Bittmann GmbH
Obertor 29
in 55590 Meisenheim

In cooperation with:



the purchase of 100% green electricity from renewable energy plants with statutory environmental standards.

The guarantees of origin are issued towards renewable energy plants which comply with statutory environmental standards whilst being connected to the European grid. Furthermore, they fulfil the criteria for KlimaInvest ÖKOSTROM by KlimaInvest Green Concepts GmbH.

BITO-Lagertechnik Bittmann GmbH achieves climate neutrality with the continuous cancellation of the green electricity proof of origin and with the offset of upstream emissions which arise, inter alia, during the construction of the plants. In the period from 1st of January 2020 to 31st of December 2021 an amount of up to 26.549 MWh of electricity is neutralized by 100% ecological and climate-neutral electricity from renewable energy.

Compared to an electricity generation through energy sources constituting the German energy mix at the time of issuing this certificate, up to 8.302 tons of CO₂ emissions will be saved through purchasing and using renewable energy. This amount also includes the offset of upstream emissions.

The cancellation in accordance with § 30 Guarantees of Origin Implementing Ordinance (HkRNDV) is carried out and confirmed by the registry of the German Environment Agency.


Jobst Jenckel
KlimaInvest
Green Concepts GmbH



This is how we realize the optimal storage solution for your requirements

We would like to support you as much as possible in choosing the appropriate solution for your internal logistics. With our proven project methodology, even complicated decision-making processes can be simplified. First, we determine your company's needs and select the appropriate products and solutions to optimize your logistics. Based on the identified needs, we present a preliminary design, prepare a budget plan and calculate the return on investment. We want to make sure that all facts are on the table, giving you peace of mind, because you know that you have made an informed decision.

7. AFTER-SALES SERVICE

You can also count on us after purchasing should the need arise to extend and adapt a storage system supplied by us. And if you are moving your operations into a new location, we are happy to re-assemble your installation. We also offer training courses to develop the skills and knowledge of your operational and administrative staff.

6. INSPECTION & MAINTENANCE

Regular inspection and maintenance ensure that your shelving or racking system will operate safely and reliably over a long period of time. By concluding a maintenance contract, you ensure on-time service at preferential conditions at the prescribed maintenance intervals as well as fast assistance in emergencies.

5. ASSEMBLY

Assembly time depends on the scope of the project. Some installations are mounted in a few days, large projects may need several weeks. All tasks are always carried out according to a previously agreed schedule. Our technicians are professionals who are used to working in a wide range of conditions and dealing with difficulties of all kinds. Upon completion, we take care of testing and commissioning to verify that your system operates and functions according to specification. Our service also includes training your staff in the proper operation of your installation as well as providing safety instructions.



1. FIRST MEETING

During an initial meeting, we take a close look at the specifics of your company and your warehouse workflow. Based on our know-how and many years of experience, we show ways to improve processes and results.

2. WE PROPOSE ONE OR SEVERAL SOLUTIONS

We present practical solutions that exactly fit your requirements and that will help you achieve the planned results. You will receive a comprehensive offer that includes all necessary products and services – from racks and bins to accessories, installation, employee training and after-sales service. Together we will calculate how long it takes for your investment to pay for itself.

3. YOU SELECT THE SOLUTION THAT BEST SUITS YOUR NEEDS

You are convinced that we are the right partner and have designed the optimal solution for your application. Let us take the time to settle all outstanding questions in connection with the project.

4. ORDERING & MANUFACTURING

Immediately after receipt of your order, we will start manufacturing all necessary components in our plants at Meisenheim and Lauterecken. During production, further details can be specified. In addition, we prepare an assembly plan to ensure smooth assembly on site.



MEISENHEIM PLANT



Premier quality manufactured in our own plants ...

BITO SHELVING & RACKING ...

... for small, large, light weight and heavy weight, bulky or long goods, for load capacities ranging from 50 kg to 4.5 tonnes per storage level is designed and manufactured in our plant in Meisenheim.

OUR PRODUCT RANGE ...

... includes boltless and bolted shelving, shelving with extra large shelves, wide span and heavy duty shelving, pallet racking, cantilever racking, mobile shelving and racking, multi-tier facilities, carton and pallet live storage as well as automated storage installations.

WE RELY ON STATE-OF-THE-ART TECHNOLOGY ...

... for manufacturing BITO shelving and racking – without any exception. Profile forming and shelf production are carried out with the latest edging, punching and bending machines. This is complemented by the high degree of automation, which ensures dimensional accuracy and consistent quality. Europe's most modern production plant for pallet racking has been in operation in Meisenheim since 2008. All components of BITO pallet racking are manufactured in a hall that was purpose-built to accommodate the new production lines. Automation guarantees safe and smooth manufacturing processes and a fast order throughput.



LAUTERECKEN PLANT

... to suit
any application!

OUR BINS & CONTAINERS

... are manufactured in our plant in Lauterecken in a wide range of varieties ranging from storage, distribution and order picking bins and containers to trays for AS/RS systems for use in any industry and for almost any application.

CUSTOMER SPECIFIC DEMANDS ...

... can be met without any problems. Customer focus and application orientation are top priorities for our R&D engineers. They coordinate the introduction of a new bin from the first steps of development to the three-dimensional digital model and optimise prototypes until they are ready for serial production on powerful, cutting-edge injection moulding machines. To meet special requirements, our plant in Lauterecken offers additional options. These include, for example, automatic barcode labeling or container milling and drilling to meet particular fire protection requirements.





BITO – Your single source supplier

BITO – THE ONE STOP SHOP

The BITO product range offers everything you need for material handling and warehousing – shelving and racking, bins and containers, workshop equipment and accessories. No matter whether you need a catalogue product or a large-scale system, a single shelving bay for your office or your workshop or a high-density storage system to streamline your intralogistics processes, a small picking bin or large volume containers for efficient material handling, a product label or a hand pallet truck. On top of this, BITO offers customers a concept-to-completion service for any project size – whether for a complex storage installation that combines several shelving & racking systems or for an automated bin or tray storage facility. From a single source. Our specialists take care of all project-related tasks from layout planning over project management and assembly coordination to installation start-up. Your benefit: A personal project coordinator will take you from start to finish.

OUR SHELVING & RACKING RANGE ...

... includes boltless and bolted shelving, shelving with extra large shelves, wide span and heavy duty shelving, pallet racking, cantilever racking, mobile shelving and racking, multi-tier facilities, carton and pallet live storage as well as automated storage installations.

Whether you opt for a conventional solution or an automated live storage installation – the BITO team will be pleased to assist you in making the right choice for your application.



OUR BINS & CONTAINERS

BITO provides a huge range of bins and containers in any size and for any application. Discover our bins for storage, handling and order picking, our stacking containers in European standard sizes and our successful distribution container series. In addition, we offer bins and trays for automated small parts storage and containers in pallet size.

- Bins with pick opening
- Box pallets
- Storage and handling bins
- Folding pallet boxes
- Material flow bins
- Large volume containers
- European size stacking containers
- Small parts containers
- Multi-purpose/distribution containers
- Plastic trays
- Folding bins and containers

A BROAD RANGE OF WORKSHOP EQUIPMENT ROUNDS OFF OUR PRODUCT PORTFOLIO ...

... such as workbenches, transport dollies, order picking and shelf trolleys, cabinets and cupboards, steps and ladders, products for marking and labelling as well as safety equipment

Whatever you need for material handling and storage – you can count on BITO as your single source supplier!





BITO LIVE STORAGE RACKING

Efficient material storage and order picking

ACCURATE, FAST AND SAFE ...

... this is how goods should get to where they are needed. That's intralogistics. Precision and reliability down to the last detail are required for an optimum workflow. With this in mind, we manufacture our live storage racking. Precisely tailored to your requirement profile and your individual needs, live storage racking will significantly boost productivity in your warehouse. Roller tracks and roller lanes are the "motor" of live storage or flow racking. We manufacture these in our own plant to the highest quality. That is why we can guarantee the functionality and durability of our products.

Why not take advantage of the streamlining potential of existing racks? The BITO pallet rack retro-fitting solutions convert storage-only pallet racking into pick racking. In just a few simple steps, live storage levels and Adapta-Flow modules will adapt your installation to new requirements – tailored to your individual needs. This saves time-consuming modifications and there is no need for investing in new equipment. All BITO racking systems can be connected with modern conveyor technology and integrated into warehouse management systems without any difficulty.

BITO leaves nothing to chance

FROM PLANNING TO COMPLETION

Fast material flow and lean procedures – these factors are key to any intralogistics process. They will only make their full impact if combined with storage and order picking systems that are perfectly adapted to the requirements of a specific project.

When it comes to realising such systems, BITO has a clear advantage over other suppliers. We design and manufacture all products in our own plants. On top of this, we assume all project-related tasks from layout planning to system commissioning. This puts time and quality management in our own hands – and puts you ahead of the game.

BITO offers companies from all industries a customised solution: from automotive manufacturers and suppliers to fittings manufacturers, suppliers of clothing, books, sound carriers, electrical engineering, bicycles, laundry services, household goods, cosmetics, machinery, metal products, food and beverages, optics, paper and stationery, pharmaceuticals and chemicals, cleaning systems, to logistics service providers.

Our dedicated and competent project teams translate your specific requirements into efficient storage and picking solutions.

CHOOSING THE RIGHT SOLUTION

To select the optimal shelving or racking system and their right combination, BITO first analyses your article structure. Only then and in cooperation with you does the project team decide on the optimal solution:

- Single tier or multi-tier shelving
- Pallet racking for piece picking and product buffering
- Mobile shelving & racking
- Carton or pallet live storage
- Automated small parts storage supplied with system-compatible bins and trays





Efficient warehousing needs functional systems

INTRALOGISTICS ...

... in industry is constantly on the move. Hardly any other industry offers such great potential for savings and streamlining as intralogistics. Starting point of efficient intralogistics are the processes within a warehouse. Choosing the right storage and order picking system and adapting material flow processes are core functions. But not all warehouses are the same. In any case, productivity is the decisive factor.

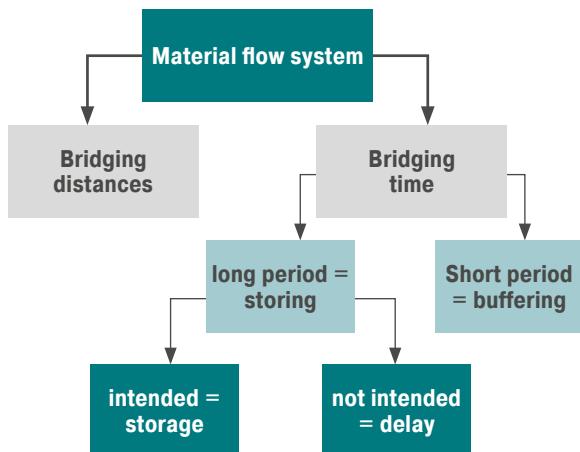
After all, the battle for market shares and the pressure to be competitive and streamline operations are increasing steadily. Short throughput times, low inventories and a high level of transparency result in lower capital commitment. The intelligent combination of the wide range of warehousing technology enables low error picking. In other words, operators who run their warehouse efficiently and are able to deliver quickly and correctly have a clear competitive advantage.

MATERIAL FLOW...

... covers all processes involving the storage, packaging and transport of goods, from procurement and processing to distribution to the end consumer. If material flow is not restricted to a specific area, it is referred to as the supply chain. The term value chain is also being used more and more frequently. This implies that value in the sense of customer benefit is to be added to the goods during the material flow process.

Optimised material flow processes result in

- shorter order throughput times
- a lower rejection rate
- improved working conditions
- lower operating costs
- less energy consumption
- lower environmental impact



INVENTORY MANAGEMENT ...

... is a part of merchandise management in companies. The aim is to store means of production or products that are completely or only partially finished - i.e. to remove them from the material flow stream - until they are needed. In general, a distinction can be made between a supply warehouse, a buffer warehouse and a distribution warehouse. Short distances and compact storage surfaces make order processing economical and efficient.

■ **Material storage:** Production equipment or products that are partially or completely finished are made available in an assigned area for manufacturing or material flow processes.

■ **Buffering:** Provision of means of production or products for a short period of time only.



PLANNING A WAREHOUSE ...

... is determined by several factors. What function should the warehouse have? Warehouse planning includes, among other things, material flow planning, ensuring good use of space and room, and efficient workplace design. In addition, warehouse planning should include the option for flexible use and expansion, for shelving and racking installations as well as for the building. The selection of suitable shelving and racking depends for example on the product range and the service level.

PRODUCT RANGE

The goods that are stored can be divided into three categories: A-, B- or C-items. A-items have the highest turnover rate, C-items the lowest. All items should therefore be placed in such a way that they can be accessed efficiently at any time. For this reason, A-items should be placed at the very front, if possible, and C-items at the back.

THE SERVICE LEVEL...

... is the ratio between the items in the warehouse that are actually available and those that are required. This allows to measure the extent to which demand for a particular item can be met from the existing stock. The quantity of items to be stored is divided into a replenishment quantity and a safety stock.

Cost analysis of different types of shelving & racking

INVESTMENT COSTS	HANDING/TRANSPORT COSTS	HANDING CAPACITY (PICKS)	VOLUME UTILISATION
Investment costs are the costs incurred until shelving or racking is installed and ready for use.	Handling/transport costs are per item. They include the cost of internal transportation, including labour.	Handling capacity is measured in picks, i.e. the quantity of items retrieved per unit of time.	Optimum utilisation of the available headroom of a warehouse/storage area.

●●●● = high

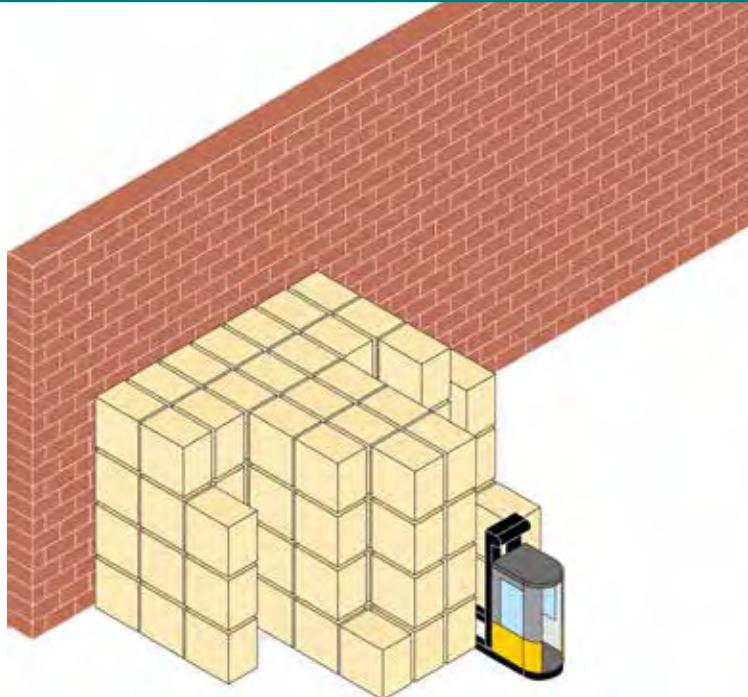
● = low

		Investment costs	Handling/transport costs	Handling capacity (picks)	Volume utilisation	Maintenance costs
Static storage systems	Pallet storage without racks (floor stacking)		●●	●●	●●●●●	
	Shelving for piece/unit load picking	●	●●	●●	●●●	●
	Mezzanine floor systems	●●	●●	●●●●	●●●●	●
	Conventional pallet racking	●	●	●●	●●●●	●
	Double deep pallet racking	●	●	●	●●●	●
	Narrow aisle racking	●●	●	●●	●●●	●
	Drive-in and drive-through racking	●●●●●	●●	●●●	●●●●●	●
Dynamic storage systems	Live storage racking/ Push-back racking	●●●●●	●●	●●●●●	●●●●●	●
	Mobile shelving and racking	●●●●●●	●●	●●	●●●●●	●●
	Automated storage installations for small parts/pallets (BITO type AKL and APL)	●●●●●●	●	●●●●●●	●●●●	●●●

FLOOR STACKING (STORAGE WITHOUT RACKS)

Floor stacking is the term used to describe a warehouse in which boxes, cartons or pallets are stacked on top of and next to each other without shelving or racking. Typical examples of goods suitable for this are palletisable goods (f. ex. beverages cases), drums or tires. Floor stacking is relatively inexpensive because there are no additional costs for racking, but it is space-intensive.

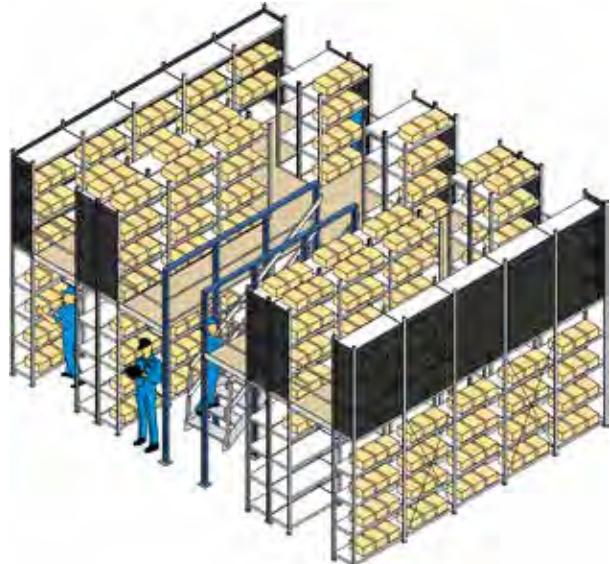
- Easiest way to store pallets in freestanding stacks
- This requires a large number of the same item, because re-sorting is time consuming.



SHELVING FOR PIECE/UNIT LOAD PICKING

Stored goods are placed on full-length surfaces. Handling equipment is not required. The most important advantage of the shelving system is its flexibility to store items without the need for bins or pallets. Therefore, this system is particularly convenient for accommodating piece items, from small parts and components to bulky goods. Shelving allows to use even the smallest corner of a warehouse.

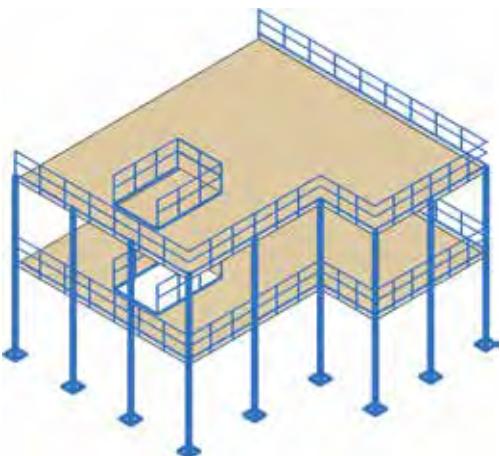
- Maximum floor space utilisation
- Storage of piece items without the need for handling equipment
- Manual loading and unloading

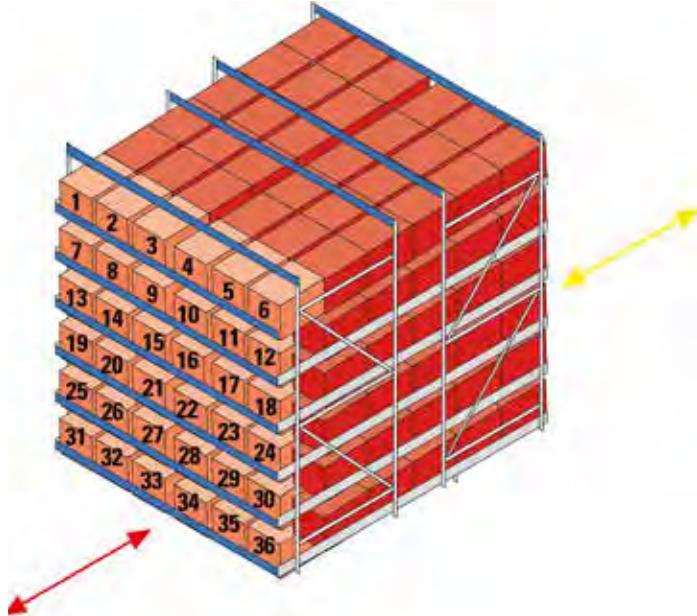


MEZZANINE FLOOR SYSTEMS

Mezzanine floors enable optimal utilisation of the warehouse volume and expansion of storage capacity without having to increase the warehouse footprint. The particularly sturdy design can be perfectly integrated into various concepts of use. The multi-tier configuration allows to “multiply” expensive floor space, thus offering the possibility to use the additionally created floor space for other activities.

- Maximum floor space utilisation
- Low investment compared to other storage solutions
- Increased storage capacity

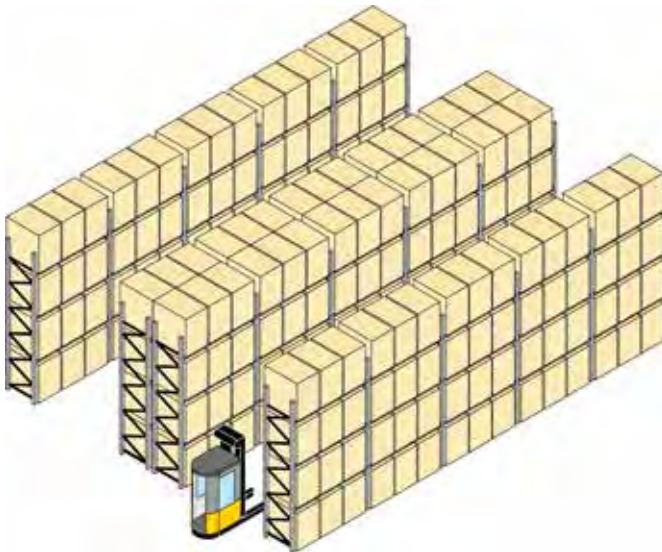




CARTON LIVE STORAGE RACKING

Our carton live storage example shows a storage unit that provides 36 reference lines on a small floor area. Each reference line is presented in a separate lane and is directly accessible at the picking front. Each item gently moves to its pick position at the front. Sufficient replenishment quantities guarantee constant product availability.

- Compact storage on a small footprint
- FIFO storage allows easy control of production batches and sell-by dates
- Separate loading and picking aisles increase operator performance



CONVENTIONAL PALLET RACKING

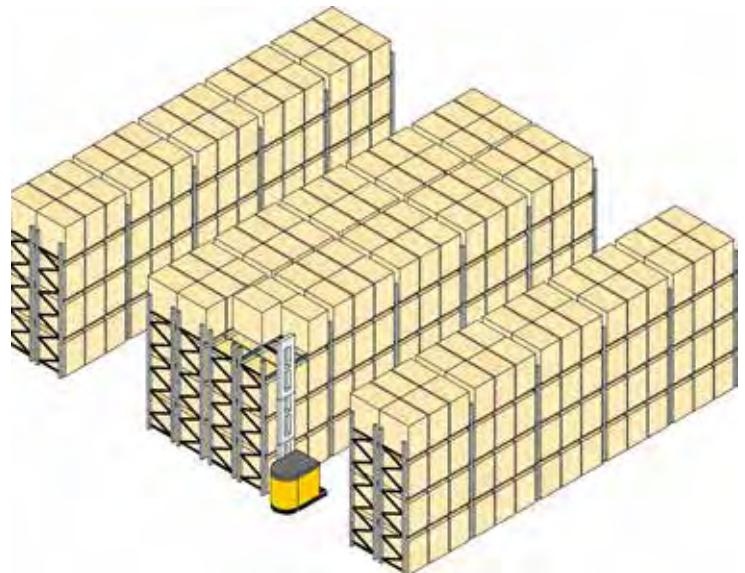
This commonly used warehouse storage system provides direct access to all pallets. Pallet racking can be easily adapted to changing requirements by retro-fitting BITO flow shelves at floor level height, thereby converting a storage-only pallet racking into a pick racking. BITO pallet racking comes with a wide range of accessories to store almost any load carrier.

- All pallets can be accessed immediately.
- Adaptability to any unit load type (broad selection of add-ons, floor level retro-fitting)
- Low investment compared to other storage solutions
- High degree of versatility

DOUBLE DEEP PALLET RACKING

In this system, a storage position accommodates two pallets that are stored one behind the other. This type of racking is serviced with a lift truck equipped with telescopic forks. This multiplies the number of pallets a service truck can access per storage level. Double deep racking thus achieves higher storage density and provides the possibility to save on service aisles.

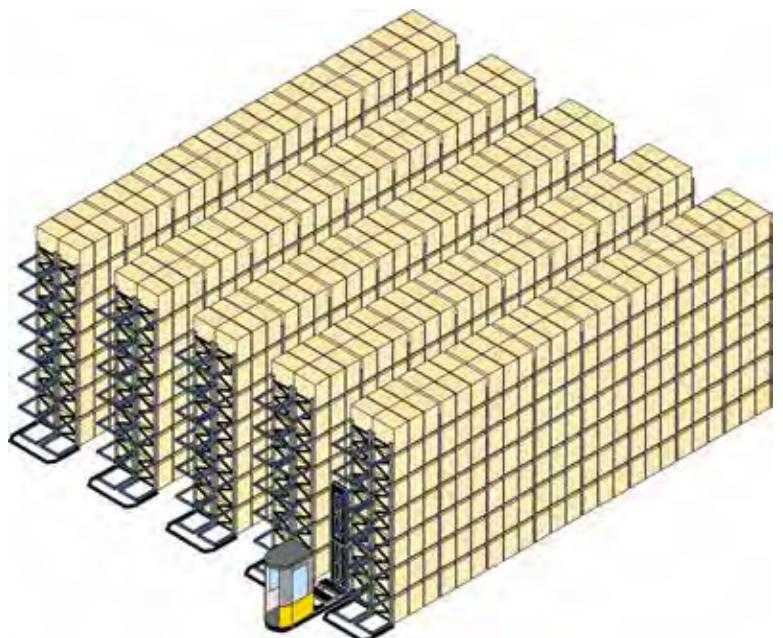
- Smaller footprint than one pallet deep racking
- Increased storage capacity
- Saves up to 25% of storage space in a warehouse compared to one pallet deep storage by improving volume utilisation

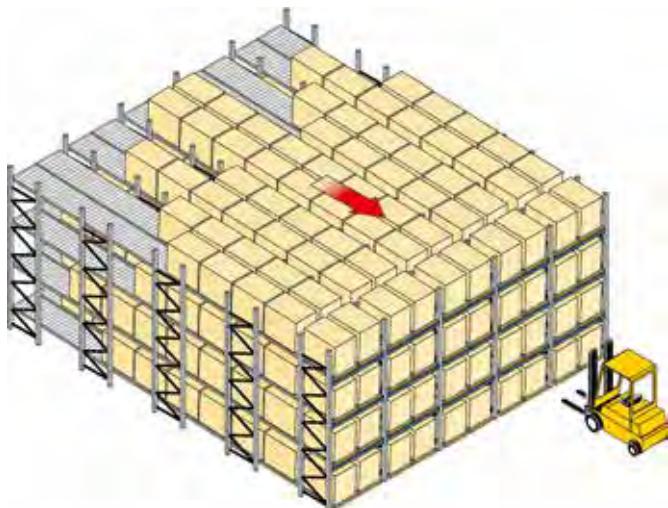


NARROW AISLE RACKING

Narrow aisle racking maximises floor space and warehouse volume. Especially when warehouse space is limited, reduced aisle width along with a high-bay design provide very dense, space and cost efficient pallet storage while still providing direct access to every pallet. Guide rails or wires fitted on the floor ensure precise truck manoeuvring, allowing safer and faster pallet loading and retrieval than in conventional pallet racking.

- High-bay configuration makes full use of the roof height
- Very narrow aisle (VNA) trucks boost handling speed and minimise the incidence of accidental damage to racking components

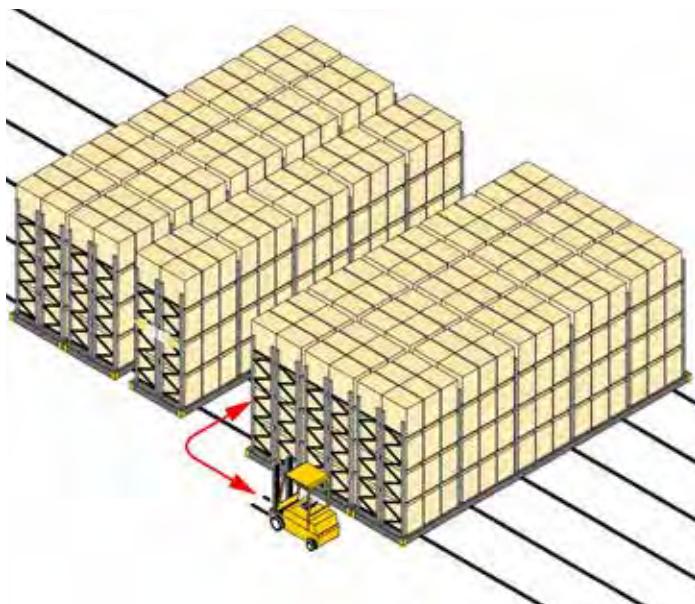




PALLET LIVE STORAGE RACKING

Pallet live storage racking provides high levels of storage density. Pallets are fed in at the loading side, and gently move to the opposite side of the racking installation. Roller tracks or full width roller lanes have a slight incline so that load carriers move gravity-driven from the loading side to the retrieval side. Pallet live storage works on a FIFO basis (first-in, first-out).

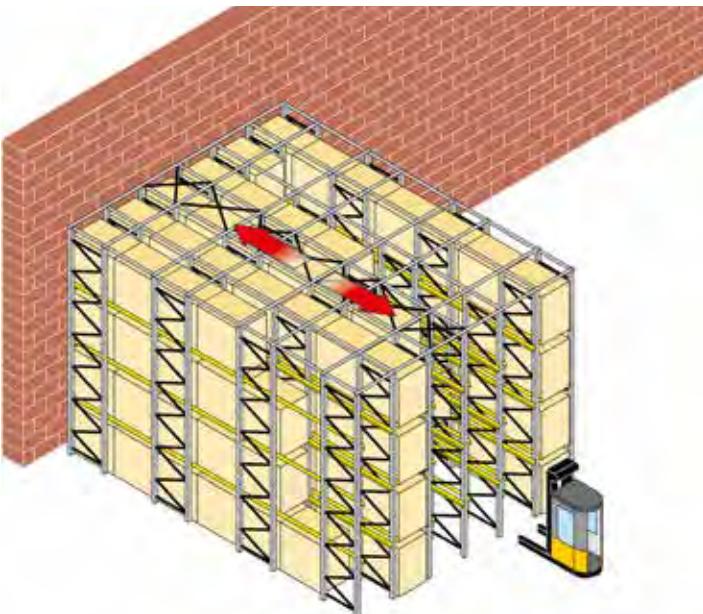
- Compact storage on a relatively small floor surface
- Easy control of sell-by dates and production batches.
- Separate loading and picking aisles



BITO PROMOBILE PALLET RACKING

This high-density storage solution is based on conventional pallet or cantilever racking rows that are mounted on mobile bases that move parallel to each other. When access to a particular item is required, the forklift driver gives the order to open the relevant aisle with a remote control unit. Light sensors prevent accidental aisle closing if people or stock are in the aisle. By using only a single access aisle at any time, pallet turnover is limited. However, the big benefit is that storage capacity doubles on the same area, because all the available space is used for shelving, not for aisles.

- Optimum space utilisation
- Lower stock turnover



DRIVE-IN RACKING

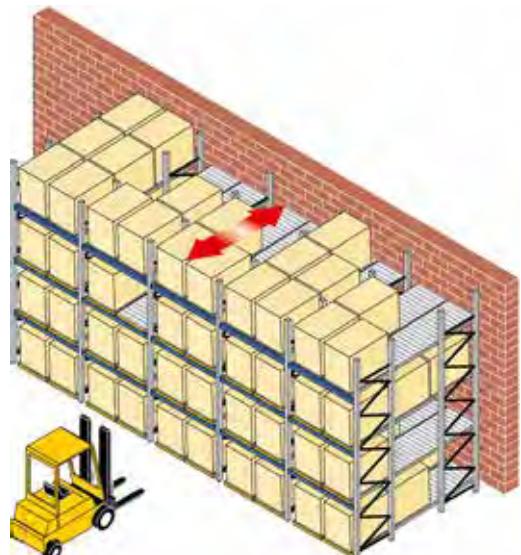
Drive-in racking consists of several adjoining lanes with angled seat profiles mounted to the uprights at the required level spacing. Storage units are loaded and retrieved with a forklift truck that operates within the racking installation, driving into the lanes that can be as long as needed. Drive-in racking works on a LIFO basis which is why this system is only suited, if no specific pallet/item must be retrieved.

- Storage on a small floor surface
- Ideal for a limited number of product lines and warehouses with high maintenance costs (climate-controlled warehouses)
- No service aisles between racking rows
- Similar to floor stacking, however with improved access to products and easier stock control

PUSH-BACK RACKING

Push-back pallet racking is similar in configuration to live storage racking with flow levels mounted at a slight incline. Pallets are stored in LIFO order (last in – first out) by pushing them “up” into the lane. The pallet which up to then was at the picking face moves to the second position in the lane. All other pallets in that lane also move one position to the rear. When retrieving the pallet which was last fed in, all other pallets will move gravity-driven one position forward to the lane front.

- Space saving, compact storage solution
- Only one aisle required for loading and picking
- All goods are always accessible at the picking face

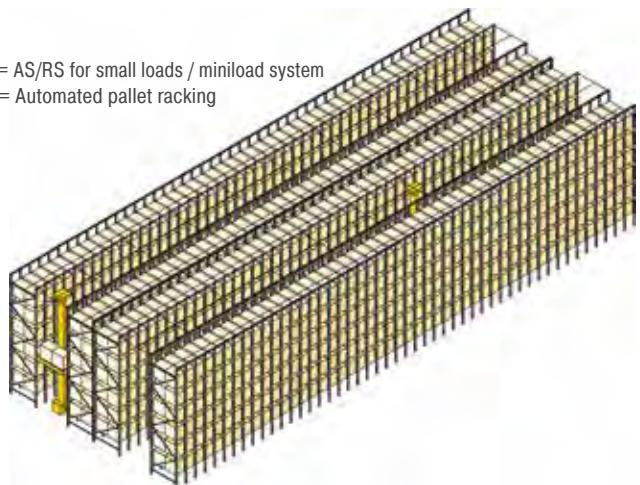


AUTOMATED STORAGE “AKL” AND “APL”

Automated Storage & Retrieval Systems (AS/RS) are designed for accommodating either small parts in bins or on trays (BITO AKL) or pallets and wire-mesh box pallets (BITO APL). AS/RS installations are serviced by rail-guided, computer-controlled stacker cranes moving laterally and horizontally on a fixed path, which is why they need less space than a manual service vehicle. AS/RS systems must be perfectly adapted to the storage items, so the product portfolio should not be subject to variations.

- Very high degree of space utilisation
- Computerized inventory control
- Considerable investment

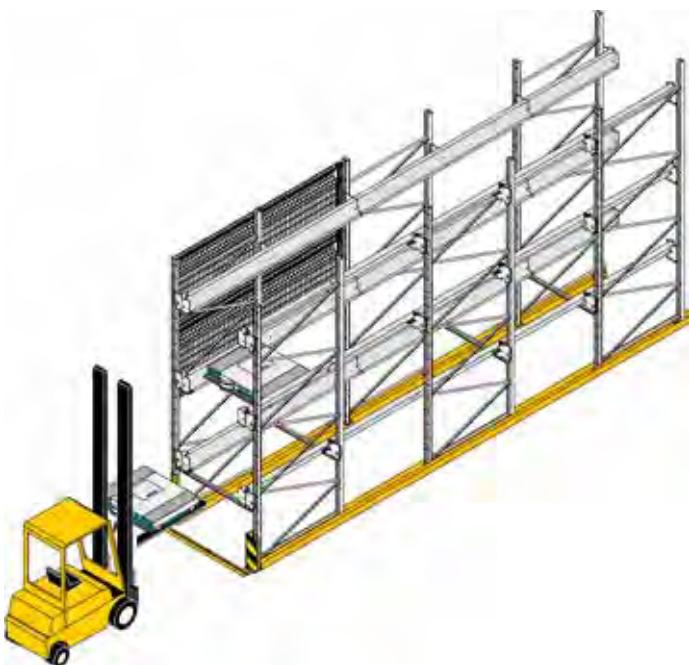
AKL = AS/RS for small loads / miniload system
APL = Automated pallet racking



PROMOTION SHUTTLE RACKING

BITO PROmotion shuttle racking is a channel storage system. Providing a high storage density, it is an alternative to drive-in racking, push-back racking and pallet live storage. Pallets can be stored in FIFO as well as in LIFO order. They are placed on a shuttle which moves them to the back and to the front of a channel. There is no need for the forklift to drive into the racking structure. The pallet shuttles are battery-powered and remotely controlled by an operator. A sophisticated security concept ensures constant availability of the system.

- Pallets are handled by a shuttle. This minimises lift truck travel distances.
- Channels can be as long as needed
- Unlike lanes in pallet live storage, channels do need an incline – optimum utilisation of roof height
- Loads weighing between 0 and 1,500 kg can be stored in the same channel





BITO
www.bito.com

Multi-system storage solutions

Functional and efficient order picking warehouses are rarely mono-system warehouses in terms of organisation, strategy and shelving and/or racking technology. From an economic point of view, a mix of different strategies and material handling equipment will usually achieve the optimal result. Shelving and racking are at the heart of any warehouse. They make a significant contribution to streamlining workflows and increasing picking performance.

The decision for the suitable shelving and racking systems is largely determined by the number of reference lines, item quantities, item size and the number of items leaving the warehouse per defined period of time. As a rule, it is not the number of replenishment cycles that is decisive, but the different handling volume per SKU.

Just as holding too much inventory is inefficient, too little inventory is also uneconomical as it would require too many replenishment operations or cause workflow disruptions at picking stations due to missing items.

Example layouts

Which shelving and racking systems are combined and how they are exactly positioned in a warehouse depends on several factors such as order picking methods, picking routes, space considerations or item characteristics. The goal of any investment in a warehouse redesign or a new construction is to streamline operating processes, save working time

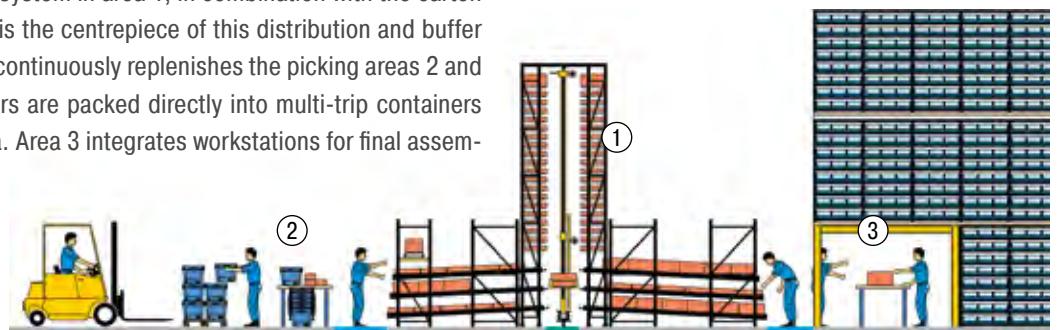
by shortening access and travel times, gain space, improve staff performance, thereby increasing overall productivity.

BITO has established itself as a solid player on the market.

Your project will be analysed by dedicated teams who will work out the most efficient solution for your application.

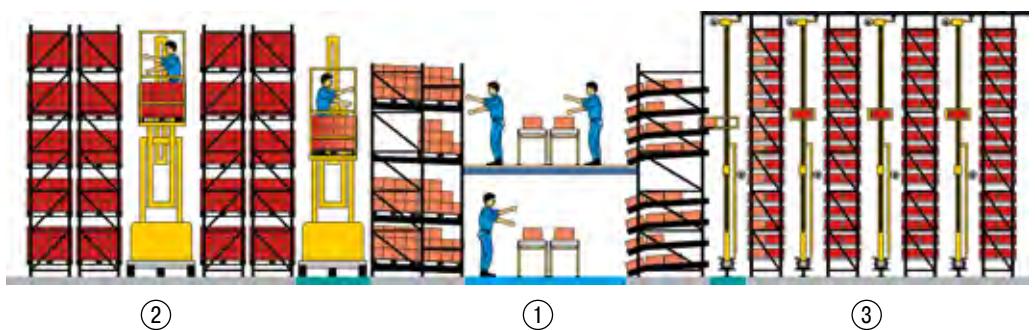
1. 3

The automated small parts storage system in area 1, in combination with the carton live storage system on either side, is the centrepiece of this distribution and buffer store. An automated stacker crane continuously replenishes the picking areas 2 and 3. In area 2, picked customer orders are packed directly into multi-trip containers and transferred to the shipping area. Area 3 integrates workstations for final assembly on the floor level of a multi-tier installation. The space in this layout example is used for 3 different purposes.



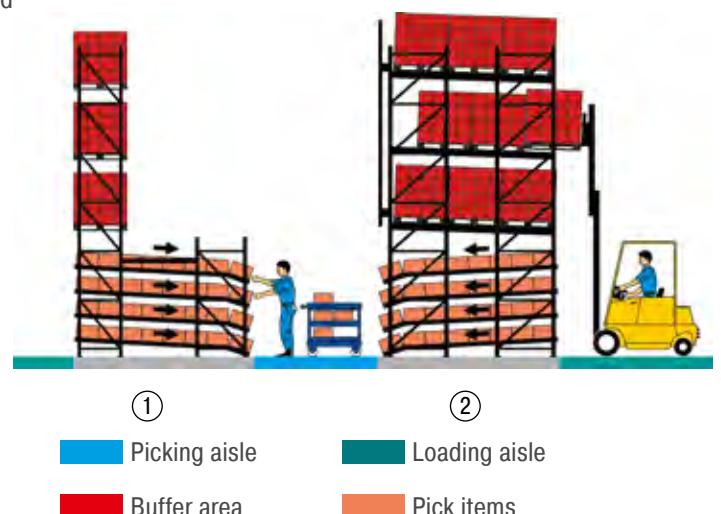
2. 3

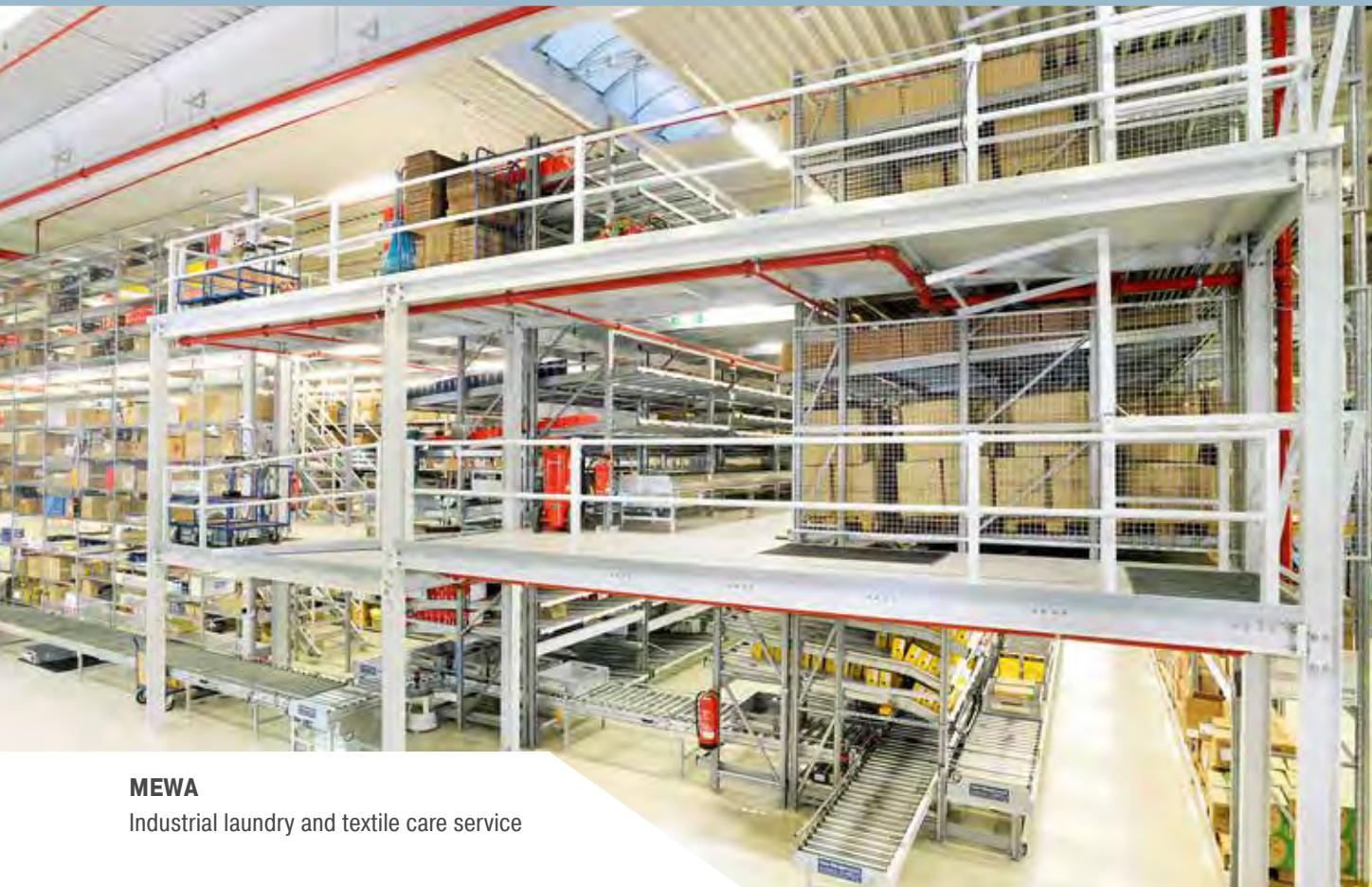
The order picking zone (area 1) is supplied with goods from two different racking systems. The conventional high-bay pallet racking in area 2 stocks palletised storage units which are fed into a pallet live storage installation for off-pallet picking. The automated small parts storage/mini load installation (area 3) holds items in bins or trays which are fed by stacker cranes into the carton live storage installation in the picking area. Picked customer orders are then conveyed to the shipping area on a powered conveyor lane.



3. 3

The combination of carton live storage with either a static pallet buffer or a push-back pallet buffer on top is widely used. The buffer stock on top always holds sufficient reserves and avoids downtime in the picking zones. The static pallet buffer in area 1 is the budget friendlier option. However, the space above the live storage installation remains largely unused, whereas the push-back pallet racking in zone 2 makes full use of the available headroom, thus multiplying potential reserve quantities.





MEWA

Industrial laundry and textile care service

FEATURES

- Designed to allow continuous expansion
- Flexible, modular structure
- Several storage systems and picking techniques have been combined into a very efficient solution

CUSTOMER REQUIREMENTS

MEWA develops, delivers and services work apparel, protective clothing and technical equipment. Storage, picking and distribution have been consolidated in a logistics centre in Immenhausen which has been constantly growing over the years. The MEWA solution includes pallet racking, carton live storage and multi-tier shelving as well as an integrated conveyor system to link the picking stations. The concept of the system was implemented in five steps. As soon as the first investments were made, the warehouse design was planned in a way to take future expansion into account.



BENEFITS

- The shelving and racking layout allows modular expansion
- Existing storage systems and equipment can be used further on
- Increased performance
- Storage and picking capacities have doubled



Office Depot

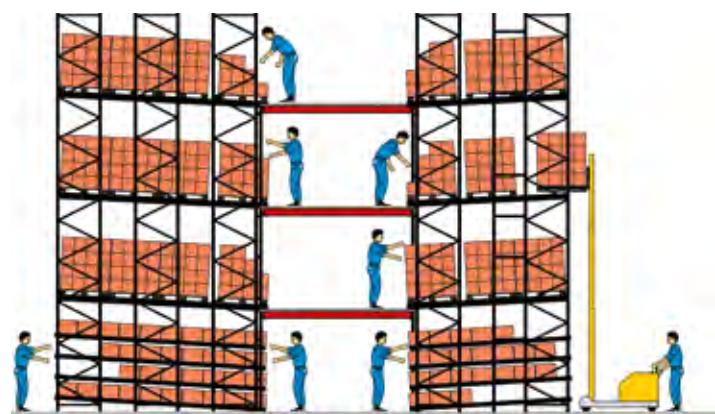
Global supplier of office products and services

FEATURES

- Combination of carton and pallet live storage as well as conventional pallet racking and shelving
- Modular system provides flexibility
- Pick-by-light order picking

CUSTOMER REQUIREMENTS

Office Depot is a leading provider of office supplies and services. In the course of business expansion, a new distribution centre has been established in Großostheim. A three-tier facility featuring pallet racking and pallet live storage with an integrated mezzanine floor as well as carton live storage racking with integrated conveyors make sure that order pickers never run out of goods. The modular layout allows maximum flexibility and optimum adaptation to changing requirements. Order pickers are guided by a pick-to-light system.



BENEFITS

- High throughput
- Efficient order picking
- Shorter order processing times
- Storage and output capacity can be increased at any time
- The modular configuration allows optimum adaptation to changing material flow requirements



BITO
www.BITO.COM

Single tier and multi-tier shelving

Shelving systems are mainly used for storing and picking non-palletised loads, loose goods stored in bins and cartons or packaging units that can be handled manually in terms of dimensions and weight. A wide range of accessories can be added later on to this modular system. This allows efficient storage of almost any product, part or component.

A well-designed shelving configuration that makes the best possible use of space will multiply the available floor space of your warehouse. Simultaneous picking on several tiers helps to considerably reduce order throughput times.

The walkways on the different floors are connected by stairs and/or elevators.

PRODUCT INFORMATION

Frequent application

- Order picking from single tier or multi-tier shelving

Service options

- Manual loading and retrieval

Storage options

- Goods can be stored short side or long side facing or standing

Surface/volume utilisation

- Multi-tier shelving maximises the available floor space
- Multi-tier constructions make full use of vertical space



AREAS OF APPLICATION

- As supply racking along assembly lines and for intermediate storage in order picking areas
- For single item order picking in the service and supply industry
- As pick rack in distribution for preparing one-on-one deliveries

STORAGE UNITS

Conveniently sized packaging units, binned or boxed products, individually wrapped items or bulk items

Stock rotation frequency

- Medium stock rotation frequency (B-items)

Stock characteristics

- Any product whether in standard size or with an odd shape, bulky products, unwrapped single items



BITO PRODUCT CATALOG

To look at our complete product range with comprehensive product information, ask for our PRODUCT CATALOGUE. We will be pleased to send you a free copy. Simply e-mail us at:
info@bito.dk (DK)
info@bito.fi (FI)
info@bito.se (SE)



Product brochures and in-depth information can be downloaded at:
<https://www.bito.com/da-dk/service/vejledninger-og-brochurer/> (DK)
<https://www.bito.com/fi-fi/neuvaja-ja-palvelua/asennusohjeet-ja-esitteet/> (FI)
<https://www.bito.com/sv-se/raadgivning-och-service/monteringsanvisningar-och-broschyer/> (SE)

For further assistance please contact our project support at:

Tel. +45 70 21 51 51 (DK) Tel. +358 10 324 6510 (FI) Tel. +46 (0)42 151 910 (SE)

BOLTLESS SHELVING

The basic components of boltless shelving include frames, stiffening beams, shelves and cross bracing.

The components of this push-fit system have been designed for optimum rigidity and high load capacities.

- Shelf load capacity: 100 kg to 300 kg
- Bay widths: 750, 1000 and 1300 mm
- Shelf lengths: 750, 1000, 1250, 1300 mm
- Wide range of accessories such as solid sheet or wire-mesh side/back cladding, full sheet/wire-mesh/wire dividers.



2. STIFFENING BEAMS

Each hook connector has 3 solid hooks for reliable force locking into uprights.

- Excellent lengthwise rigidity
- Convenient drop-in fitting of shelves
- Height adjustable in 25 mm increments
- Fast and easy hook-in fitting



COMPONENTS AND ACCESSORIES

- 1 Frames
- 2 Side cladding, solid sheet
- 3 Side cladding, perforated
- 4 Side cladding, wire-mesh
- 5 Slotted shelf to accept dividers
- 6 Wire divider
- 7 Wire-mesh divider
- 8 Solid sheet divider
- 9 Stiffening beam
- 10 Tyre beams
- 11 Bin shelf for loose items
- 12 Shelf front panel
- 13 Support rail for divider bars (vertical storage)
- 14 Push-fit divider bar
- 15 Solid steel shelf
- 16 Wire shelf
- 17 Wire basket
- 18 Wire divider for wire baskets
- 19 Cross bracing

- 20 Hanging file rail
- 21 Back cladding, solid sheet
- 22 Back cladding, wire-mesh
- 23 Clothes rail

More accessories on request



1. FRAMES

- High load bearing capacities and excellent rigidity
- Uprights are only 50 mm wide
- Minimum loss of clear shelf length
- Easy-to-assemble system without bolts



3. SHELVES

The shelves are simply placed onto the stiffening beams or fitted with 4 shelf clips. Both options ensure full shelf load capacity.

- High shelf load capacities
- Height adjustable in 25 mm increments
- Fast and easy drop-on fitting

Single tier shelving

The modularity of BITO shelving allows to realise extremely flexible storage configurations and to perfectly adapt your shelving facility to building constraints. BITO shelving is assembled without bolts. Cleverly designed accessories cater for a very wide range of applications in any industry.



SHELVING TYPE EL AND L PERFECT FOR EXTRA LIGHTWEIGHT AND LIGHTWEIGHT LOADS

Considering the actual weight of shelved goods, it often becomes apparent that many shelving installations are "oversized" as to their load capacity. BITO shelving type EL, which is built without beams and still has a load capacity of 100 kg per shelf, provides the optimal solution. Should your storage requirements change, it is no problem to upgrade shelving installations type EL to type L. Simply retrofit beams to increase bay load capacity from 800 kg to 1300 kg!



SHELVING TYPE M AND S PERFECT FOR MEDIUM AND HEAVY LOADS OF UP TO 300 KG PER SHELF!

Shelving is expected to meet the most diverse needs: There are bulky and heavy goods which will need a wider level spacing than small packaging units or single items which can be stored in shelving units with a smaller level spacing. Customers may want to make full use of the available headroom in their premises and therefore opt for multi-tier shelving. Other applications may need low height shelving to allow handling without access equipment. Our task is to provide the right solution for every requirement. BITO shelving type M and S provide unmatched versatility. With the right accessories, configuration and design options are almost unlimited.



Single tier shelving Application examples

OFFICE AND ARCHIVE SHELVING PROVIDE SPACE-SAVING FILE STORAGE

Although paperless filing is on the increase, there are many record types that have to be kept as hard-copy for many years. Space-saving, yet easily accessible storage of documents is therefore essential since available storage capacities are usually limited. For this reason, BITO archive shelving comes in various height and length options for optimum adaptation to the specific conditions of your premises. Further options include shelving for single-sided or double-sided access as well as shelving with a galvanised finish or with epoxy-coating in light grey, RAL 7035.

- Shelf levels can be adjusted on a 25 mm pitch
- Excellent stability
- Easy to assemble



GIVE A NEW LOOK TO YOUR SALEROOMS AND IMPROVE YOUR WORK ENVIRONMENT WITH COLOUR

Choosing the right colour scheme for your bins and containers or even your entire warehouse will not only find your employees more comfortable and efficient. Colours help to make a difference and to coordinate furnishings and equipment with corporate colours. Guided by these considerations, our storage and order picking equipment is available in a range of standard colours, but can also be supplied in any requested colour for a brighter look, immediate product identification and easy picking.

- Improved product presentation
- Visual separation of work areas or product lines
- Colours help to visually delimit work areas
- Colours create a positive work environment



PROPER AND SPACE-SAVING TYRE STORAGE

Whether summer or winter tires: When not needed at the moment, tyres must be stored properly. Correct storage is the only way to ensure their road safety and increase their service life. BITO tyre shelving was specifically developed for this purpose. Our strong tyre beams are 400 mm deep and enable upright storage of tyres or rims with a diameter between 578 mm and 624 mm.

- Vertical storage instead of storage in stacks
- Specifically shaped tyre beams protect tires and rims
- Access to every single tyre/rim



OPTIMAL SOLUTION FOR SUPPLYING MATERIALS AND PRODUCTS IN A HANDY SIZE

Whether you need to supply small parts to production and assembly areas, the goods-out department or in your warehouse, you can rely on BITO to provide the optimum solution for your application.

Your benefits: As BITO is one of the few single source manufacturers of shelving and racking as well as of bins and containers, we are able to offer both product groups perfectly coordinated.

- Improved product presentation
- Visual separation of work areas or product lines
- Colours help to visually delimit work areas
- Colours create a positive work environment



Multi-tier shelving stores a large product portfolio on a small footprint

MAXIMISES USE OF SPACE



MULTIPLIES YOUR FOOTAGE OF USABLE SPACE!

COMPACT AND SPACE-SAVING

- Optimum utilisation of cubic space
- Maximum floor space utilisation

MODULAR AND SCALABLE

- Customizable to all kinds of products
- Combines various shelf and bay load requirements
- Can be adapted or extended to address peaks and growth
- Ideal for handling varying/seasonal product lines

OPERATIONALLY EFFICIENT AND COST EFFECTIVE

- The investment costs amount to only a fraction of the sum that has to be invested in an automated system
- Lower operating costs
- Higher order throughput, as orders can be picked on several levels at the same time



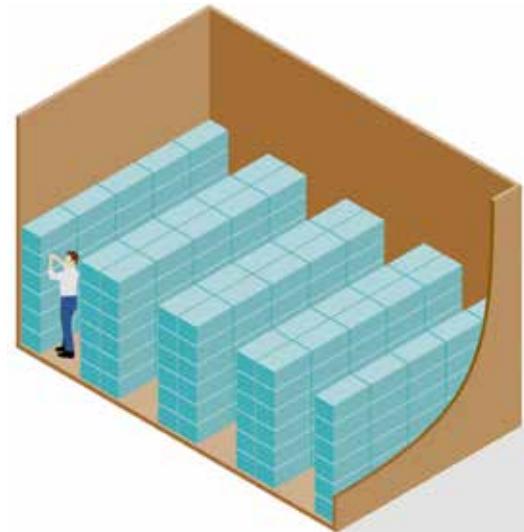
MULTI-LEVEL FACILITIES WITH INTEGRATED PLATFORMS AND CATWALKS ARE MAINLY USED FOR STORING AND PICKING NON-PALLETISED LOADS, SMALLER COMPONENTS IN BINS OR CARTONS, UNPACKED ITEMS AND BULK GOODS.

It is suited for storing almost all kinds of items. Multi-tier shelving makes optimal use of your warehouse cubic space and at the same time multiplies expensive floor area. Simultaneous picking at different levels can speed up order throughput many times over. The individual levels are connected by stairs or elevators.

Advantages of the system

HUGE INCREASE IN STORAGE CAPACITY

Multi-tier facilities increase space utilisation by making full use of the available headroom, thereby maximising storage capacity in your existing building.



PLENTY OF ROOM FOR MANY PRODUCT LINES

Any company that has to manage a product portfolio with a large and varying number of product lines faces the challenge of living up to customer expectations. Multi-tier installations offer the flexibility you need for coping with spikes in demand.

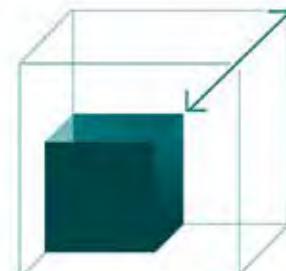


Particularly in the e-commerce sector, flexibility is key when it comes to quickly adapting to consumer behaviour and seasonal peaks.



QUICK ADAPTATION TO NEW REQUIREMENTS

Multi-level shelving is the optimum solution for responding flexibly to future changes in your product range and to growth. It can be adapted or extended to address peaks no matter when they occur.



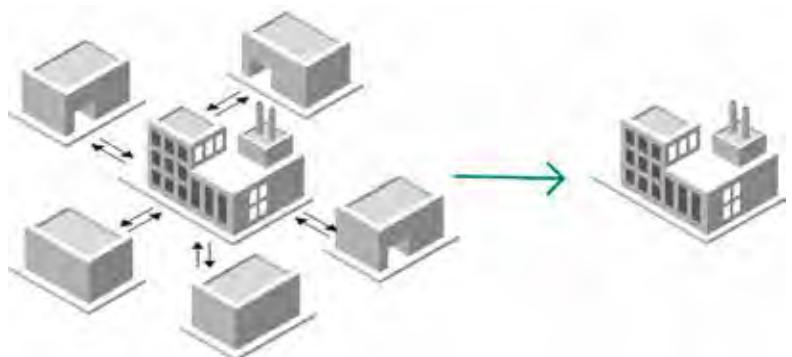
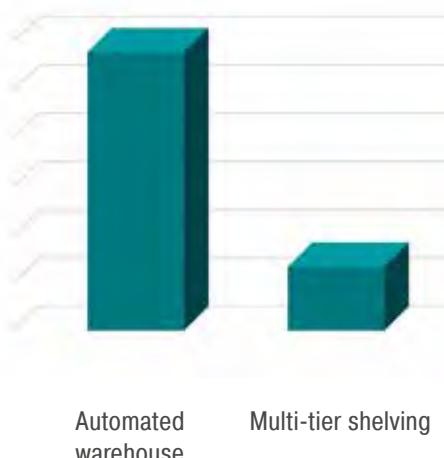
MODULARITY AND FLEXIBILITY

Coping with peak demand during the holiday season or after special sales promotions is no longer a problem. Whenever demand levels pick up, the number of operators can be increased to assist with high order volumes. There is no need to automate your processes.



CENTRALISED WAREHOUSING

Many companies choose a multi-tier solution to keep their entire inventory in one single warehouse instead of operating several facilities in different locations. A centralised warehouse will make inventory management easier, eliminate utility expenditures for different warehouses and decrease the cost of shipping between warehouses.



LOW INVESTMENT COSTS

The investment costs for a multi-tier system amount to only a fraction of the sum that has to be invested in an automated system. This reduces your financial risk. The flexibility of a multi-tier solution will further help you spend less on internal and external logistics.

»BITO presented a convincing warehouse layout and was able to provide a solution to all our requirements. Very important, too, was the fact that our tight time schedule from concept to completion did not deter them.«

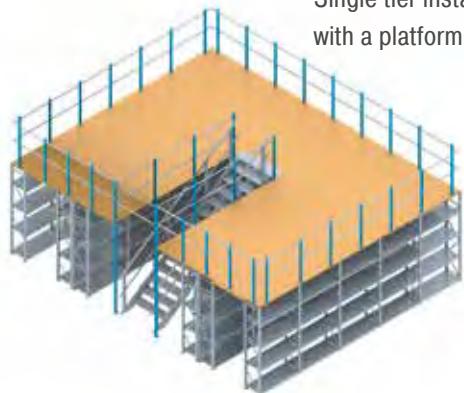
Florian Herr, Head of Operations at Publikat Verlags- und Handels GmbH Co. KG.
The publishing house opted for a platform system from BITO.

MULTI-TIER SHELVING

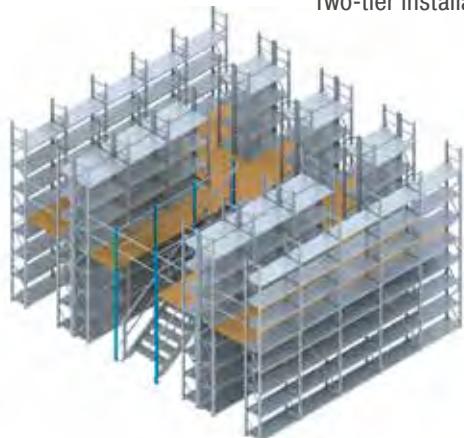
Multi-tier installations can be designed either as single tier shelving or racking with a platform on top or as a multi-tier construction. Additional work areas can be created on the floor level as well as on the tiers on top.

Our representatives are happy to meet you on-site to discuss the optimal design for your needs. Depending on your specific work processes and material flow, as well as your requirements and current conditions, we will show you the advantages of each system and advise which design is best suited for your business. Together with you, we will design the solution that is perfectly tailored to you.

Single tier installation
with a platform on top



Two-tier installation



Three-tier installation



COMPONENTS AND OPTIONS

BITO multi-level systems are constructed with high-quality components and can be extended and upgraded at any time. Should your requirements change, the system can be easily retrofitted with a wide range of accessories and adapted to the new conditions. Shelving systems accommodate almost any kind of product.

SPOTLIGHT ON A KEY COMPONENT OF MULTI-TIER SHELVING: BITO SHELVES

Our shelves are made for different load capacities and come in various lengths, depths and widths to provide you with the highest level of flexibility to store a wide and varying product range. Shelf spacing can be adjusted on a 25 mm pitch, providing utmost flexibility in storing products of various sizes.

SHELVES "40"

BITO shelves with a height of 40 mm are suited for a wide range of applications for optimum adaptation to your product portfolio. The shelves can be supplied with a load capacity of 100 kg, 200 kg and 300 kg.

More information on shop.bito.com

OUR
TOP SELLER



SHELVES "25"

Our low-height shelves are only 25 mm high. They allow to fit in even more storage levels to make maximum use of the headroom in your building. The shelves are available with a load capacity of 70 kg or 150 kg.

More information on shop.bito.com

With a height of only 25 mm, these shelves save space and provide more storage capacity.



WIRE SHELVES "GRID" FOR ADDED FIRE PROTECTION

If you need a shelf that allows water and air to pass through for added fire protection, the BITO GRID shelf is the ideal solution. It is ideal for environments where sprinkler systems must be installed. The shelves are also suitable for cold and deep-freeze stores as they do not stop air ventilation.

In addition to these benefits, GRID shelves let light pass through, creating a brighter and more pleasant work environment.



Additional equipment options for multi-tier installations



1. FLOORING

Select the right flooring for your application. Not sure what you need? We are happy to advise you on the range of chipboard and mesh deck options.

2. SHELF DIVIDERS

Dividers help to organise your stock. They are slotted into the shelf perforations and can be easily relocated to change compartment size. Dividers facilitate product identification and clearly separate product lines, returns etc.

3. SPRINKLER SYSTEM

In order to help you comply with fire protection regulations, we prepare your facility with fixtures for installing a sprinkler system.

4. STAIRWAYS

Stairs provide access to the different floor levels.

5. LIGHTING

Good lighting brightens up your workspace, keeps your employees safe and improves productivity.

6. PALLET TRANSFER POSITIONS WITH AN UP AND OVER PALLET GATE

Pallet transfer positions on platforms enhance operational safety and optimise your picking operations. We are pleased to furnish your facility with the required number of transfer positions.

3



4



5



6



7

8

7. SPIRAL CHUTES

Spiral chutes help to optimise the workflow between order picking areas and despatch zones by gently transferring products from one level down to the next.

8. LIFTS

Alternatively, if material needs to be moved from one floor to the next, lifts are the ideal solution. BITO will be pleased to advise you in detail at the planning stage should you choose to explore this option.



FEATURES

- Combination of back-to-back shelving runs and single racking rows with a maximum length of 17054 mm
- Manual order picking from shelving type EL
- Level spacing in 25 mm increments
- High-quality, impact and scratch-resistant epoxy coating in light grey, RAL7035

CUSTOMER REQUIREMENTS

Since 2012, myTime.de, a company of the Bünting group, has been selling groceries online throughout Germany. The product range includes more than 34,000 products. In addition to fresh products such as fruit, vegetables, meat and cold cuts, dairy products and frozen foods, the online grocery also sells drugstore products, pet food and household products. For their extensive product range, myTime.de needed a clear and coherent warehouse structure. The new shelving system was to be designed for future expansion in order to be able to react to a rapidly changing product range.



BENEFITS

- The BITO shelving system ensures maximum flexibility
- Shelf levels can easily be adjusted in height within a few seconds
- The BITO standard product is immediately available for add-ons
- Fast and easy assembly
- Easy-to-clean epoxy-coated surfaces



Globetrotter.de
Ausrüstung

Globetrotter
Outdoor retailer

FEATURES

- Light duty shelving type L in all storage and sales areas
- Shelving units of various widths and depths have been installed depending on the available room space

CUSTOMER REQUIREMENTS

For 37 years, the German Globetrotter Ausrüstung GmbH have been convincing their customers with carefully selected travel and outdoor equipment and have meanwhile grown into one Europe's largest retailer for outdoor products. The outfitter can boast a range of 35000 products from more than 1000 brands sold in experience shops and by distance trade. The customer was looking for a versatile storage solution that would adapt to the different dimensions of the goods, grow/adapt as the range of goods expanded/changed, and at the same time would take up little space.

BENEFITS

- Optimum space utilisation
- Attractive product presentation
- Flexible shelving configuration: Shelf levels can easily be adjusted in height within a few seconds.
- High manufacturing quality minimises the risk of injuries during order picking and prevents product damage





ASWO GmbH
Spare parts provider for
consumer electronics

FEATURES

- Shelf storage of packaging units and products in convenient dimensions
- Operator-to-goods order picking

CUSTOMER REQUIREMENTS

ASWO International Service GmbH in Eime supplies spare parts, service and repair workshop demand for electronic appliances. The distribution centre accommodates more than 120 000 references in BITO boltless shelving with slotted shelves to accommodate dividers. Level spacing can be adjusted on a 25 mm pitch. The shelving units have been installed on steel platforms. Incoming orders are shipped to customers throughout Germany on the same day. A, B and C-items are picked manually on several levels according to the operator-to-goods principle.



BENEFITS

- very good availability of goods
- simultaneous order picking on several tiers
- optimum utilisation of available warehouse space
- shorter travel routes



CTDI GmbH
Global Engineering,
Repair & Logistics

FEATURES

- High bay shelving facility
- Manual order picking
- A rail-guided man-up stacker crane provides fast access to goods

CUSTOMER REQUIREMENTS

As a manufacturer-independent partner, CTDI Europe offers innovative and cost-effective solutions for operators, manufacturers and contract manufacturers of telecommunications equipment. The test and repair portfolio comprises more than 75,000 different assembly types from various manufacturers worldwide. Sorted by logistics model, these systems are stored in 4.50 m high single tier shelving in the exchange pool warehouse after repair. They can be delivered on call within a few hours. Fast and direct access is extremely important in this case and is optimally ensured by the shelving system. A rail-guided man-up device speeds up the picking process.

BENEFITS

- Optimum utilisation of floor surface and warehouse height
- Narrow aisles allow compact storage
- Fast access through short travel routes
- Operators do not need a fork lift truck permit;
initial instruction is sufficient





FEATURES

- Two-tier shelving installation
- BITO GRID fire protection shelves (air and water permeability of 50% according to VdS guideline CEA 4001)
- Manual handling of boxed items

CUSTOMER REQUIREMENTS

Continental, best known as tyre manufacturers for passenger cars, commercial vehicles and two-wheelers, has grown into one of the world's major automotive suppliers. With 150 years of experience in development and production and meanwhile more than 235,000 employees at 561 locations in 58 countries, Continental holds an exceptional position within the automotive industry.

The aim of refitting the warehouse was to make optimum use of the existing storage space. The customer was looking for a cost-effective solution that would meet the requirements of the existing fire protection concept.

BENEFITS

- Low-cost project realisation by using standard components
- The 2-tier facility offers many times more storage space on the same floor area
- Easy and fast push-fit assembly of all components with the option of later-on adaptation to new requirements
- Budget-friendly solution, as no additional fire protection equipment is necessary





Eurotape
Logistics partner for
digital media production

FEATURES

- 2-tier facility combining BITO carton live storage, pallet racking and shelving
- 30,000 storage positions in more than 10,584 flow lanes
- The second level is used as a buffer store for palletised goods and can be retro-fitted into a pick area when required

CUSTOMER REQUIREMENTS

Since the early 1980s, Eurotape has been one of the most prominent specialists in media duplication, preparation, production and logistics. Every year, their pressing plant produces more than 20 million DVDs, Blu-Rays and CDs. The portfolio includes the full range of media services such as film scanning, restoration, format conversion, authoring, mastering, graphic design and multilingual subtitling. A storage area of 20,500 m² was to be designed at the Berlin location which stores 15 million products and ships some 19.5 million items to customers worldwide. Delivery throughout Germany is made within 24 hours. Continuous availability of all products must therefore be guaranteed.

BENEFITS

- Optimum utilisation of the available headroom
- Significantly reduced order throughput times
- Numerous reconfiguration options for later adaptation / expansion





DeLaval

Integrated solutions provider
for dairy producers
and animal breeders

FEATURES

- Integrated solution combining a large part of the BITO shelving & racking portfolio:
- 3-tier shelving installation for small parts and conveniently sized packaging units
- Pallet racking, carton and pallet live storage and cantilever racking
- Steel construction platforms
- Conveyor technology

CUSTOMER REQUIREMENTS

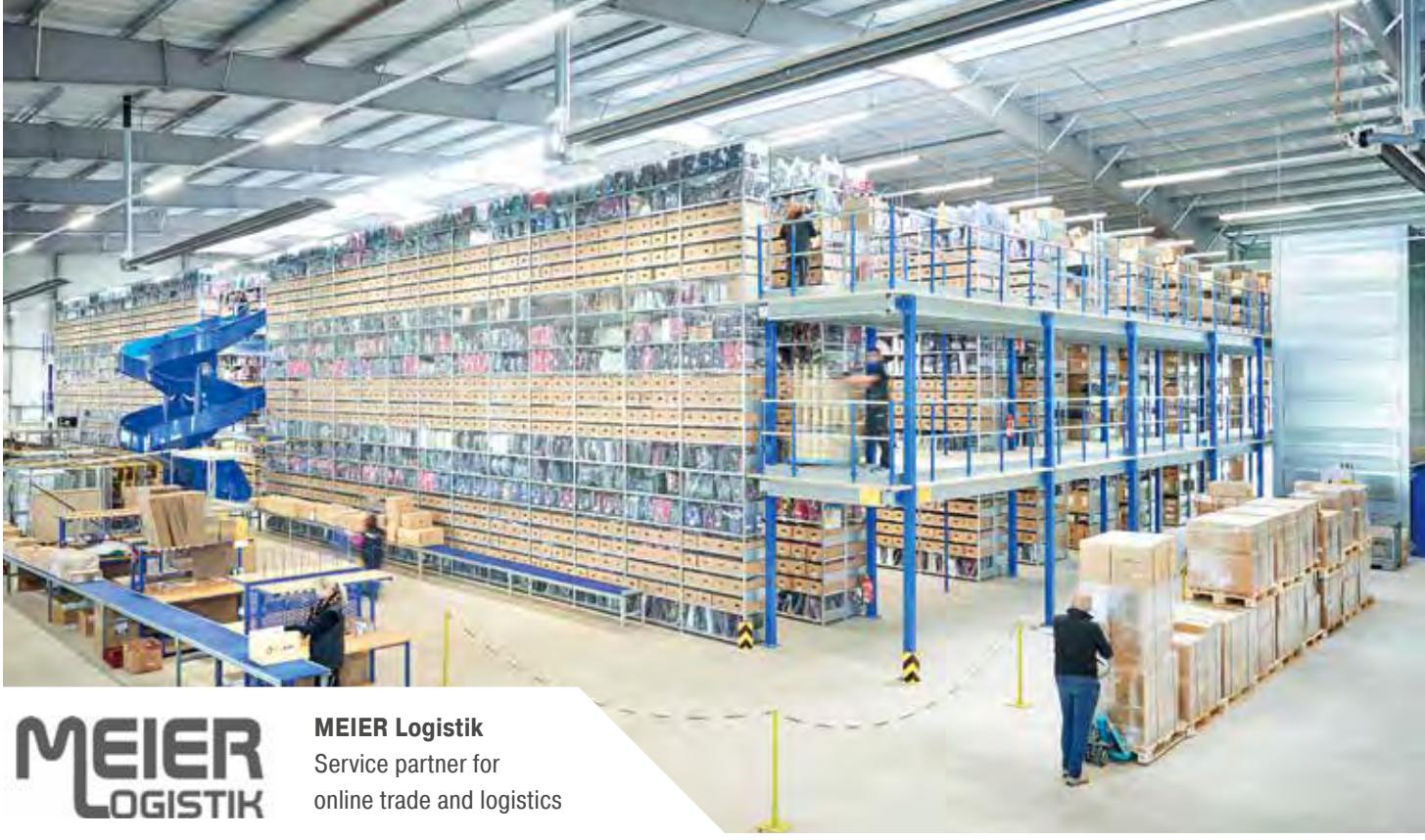
DeLaval is a leading global supplier of products and equipment for dairy production and animal husbandry. The portfolio also includes a comprehensive range of services such as the sale of accessories, knowledge transfer and advice to help dairy farmers increase their farm profitability and improve animal welfare.

As the old location became too small, the decision was made to build a completely new logistics hub covering 52,000m² of warehouse space in Gallin. The equipment, selected in compliance with the most modern and sustainable guidelines, was to ensure more efficiency and flexibility, save costs and also create space for further growth.

BENEFITS

- Manifold increase in storage capacity
- Best possible use of warehouse floor space and volume
- Centralised storage: short distances enable efficient management
- Flexibility to respond to order volumes that are difficult to forecast





MEIER Logistik
Service partner for
online trade and logistics

FEATURES

- 3-tier shelving facility with 7,000 shelves and a height of 7.5 m on a floor area of 1,250 m²
- Every tier provides an effective storage surface of some 6,000 m², subdivided in 3 areas:
 - Compartments type A for up to 4 large suitcases per compartment
 - Compartments type B and C for boxed goods, e.g. handbags and purses

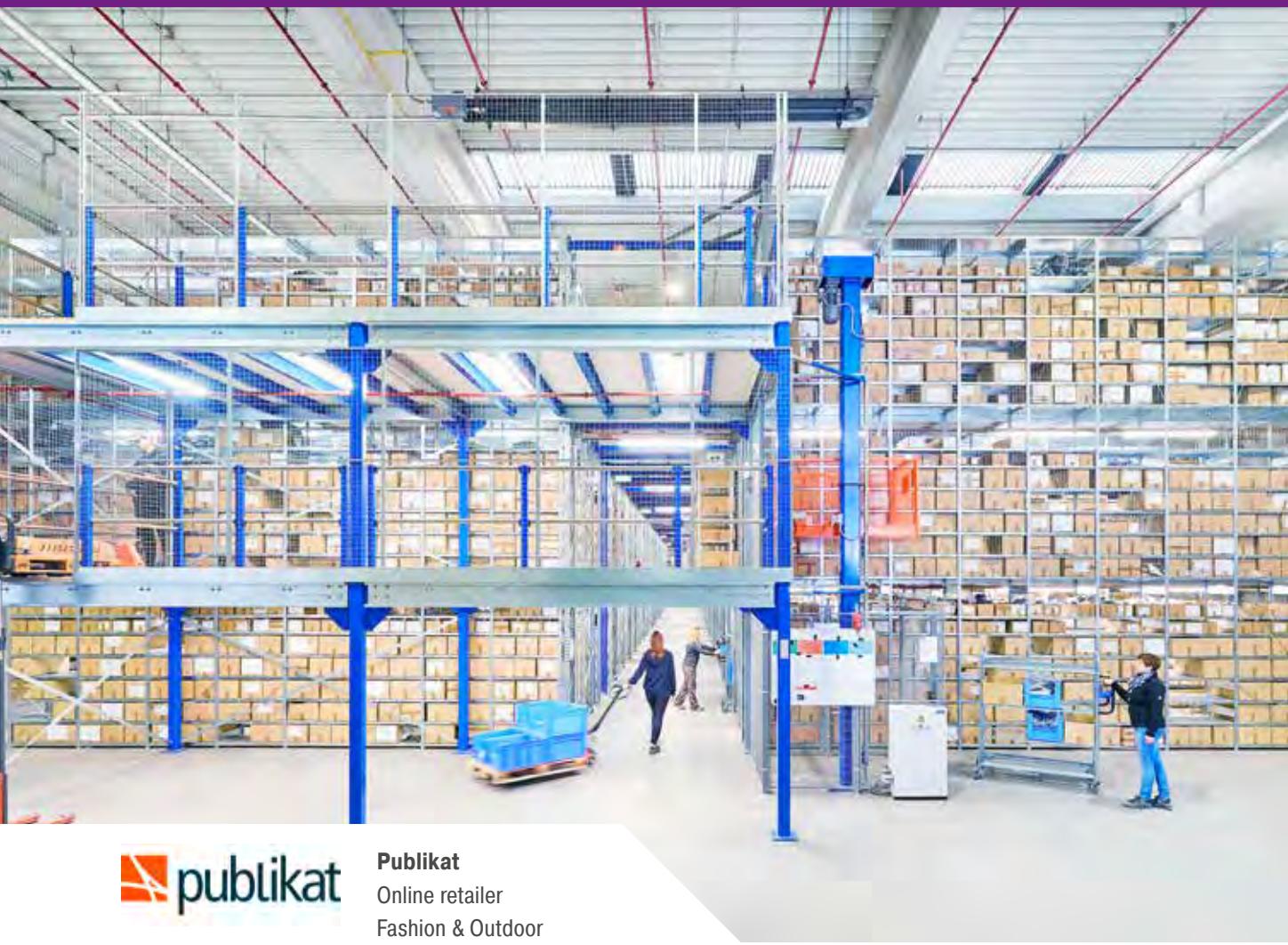
CUSTOMER REQUIREMENTS

At Kofferprofi.de, customers can choose from more than 100,000 high-quality bags, satchels, jewelry cases and travel luggage from almost 90 well-known manufacturers. The Horst Condé GmbH online store has been growing continuously over the past few years with this portfolio. As the rented warehouses became too small and the material flow inefficient, the decision was made to build a new logistics hub in the industrial park of Saarlouis. On average, around 800 to 1,000 products a day leave the premises. The retailer's aim was to have all the items of their extensive range in stock and to ensure timely delivery.

BENEFITS

- Very good utilisation of the warehouse volume and surface area
- Kofferprofi.de was able to expand their portfolio by 6,000 reference lines
- Expensive and cumbersome external warehouses were closed
- A consistent fire protection concept helped to avoid the investment into an expensive sprinkler system





Publikat
Online retailer
Fashion & Outdoor

FEATURES

- Two 3-tier shelving installations connected with a 2.5 m wide central aisle
- The central aisle is given its excellent stability by a design based on BITO pallet racking components
- 300 mm deep shelves for double-deep storage of shoe boxes, 600 mm depth for boxes with clothing

CUSTOMER REQUIREMENTS

Starting out as a startup in the field of publishing and online shipping of graffiti supplies and books, Publikat Verlags- und Handels GmbH Co. KG, a young e-commerce company from Großostheim, Germany, has grown into Germany's second-largest Adidas online retailer.

The rapid growth of the e-commerce company required a many times larger storage capacity. Publikat therefore moved to new storage premises and needed a sturdy shelving system that would offer the greatest possible flexibility in order to be able to respond to the further expected growth with little financial effort. Moreover, the new warehouse was to be furnished during ongoing operations without affecting operational processes.



BENEFITS

- 500 sqm of new storage surface were gained on the same footprint owing to the multi-tier construction
- Optimal use of the cubic space of the new logistics building
- Permanently high delivery availability: there are approximately 100,000 different items in stock, and between 3,000 and 5,000 orders are shipped daily - depending on the season.
- Shelves without sharp corners and edges provide protection for tear-sensitive goods such as clothing
- The aisle width has been designed to enable two hand pallet trucks to comfortably pass next to each other.



Marel Slowakei

Manufacturer of technologies
used in the food industry

FEATURES

- 3-tier shelving facility with 10,200 shelves accommodating 4,900 plastic bins
- Interior stairways
- Bin lift system
- Product identification by means of barcoded labels
- A pallet racking system in the incoming and outgoing goods area with spans of up to 4,500 mm stores finished machines



Video: Marel Slowakei

CUSTOMER REQUIREMENTS

Marel is a manufacturer of advanced processing solutions for foods such poultry, fish and meat. With an annual investment of around EUR 60 million in innovative technologies, the company offers software, machines and systems that help food processors make the most of the potential offered by digitalisation, automation and robotics.

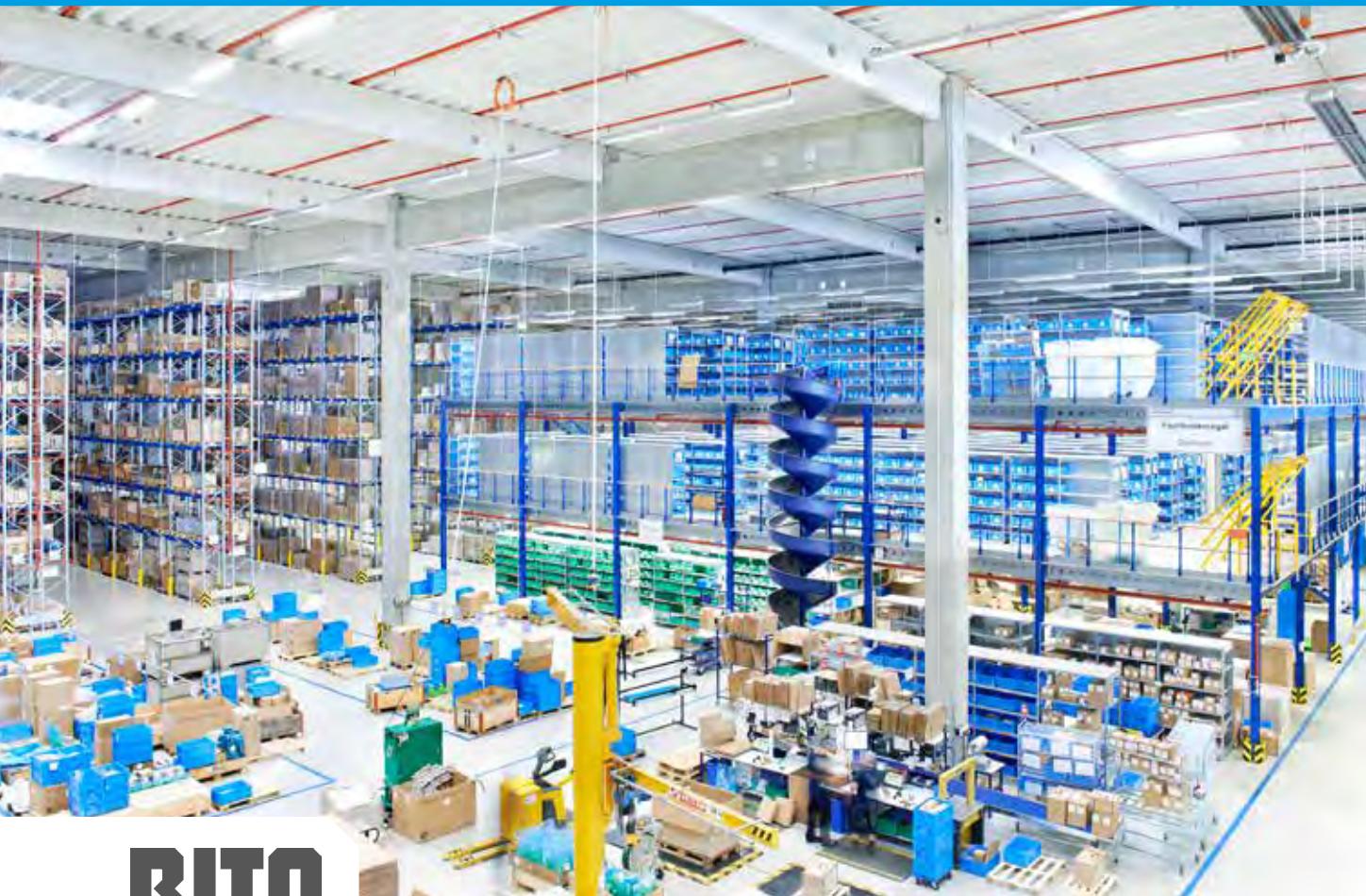
The aim of the new warehouse was to gain space for new projects and consolidate the entire logistics process into one unit (incoming material / finished products). The BITO delivery included a multi-tier shelving system, pallet racking and workstations including equipment.



BENEFITS

- Substantial increase in storage capacity
- Fast and efficient picking at the workstations on each floor
- A bin lift system ensures automatic material replenishment
- Barcoded labels provide instant stock identification





BITO
www.bito.com

Mezzanine floor systems

BITO mezzanine flooring is sturdy and versatile and comes in a wide range of designs that can easily be integrated into various warehouse concepts. Whether used for storage and order picking, as maintenance platform or as connecting platform between shelving or racking installations, as conveyor stand, for creating service aisles, catwalks or as an integral part of a stair tower - precious space should not go unused!

Multi-level mezzanine flooring can fulfill a number of useful functions in a commercial or industrial setting to meet different sets of requirements. A mezzanine floor makes best use of the existing footprint of a warehouse by fully utilising the available headroom, thereby opening up previously unused areas. Especially in premises with a high ceiling, steel platforms can more than double your useful area.

If heavy loads have to be stored, it is necessary to choose particularly load-bearing and appropriately designed shelving or racking as supporting structure. A sturdy, self-supporting steel construction is ideally suited for storing heavy loads. Surface loads of more than 1,000 kg/m² are possible, provided that the floor load capacity is sufficient.

Columns and joists form a rigid base structure which does not require cross bracing, permitting access from all sides. The BITO mezzanine floor system allows level fitting at any required height.

PRODUCT INFORMATION

Frequent application

- Multi-tier storage and order picking, additional workstations, office areas

Handling options

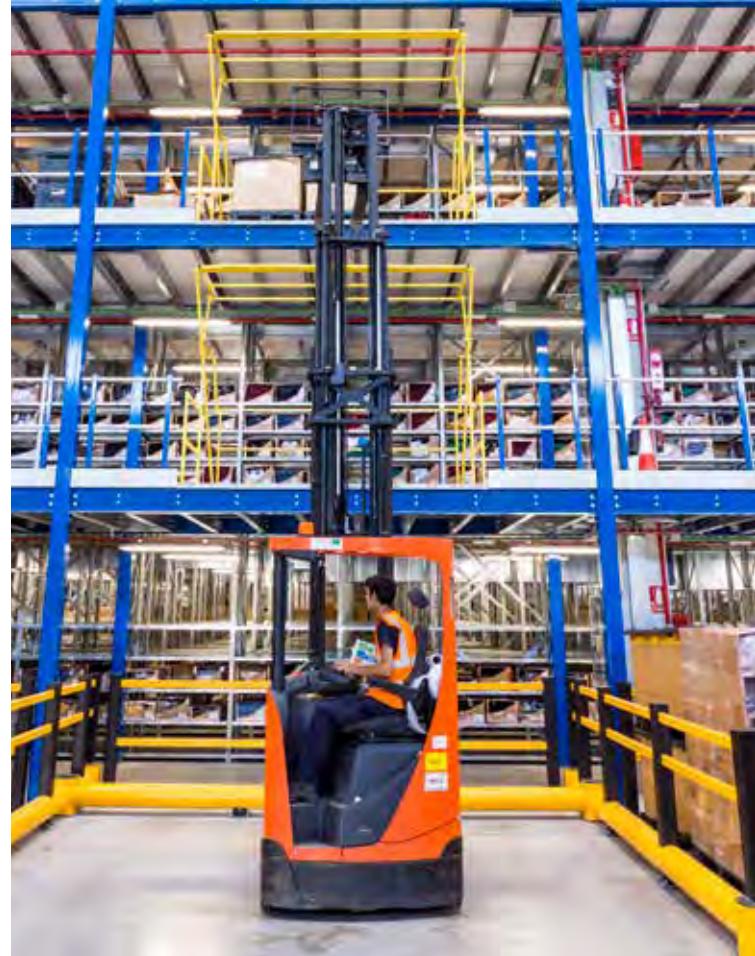
- Manual handling of goods

Storage options

- Various options depending on the combination with other storage and furnishing systems

Surface/volume utilisation

- Multiplication of existing footprint
- Multi-tier constructions make full use of vertical space



AREAS OF APPLICATION

- Storage area for bulky goods or for establishing additional offices/workstations/staff rooms
- Stand-alone multi-level shelving and racking or integrated into shelving and racking systems
- Conveyor platform, maintenance access platform or to give additional support to automated racking systems

STORAGE UNIT

- Conveniently sized packaging units, binned or boxed products, individually wrapped items or bulk items
- Pallets or special size/use load carriers
- Conveyor lanes for bins or pallets, sorter systems
- Shelving & racking

BITO PRODUCT CATALOG

To look at our complete product range with comprehensive product information, ask for our PRODUCT CATALOGUE. We will be pleased to send you a free copy. Simply e-mail us at:
info@bito.dk (DK)
info@bito.fi (FI)
info@bito.se (SE)



Product brochures and in-depth information can be downloaded at:
<https://www.bito.com/da-dk/service/vejledninger-og-brochurer/> (DK)
<https://www.bito.com/fi-fi/neuvaja-ja-palvelua/asennusohjeet-ja-esitteet/> (FI)
<https://www.bito.com/sv-se/raadgivning-och-service/monteringsanvisningar-och-broschyer/> (SE)

For further assistance please contact our project support at:
Tel. +45 70 21 51 51 (DK) Tel. +358 10 324 6510 (FI) Tel. +46 (0)42 151 910 (SE)



BENEFITS OF MEZZANINE FLOOR SYSTEMS

FUNCTIONAL AND VERSATILE

- Perfect integration into existing concepts
- Additional space for assembly, order picking, storage offices and staff/meeting rooms
- The multi-storey design enables each level to be configured in a different way, depending on requirements.
- Flexible use of space to respond quickly to seasonal fluctuations or to an increase in product lines and orders
- The clearance underneath your mezzanine floor can be used as required, for example as working space.
- Use in production environments, for example to retrofit or maintain machinery



SPACE AND COST EFFICIENT

- Optimal use of space by multiplying the footprint and making full use of the room height.
- Modular design - additions, modifications or expansions can be implemented quickly and with relatively little effort.
- Mezzanine floors are suitable for the rapid expansion of storage capacity for a fraction of the cost of a new warehouse
- Fast adaptation of your warehouse to future requirements
- Simultaneous and time-saving picking on several levels, resulting in shorter order throughput times
- Mezzanines can be integrated into your premises during ongoing operations.



STURDY AND SAFE

- Particularly rugged design
- Loads of up to 1,000 kg/m² (assuming sufficient floor load capacity)
- Surfaces are painted or hot-dip galvanized to protect the installation from corrosion and environmental influences
- Designed in accordance with the safety regulations of the German Employer's Liability Insurance Association and the applicable European standards



BITO Steel Construction.

We build steel platform systems that perfectly integrate into your processes.

WE DESIGN. WE DELIVER. WE CARE.

BITO Steel Construction rounds off the BITO portfolio in the field of steel structure platforms which integrate seamlessly into existing processes. What is so special about this BITO offspring? BITO Steel Construction benefits from the BITO know-how in the field of warehousing technologies and makes best use of existing synergies to build steel structure platforms of any size and for any application.

As a competent partner to their customers, BSC supplies a complete range of services from a single source - from project development, design, structural engineering, production and assembly to after-sales service. In cooperation with the BITO Group, BSC offer their customers a complete package with clear lines of action, no matter how complex the project.



CUSTOMIZED AND EFFICIENT PROJECT DESIGN

Steel structure platforms from BITO Steel Construction make sure that valuable space in your warehouse or production area is not left unused. This means that cost-intensive storage space becomes twice as useful. For perfect adaptation to the specific requirements of an application, we believe in cooperating with our customers to design a platform system that really meets your needs.

Focussing on cost efficiency, we integrate as many standardised components as possible throughout the entire process. No matter how complex the task, customers can be sure to receive a tailor-made and budget-friendly solution that will increase profitability within their facility for years to come.

PROJECT EXPERIENCED PARTNER – INVISIBLE INTERFACES

As a 100% BITO subsidiary, we benefit from many years of experience in realising numerous logistics projects of all sizes and in all industries. In addition, we cooperate closely with the BITO team to plan and realise your project.

We know how things look like on the other side and will therefore integrate complex steel structure platforms neatly into any process. As a result, everything fits together: your mezzanine, shelving and racking and automated systems, without any risk of interface delays or losses.

SOLUTION-ORIENTED ADVICE

Every detail must be spot on. Especially in the field of integrating platforms into existing systems, there are many things to consider and it is important to speak a common language with system integrators and customers. This is why we thoroughly examine interface requirements of third-party trades, such as automated system providers.

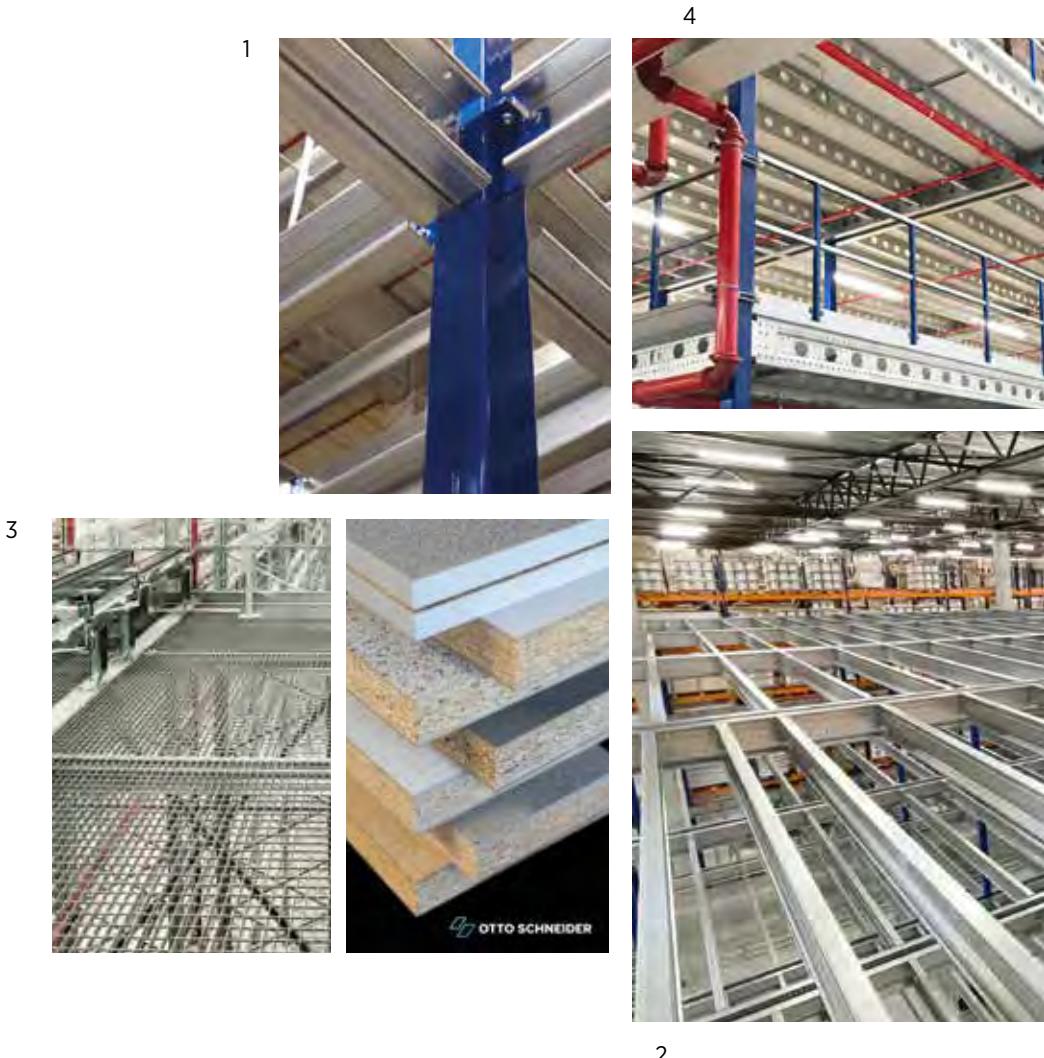
These must be understood to ensure a smooth workflow between shelving and racking installations, automated storage systems, conveyors and integrated platforms.

YOUR SINGLE SOURCE SUPPLIER

From the first inquiry to order placement, from monitoring all processes to project acceptance, we oversee and check every single step, always keeping a firm eye on the big picture. After engineering has been done, planning is complete, the steel components have been designed and the individual parts have been manufactured, we coordinate the construction of your mezzanine system with our assembly partners and keep close contact with the site management and the assembly team.

Our part of the work does not end there, because we also take care of everything that comes after construction. Whether customer service is needed, modification and enlargement of the facility is required - BITO Steel Construction is always available for their customers.

Components and equipment options



2

1. SUPPORT COLUMNS

BITO mezzanine columns are manufactured from solid steel profiles and are dimensioned according to the intended load capacity.

2. JOISTS

Joists are made of solid steel profile or slotted profiles and are dimensioned to load requirement.

3. FLOORING

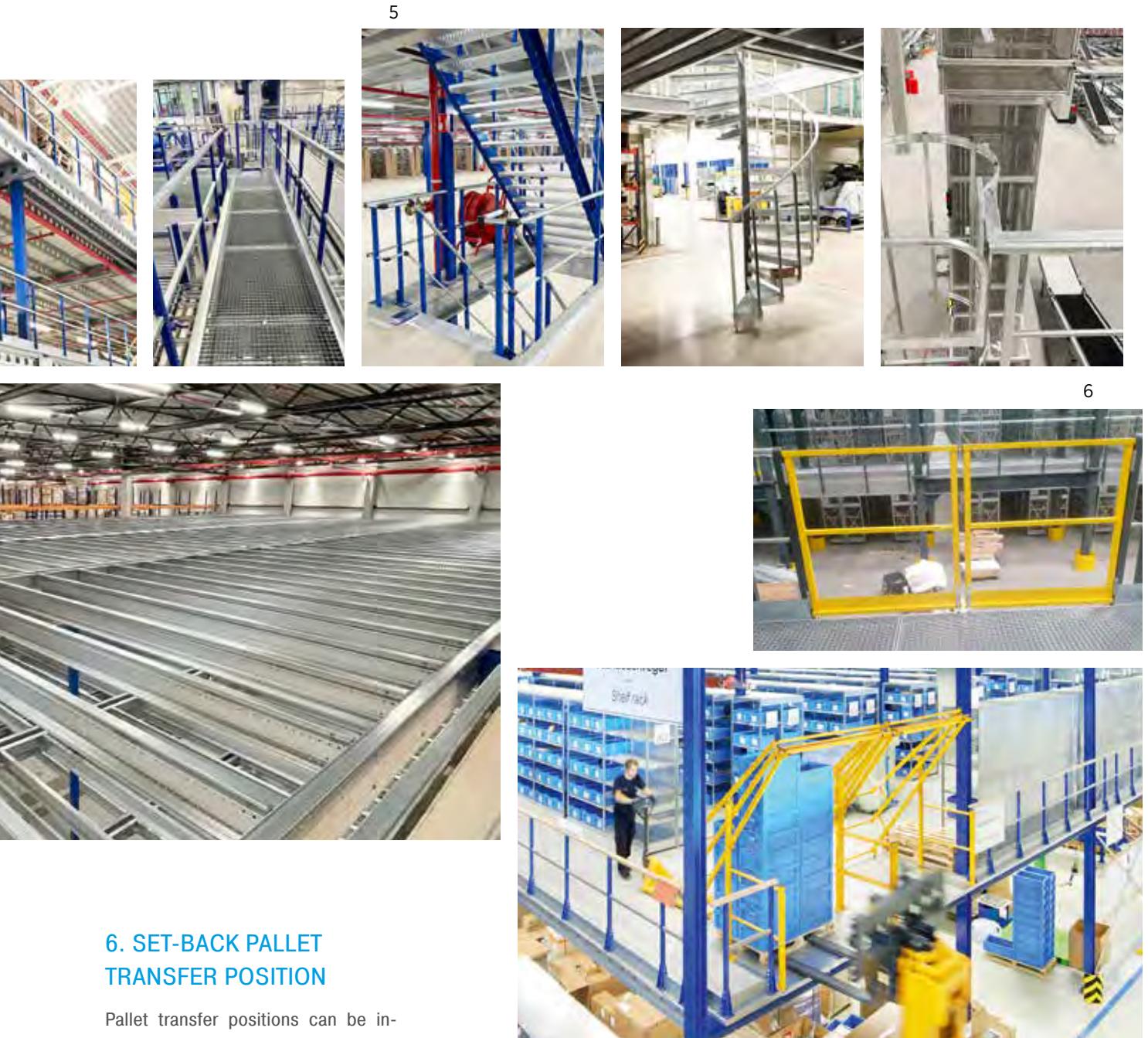
Chipboard decking, galvanised mesh decks and chequer or teardrop plates are available as decking options. Depending on your specific requirements and needs as well as load distribution, we will recommend the most suitable flooring option.

4. GUARD RAILING

The sides of BITO mezzanines meet professional association standards for safety requirements and all applicable European standards. Guard railing consists of sturdy tubular hand railing and railing at knee height. The kickplates have been made from bended steel sheet which is fitted around platform and walkway edges to prevent small parts from falling down to the levels underneath, ensuring that your employees can work safely at all levels.

5. STAIRWAYS

Stairways to the mezzanine floors are equipped with safety barriers and can be optionally supplied with or without an intermediate landing. The steps can be safely climbed and are available in tread widths of 800, 1,000 or 1,200 mm. Depending on your needs and requirements, they can be made from galvanised mesh, chequer plate or wood.



6. SET-BACK PALLET TRANSFER POSITION

Pallet transfer positions can be installed on mezzanine floors or walkways, enabling safe and easy goods replenishment and material transfer. Set-back pallet transfer positions secured by a chain are the most inexpensive solution. They consist of a hand and knee rail and two posts with a red and white plastic chain which can be unhooked. The chain barrier is set back at least 800 mm.

7. SWING ACCESS GATE

Pallet transfer positions are also available with a swing access gate with one side closed depending on the direction of transfer. This ensures optimum staff safety during pallet transfer, especially on higher levels. Particular ease of use.



J. König GmbH
Tool manufacturer
for stone machining

FEATURES

- Mezzanine floor with shelving on the ground level, bulky items are stored on the platform
- PRO pallet racking for European standard size pallets, flow shelves with roller tracks on the ground level for single item picking
- The pallet racking levels 2 to 5 are fitted with wire-mesh back cladding

CUSTOMER REQUIREMENTS

The J. König GmbH in Karlsruhe is a family business in the fourth generation. The company manufactures and sells tools for natural stone fabricators, stonemasons and sculptors. The product portfolio ranges from small stone drills to angle grinders and bulky transport racks.

In order to prepare for strong expansion, a new logistics centre was built with the aim of making optimum use of space and optimising material flow. The product portfolio includes fast and slow movers, very small as well as large and bulky items.



BENEFITS

- Perfect adaptation of the system to a varied product portfolio
- Efficient storage, fast order processing
- Increased operational safety through strictly separated loading and picking aisles and back cladding



M.A.T. Group
Wholesale trader

FEATURES

- Two-level mezzanine construction with 8 pallet transfer points
- Expansion of the storage area by 1,731 m²
- Additional increase in storage capacity with shelving units providing a total surface area of 2,566 m²

CUSTOMER REQUIREMENTS

The M.A.T. Group is a wholesale company founded in 1993 in Pilsen. The product range initially included hardware and tools for craftsmen. Since 1999, the product range has been expanded significantly. Today, M.A.T. is a leading wholesale company in the market segment of hardware, garden products, household and kitchen products and stoves. Their portfolio includes more than 16,000 reference lines. In addition, M.A.T. have their own retail network with 12 stores in the Czech Republic. Their main business is with specialised retailers and DIY chain stores.

To create more storage space, a steel structure platform was installed in the original floor stacking area which included low-height pallet racks. 8 pallet transfer points were added on the mezzanine floor to streamline workflows and order picking. The customer opted for shelving units to store small items.

BENEFITS

- Significantly higher storage capacity as a result of making optimum use of the building height
- Increased work performance
- Cost savings, as no new warehouse had to be rented





Ave
Wholesaler of
vegan products

FEATURES

- Multi-tier installation comprising combined PRO pallet racking and FLEX carton live storage and a steel platform
- Pallet racking used as buffer store on the upper level, flow shelves at floor level height
- A powered conveyor system transports the bins with picked goods to the dispatch area
- BITO MB multi-purpose containers are used for order picking

CUSTOMER REQUIREMENTS

AVE is Europe's first vegan wholesaler based in Nabburg / Bavaria. Established in 2001, the company has grown into an internationally operating, sustainable business. Their products are sold to retailers and through their online shop. With over 900 items available for wholesale and over 2,500 vegan items, AVE today offers a full line of vegan lifestyle products.

Steady company growth required the construction of a new logistics centre to process 2,000 small orders for online sale and up to 150 wholesale orders.

BENEFITS

- Optimum utilisation of the available headroom
- Simultaneous order picking on two levels
- Compliance with best-before dates through storage in FIFO order
- Significantly faster order processing and shorter delivery times





AfB

IT-Remarketing

FEATURES

- Steel structure platform covering the entire work area on the ground floor
- Pallet racking with a height of up to 8 metres with a stairway and pallet transfer positions
- Pallet live storage racking in the goods-in department
- Shelving with inclined shelves for small item picking
- Storage of tools and accessories in European size BITO XL stacking containers
- BITO KLT Small parts containers from regranulate with inlays are used to ship sensitive goods

CUSTOMER REQUIREMENTS

The non-profit IT company AfB, founded in 2004, is an expert in IT remarketing. AfB purchase used quality tablets, computers, laptops, smartphones and printers from companies, banks and public institutions, refurbish them and resell them in stores throughout Germany, neighbouring European countries and in their own online store.

In early 2020, AfB moved into their new company headquarters with an adjacent logistics centre. Since commercial space in the Ettlingen metropolitan area is expensive, the primary goal was to make efficient use of space. In addition, work processes were to be optimised and demanding safety requirements had to be satisfied.



BENEFITS

- Full use of space
- Plenty of storage and work space with short travel distances
- Safe workplaces on two levels



Schleich
Manufacturer of toys

FEATURES

The 12,000 m² logistics centre accommodates:

- 3-tier pallet racking with 6 single racking rows, integrated walkways on the second and third level, full-width roller lanes to handle pallets
Storage capacity: 1,600 pallet positions
- Stationary pallet racking with 27 single and double-deep racking runs and 10 mobile double racking runs. The facility is 11 metres high, 90 metres deep and has 5 levels. Each bay is 4 pallets wide, providing a total of 16,000 pallet positions.
- The products are handled with 4 reach trucks.
- Pick-by-light order picking
- Integrated conveyors on all levels

CUSTOMER REQUIREMENTS

Founded in 1935, the company is one of the leading suppliers of branded toys: Smurfs, dinosaurs, farm animals, elves and knights can be found in many children's rooms around the world. Some 30% of the toy figures including matching tools are designed and manufactured at the company headquarters in Herlikofen near Schwäbisch Gmünd. The figures are distributed worldwide.

Until now, the company was storing its products in the 400 m² warehouse at the company headquarters as well as in 6 other rented warehouses in the surroundings. All warehouses together offered space for 6,000 pallets. Schleich had already outsourced the delivery of goods to a service provider in 2006, who carried out shipment from his warehouses. For larger orders, the goods had to be called in from various warehouses to be prepared there for picking and shipping.



PROJECT CHALLENGES

The new logistics centre was to consolidate warehousing, picking and shipping processes in order to reduce the previously enormous coordination effort and the associated error susceptibility.

Another challenge involved significantly varying shipping volumes. Around 10,000 customers are supplied worldwide, ranging from small kiosks that only order the minimum quantity to wholesalers who receive several truckloads per day.

Another concern was staff protection in the picking aisles.

BENEFITS

- Consolidation of all activities
- Easier capacity planning along with simultaneous capacity expansion
- Very low susceptibility to errors after switching to pick-by-light picking and allocating fixed storage locations
- Reduced costs and increased productivity
- Significantly reduced delivery times
- Double fall protection equipment in the pallet racking service aisles ensures staff safety



**BITO**

www.bito.com

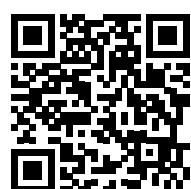
Carton live storage »CLS«

Among order picking installations based on the operator-to-goods principle, live storage is the ideal solution for warehouses with fast moving product lines. Higher investment costs are more than compensated by improvements in efficiency.

Separate working aisles ensure that stock replenishment does not interfere with order picking. Order pickers can rely on constant product availability, as all storage units move unassisted into the picking position.

Straight travel routes enable fast access to all product lines on stock, resulting in a considerable increase in picking performance.

Case studies of carton live storage show drastic savings of between 40% to 70% in travel time compared to conventional shelving, and up to 30% in occupied floor space. This makes BITO carton live storage a cost efficient solution for almost any commercial or industrial setting.



Video: BITO carton live storage systems

PRODUCT INFORMATION

Frequent application

- Product/component supply at workstations, order picking

Service options

- Manual order picking and replenishment
- Automated replenishment

Storage options

- Conveniently sized packaging units, either short side or long side facing

Surface/volume utilisation

- Savings in floor space of up to 30%

STORAGE UNIT

Smaller sized unit loads, products in plastic bins or cartons, piece items

Stock rotation frequency

- High stock turnover, short shelf life

Stock characteristics

- A-items (fast movers)



As a manufacturer of a wide range of plastic bins, BITO is able to provide shelving and racking complete with perfectly adapted, durable and functional bins and containers for order picking, storage, handling, distribution and shipping.

BITO PRODUCT CATALOG

To look at our complete product range with comprehensive product information, ask for our PRODUCT CATALOGUE. We will be pleased to send you a free copy. Simply e-mail us at:
info@bito.dk (DK)
info@bito.fi (FI)
info@bito.se (SE)



Product brochures and in-depth information can be downloaded at:
<https://www.bito.com/da-dk/service/vejledninger-og-brochurer/> (DK)
<https://www.bito.com/fi-fi/neuvooja-ja-palvelua/asennusohjeet-ja-esitteet/> (FI)
<https://www.bito.com/sv-se/raadgivning-och-service/monteringsanvisningar-och-broschyer/> (SE)

For further assistance please contact our project support at:

Tel. +45 70 21 51 51 (DK) Tel. +358 10 324 6510 (FI) Tel. +46 (0)42 151 910 (SE)

EXAMPLE LAYOUTS



Upright adapters for retro-fitting pallet racking

Page 88



Roller conveyor stand

Page 87

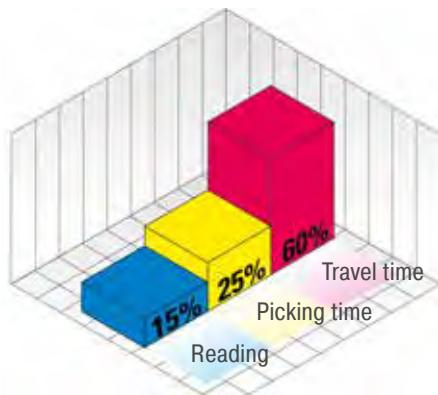
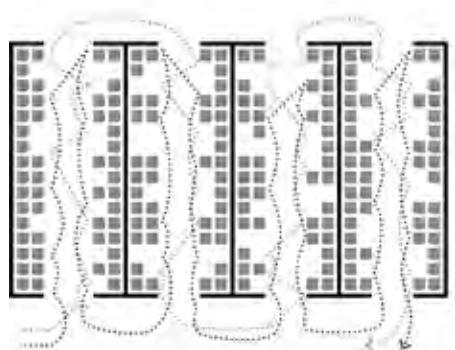
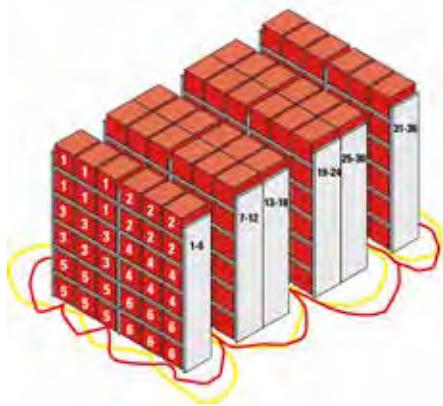


Step-up rail for convenient working

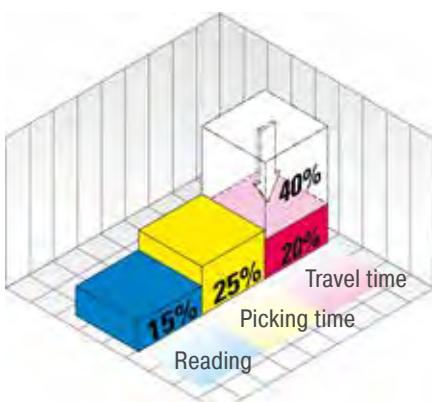
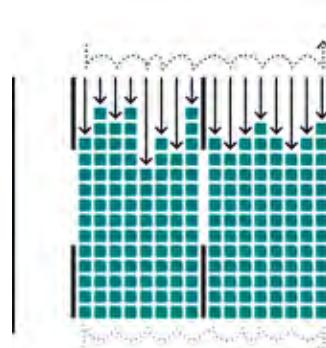
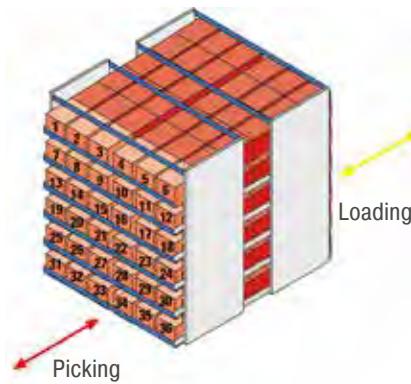
Page 87

Economic evaluation

CONVENTIONAL SHELVING



CARTON LIVE STORAGE



CASE STUDY

Our carton live storage example shows two storage units providing 36 reference lines each.

The difference is easy to see: The carton live storage installation needs less floor space and each reference line has a separate lane.

All items can be accessed immediately at the racking face and as soon as one carton or box is removed, the next one gently moves to its pick position at the front.

Compact storage and a reduced number of service aisles provide a gain in floor space of at least 20%.

Separate working aisles prevent that replenishment interferes with order picking which increases productivity.

Short travel routes help to increase picking performance.

Whereas information and pick times remain the same for both solutions, travel times are drastically reduced.

This saves working time and boosts order throughput.

Travel time savings of 66% result in a 40% reduction in overall picking time.

Advantages of the system

GENERAL ADVANTAGES OF CARTON LIVE STORAGE

■ Substantial time savings

Any picking process can be sped up by not wasting time on walking: 40-70% shorter travel distances have a great impact on picking efficiency.

■ Order picking in FIFO order

(first in – first out)

■ Same storage capacity on a smaller floor area

Reducing the number of unnecessary service aisles results in a substantial growth in storage capacity by up to 30%.

■ Goods are stored on roller tracks

and move unassisted to the picking face.

■ Less picking errors

Compact and clear product presentation helps operators to focus on the products.

■ No loss of time in search for products

Short and straight walking paths improve general overview and job planning/allocation of work zones to operators

■ Improved productivity

Separate loading and picking aisles prevent operators from crossing each other's way, thus improving operator performance.



SPECIFIC ADVANTAGES OF BITO CARTON LIVE STORAGE

■ Assembly without bolts, system comprises components that have been especially designed for live storage applications

■ Optimum adaptation to the size of storage items

Roller tracks and lane separators can be fitted with an 8.5 mm spacing
Flow levels are height-adjustable in 12.5 mm increments

■ There are three roller types available:

Cylindrical rollers on a plastic axle

Cylindrical rollers on a steel axle

Flanged rollers on a plastic axle

■ System specific solutions for small load carriers conforming to VDA standards* and conical transportation bins

**German Association of the Automotive Industry (VDA)*

■ Narrow roller pitch

Starting at 28 mm, the narrow roller pitch ensures smooth travelling of low-quality cartons

■ Wide range of useful accessories; box profiles provide maximum safety

■ BITO flow levels have a high load carrying capacity

■ Frames have been designed for heavy-duty applications, f. ex. for pallet buffering on the upper storage levels or integration into a multi-tier facility

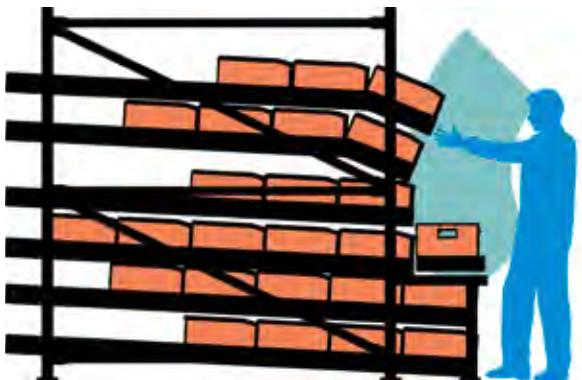
■ Enormous streamlining potential

by using automated stacker cranes for replenishment and by introducing paperless order picking

■ BITO roller tracks come with a 5-year functional warranty



Shelving configurations



1. CONFIGURATION OPTIONS WITHOUT CONVEYORS

Straight flow shelves with a flush front are suitable for picking entire storage units. Smaller items can be picked through the view and pick opening of the storage bins.

- Optimum utilisation of the shelving height

As a rule, medium-sized products are picked through the view and pick opening of bins and containers. Flow shelves with an angled front facilitate access.

- Excellent product visibility and fast access to goods

Large items are picked from the open top of bins and containers. Additionally, the flow levels are recessed in depth in order to leave more room for access from the open top.

- Optimum product visibility and fast access
- Easy picking even of bulky goods

Convenient access to goods has a great influence on picking performance. The question which flow shelf type is best suited for your application mainly depends on product shape and dimensions. Another determining factor is whether and to what extent conveyors are integrated into the installation. Ergonomics have a major influence on performance. In particular, it is important to realise a picking curve which reflects the order picker's natural picking motion.

This includes for example the installation of conveyors at the correct working height or a step-up rail to facilitate access to the working levels above the natural reach height.

2. CONFIGURATION OPTIONS WITH CONVEYORS



Pick-to-belt is a typical solution of a product-oriented picking strategy. The conveyor lane is located in the aisle centre.

- Direct access to all products on the entire shelving front
- Limited investment into conveyor systems



The integration of roller conveyors in the rack front is ideal for order-based picking, i.e. each order is picked in full by one and the same order picker.

- Low investment into conveyor systems
- Improved picking efficiency as the order picker does not need to turn to a conveyor in his back



For order-related picking in several zones, the combination of powered and non-powered roller conveyors is ideal. This solution requires a higher degree of organisational and technical monitoring.

- Very high productivity as a result of short distances and fast removal of empty bins
- Very short order lead times
- No waste of time as no turning to the conveyor is required

1. CONVEYOR-AIDED ORDER PICKING

- Shelving with a roller conveyor lane at the front
- Shelving with an integrated roller conveyor for transporting cartons or bins with completed orders

The order picker simply walks along the picking face, collects items according to order into a bin while pushing the bin along his picking route. Picked customer orders are then conveyed to the shipping area on a powered conveyor lane.



Your advantages:

- Automated transfer of picked orders to the shipping area
- Loading and picking in separate aisles
- Immediate re-stocking from the pallet buffer stock on top

2. INTEGRATED PALLET LIVE STORAGE LANES

- CLS unit with pallet live storage lanes at floor level height

Single items are picked from the carton live storage lanes on top. The pallet live storage lanes on the floor provide replenishment supply - one reference line per pallet.



Your advantages:

- Single pieces as well as packaging units can be picked from the same shelving unit
- Balanced work load in each picking zone
- Re-stockers and order pickers work in separate aisles and do not disturb each other

3. PALLET BUFFER STOCK ON TOP

- Available as static configuration / dynamic configuration

By fitting upright adapters, existing pallet racking can be retro-fitted with carton live storage flow levels.



Your advantages:

- Quick and easy re-stocking from the pallet buffer on top
- Maximum utilisation of headroom
- Ideal for converting existing pallet racking
- The dynamic solution is serviced from separate working aisles, i.e. order pickers are not disturbed by re-stockers

4. MOBILE SHELVING

- Mobile carton live storage installation with a pallet buffer stock on top

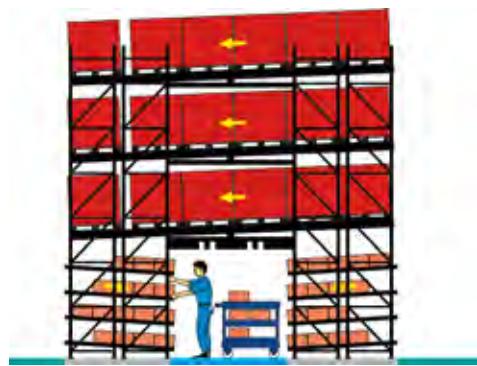
Only one service aisle must be opened for order picking. Enormous capacity increase, as there is no need for a separate access aisle between each shelving or racking row.



Your advantages:

- Space-saving solution with short travel routes, because only one service aisle is needed. FIFO storage.
- The aisle width can be chosen to requirement.
- Goods in the pallet buffer stock can be accessed at any time by opening the required service aisle. Double-deep pallet storage is possible without the need for push-back lanes or special service vehicles.

Picking aisle Loading aisle
 Buffer area Pick items



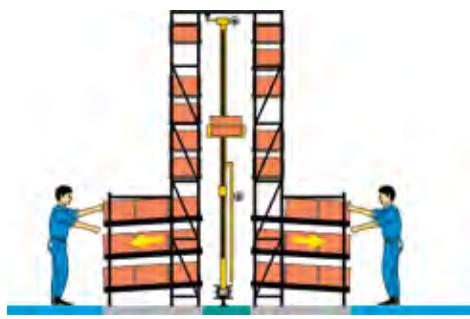
5. CENTRAL ORDER PICKING TUNNEL

- Pallet live buffer stock on top

Safe picking in the order picking tunnel Huge storage capacity in the levels on top

Your advantages:

- High degree of operational safety
- Separate working aisles prevent that loading interferes with order picking
- Constant availability of goods
- Maximum utilisation of warehouse space



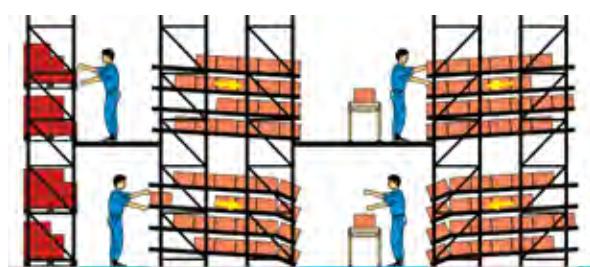
6. INTEGRATED BIN BUFFER AREA

- Bins can be buffered in a miniload system or in high-bay shelving serviced by an automatic stacker crane

Hand picking The picking lanes are replenished by an automatic stacker crane.

Your advantages:

- Short replenishment routes
- Good utilisation of headroom
- Computer-monitored material flow management including permanent stock level control
- Constant availability of goods



7. MULTI-TIER ORDER PICKING

- Multi-tier carton live storage installation combined with a pallet buffer at the rear

- Centrally located roller conveyors in the picking aisles

The multi-tier construction allows simultaneous order picking on several tiers.

Your advantages:

- Re-stockers and order pickers work in separate aisles and cannot get into each other's way
- Constant availability of goods
- Maximum utilisation of headroom
- Immediate replenishment from the near-by pallet buffer stock

Picking aisle

Loading aisle

Buffer area

Pick items

8. MULTI-TIER ORDER PICKING

- Multi-tier carton live storage installation combined with roller conveyors in the centre of each picking aisle
- Re-stocking by man-operated stacker cranes
- Optional conveyor-aided re-stocking

The carton live storage lanes can either be replenished by a man-operated stacker crane or with a powered conveyor lane at the rear side of the opposite shelving row.



9. MULTI-TIER ORDER PICKING

- Multi-tier carton live storage installation combined with roller conveyors in the centre of each picking aisle
- Automated stacker crane re-stocking

This option uses stacker cranes to refill the picking lanes. Orders are picked simultaneously on several levels. The products are picked by hand. Upon completion of an order, a conveyor lane carries the products to the dispatch area.

Your advantages:

- Maximum utilisation of floor space and headroom
- Data management systems make sure that there is always sufficient supply
- Computer-controlled replenishment from the buffer stock



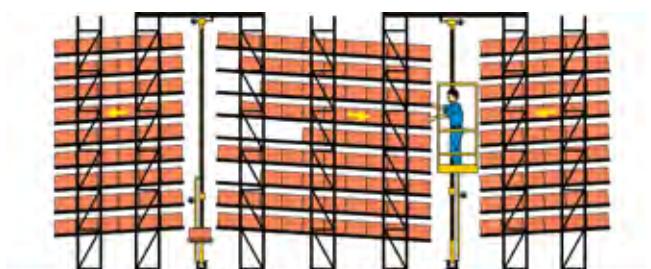
10. HIGH-BAY CONSTRUCTION

- Carton live storage high-bay installation
- Orders are picked with a man-operated stacker crane
- Re-stocking by automatic stacker-crane

In order to ensure fast access to all items, orders are picked using a man-operated stacker crane which lifts the order picker to the required height.

Your advantages:

- Optimum ergonomic conditions for the operators
- High degree of operational safety with separate working aisles
- Computer-controlled availability of goods
- Immediate computer-monitored stock replenishment without the need for an intermediate buffer stock
- Stacker crane servicing prevents unauthorised access to goods



Picking aisle

Loading aisle

Buffer area

Pick items



Smart ideas to boost picking performance

STORAGE IN FIFO ORDER

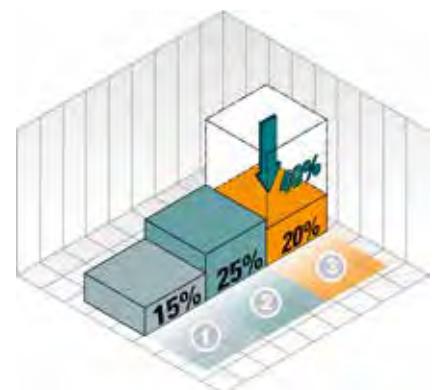
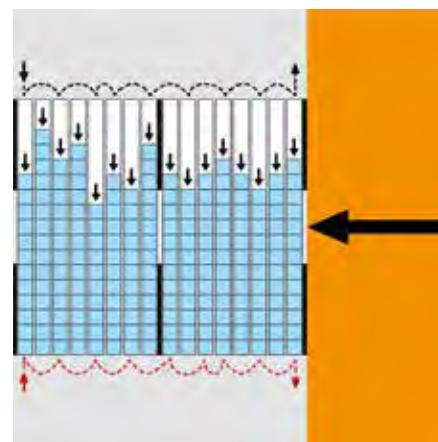
- Easy control of sell-by dates and production batches
- Ergonomic picking curve
- Very easy stock control, lacking references can be identified immediately
- Order pickers never run out of stock
- Items move unassisted to the picking face

VERY GOOD FLOOR SPACE UTILISATION

- Gain in useful floor space by reducing aisle space
- Re-stockers and order pickers work in separate aisles and cannot get into each other's way
- Shorter travel routes

SUBSTANTIALLY REDUCED TRAVEL TIMES

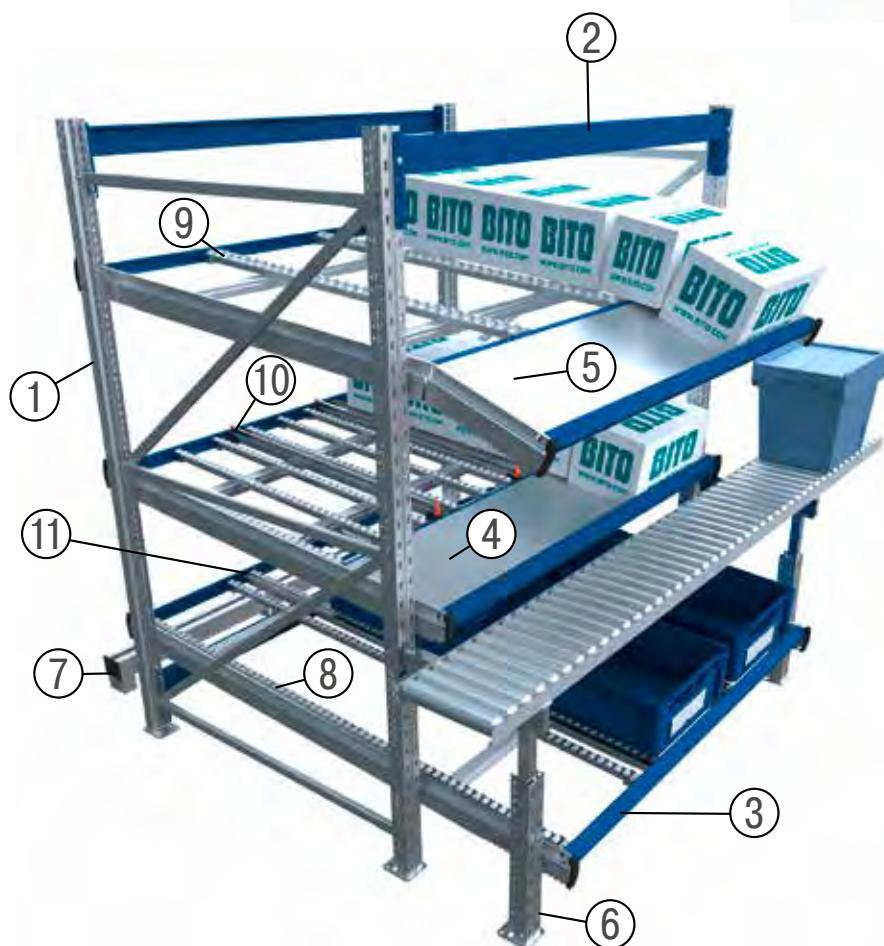
- Reading/info time (1) – no difference to conventional shelving
- Picking/access time (2) – no difference to conventional shelving
- Travel time (3) – A two-third reduction in travel time translates into a higher inventory turnover rate



FLOW SHELVES

There are three options available to suit your ergonomic requirements. The push-fit construction allows later-on adaptation of the flow shelves to different load capacities or applications, while re-using the existing components.

- Assembly without bolts
- Easy adaptation to different load requirements



1 Frame
designed for heavy-duty applications

2 Stiffening beam
hook-in mounting

3 Straight flow shelf

4 Straight flow shelf with inclined picking tray

5 Angled flow shelf

6 Roller conveyor stand
available in different height and depth options

7 Step-up rail
for convenient access

8 Roller track with cylindrical rollers
on a plastic or a steel axle

9 Roller track with flanged rollers
no lane separators needed

10 Lane separator
pre-defined lane separation for a specific product line

11 Universal lane separator
fast lane re-adjustment for frequently changing product lines

ROLLER TRACK WITH CYLINDRICAL ROLLERS ON A PLASTIC AXLE

These durable, smoothly operating rollers from high quality plastic have been designed to accommodate a wide range of storage units.

The smallest roller pitch is 28 mm.

- The broad roller surface guarantees good travel characteristics
- Load capacity 4 kg per roller



ROLLER TRACK WITH CYLINDRICAL ROLLERS ON A STEEL AXLE

The plastic rollers are mounted on a steel axle.

The smallest roller pitch is 28 mm.

- Made for high load capacities
- Also available as conductive version
- Good start-up and conveying qualities
- Load capacity 8 kg per roller



ROLLER TRACK WITH FLANGED ROLLERS ON A PLASTIC AXLE

Flanged rollers are mainly used for storage units with stable pre-formed edges.

The smallest roller pitch is 42 mm.

- No additional lane separators required
- Very good travel characteristics
- Load capacity 4 kg per roller
- Also available as conductive version



LANE DIVIDER

Convenient lane separation, available in two height options. Prevents jamming of two storage units moving side by side.

- Easy assembly without bolts
- Capable of absorbing high lateral forces



UNIVERSAL LANE SEPARATOR

Fast re-adjustment of lane width without prior removal of the roller tracks. Universal separators are preferably used for roller beds and for portfolios with varying product lines.

- Fast re-adjustment of lane width
- Easy assembly without bolts



ADJUSTMENT CLIPS

The adjustment clips are inserted into the lateral slot pattern of the frame. They provide a safe seat for flow shelves. By simply turning the adjustment clips upside down, flow levels can be adjusted in height on a 12.5 mm pitch.

- Easy assembly without bolts



ROLLER CONVEYOR STAND

Sturdy support for roller conveyors or worktops. Roller conveyor stands are bolted to the frame and anchored to the floor.

- Can be adjusted in height
- Various width options
- Safe seat for roller conveyor segments



STEP-UP RAIL

6 height options They provide safe access to the upper storage levels.

- Convenient working
- Supplied with anti-slip surface for operator safety



FULL-WIDTH PLASTIC LABEL HOLDER

Supplied with easy-to-insert card labels and self-adhesive strip on the back.

- Height options: 26 mm or 39 mm
- High-strength adhesive back
- Label cards can be inserted conveniently from the open top edge



BACKFEED GUARDS

Backfeed guards are mainly used on the loading side. They tilt forward when a load carriers passes over them. They tilt up as soon as a load carrier is pushed against the throughfeed direction.

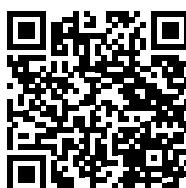
- Increased operational safety
- Prevents loads from dropping at the loading side if pushed back unintentionally



BRAKE ROLLER/ BRAKE SHOE

Both components have a gentle braking effect and reduce the travel speed of packaging units over the entire lane length. They allow to store bins of different weight in the same lane. In the case of bins with poor start-up properties, it is possible to realise flow levels with a stronger gradient.

- Increased operational safety
- Increased storage density, as it is possible to realise longer lanes
- Suited for loads between 3 kg and 30 kg
- Brake shoes provide a stronger braking effect



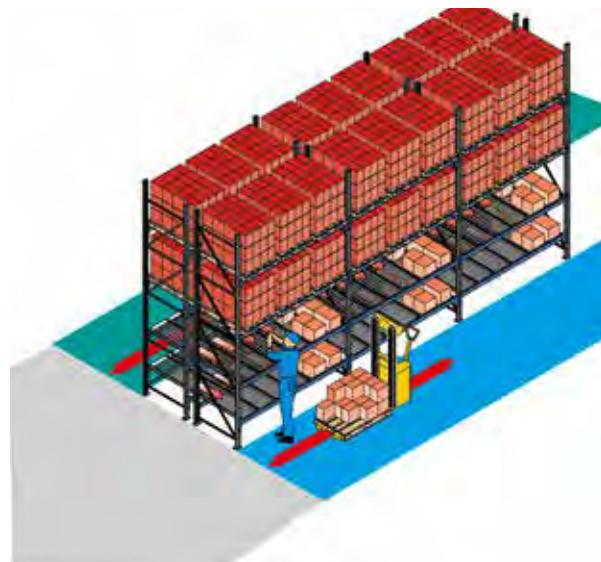
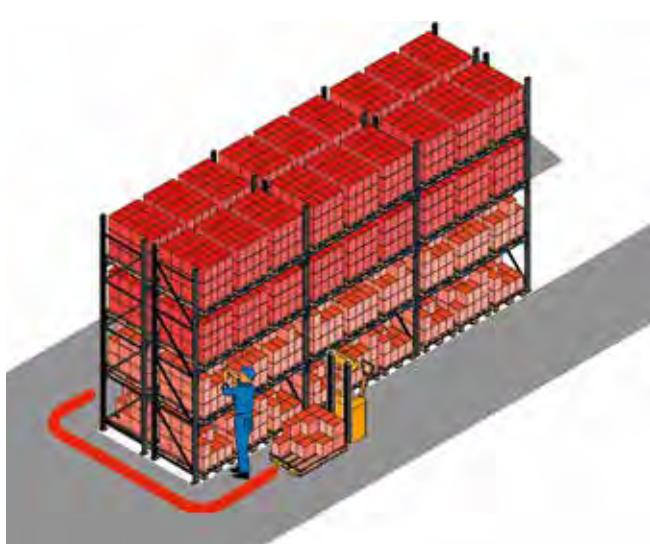
Video: Brake rollers



Pallet rack retro-fitting

Operating processes and warehouse requirements are changing ever faster.

BITO shelving and racking enables customers to react flexibly to changing situations and adapt their storage equipment to new requirements. BITO flow shelves can be retro-fitted into existing pallet racking.



UPRIGHT ADAPTERS

Upright adapters help to transform the floor level of any pallet racking brand into an efficient live storage unit. They provide a safe seat for flow levels.

Benefits of retro-fitting with your pallet racking with live storage levels:

- Drastically reduced pick routes
- Substantially reduced picking times
- More product lines in the same space
- Separate loading and picking aisles
- Storage in FIFO order
- All commercially available pallet racking brands are suited for retro-fitting
- Height: 1,950 mm
- Flow shelf width = clear bay width - 10 mm
- Simply bolt upright adapters to your racking frames, hook in BITO flow shelves and you are ready to go
- Lane separators and flow level height can be re-adjusted
- Flow levels with angled picking tray provide optimal ergonomic conditions
- Cost efficient standardised flow shelves and upright adapters



Adapta-Flow modules

Easy retro-fitting of a static pallet racking level into a live storage level. The beams of the existing racking can be used, no matter which brand.

- Ready-mounted drop-on modules allow rapid reconfiguration
- Modules can be removed at any time and re-used where required
- For use with 50 mm wide beam profiles
- Suited for cartons and bins weighing up to 20 kg



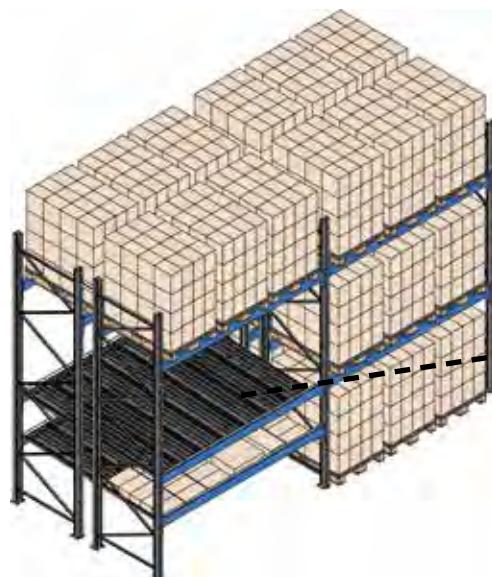
FULL-WIDTH ROLLER LANES

- Accommodate cartons and bins in lanes with a pre-defined width
- Ideal for storage units with difficult travel characteristics
- Suited for loads of up to 30 kg
- Galvanised rollers, diameter 25 mm, roller pitch 84 mm



ROLLER TRACK LEVELS

- Suited for multi-size cartons and bins
- Cylindrical plastic rollers at a spacing of approximately 100 mm and a roller pitch of 28 mm
- Roller beds provide flexible storage without pre-defined lanes





Carton live storage »CLS« – Supply of parts and components

Designed for use in the automotive industry and for automotive parts suppliers.

This racking system is particularly suited for VDA*/KLT containers as well as other load carriers and cartons supplying small items at work stations and assembly lines. Assembly operators do no longer need to be involved in organising replenishment.

In production and assembly settings, permanent availability of goods is crucial for maintaining or improving productivity and avoiding down times.

Depending on item characteristics and storage unit size, this supply system can be realised with different shelving or racking types such as carton live storage, Kanban shelving, boltless shelving or pallet racking.

*VDA = German Association of the Automotive Industry

PRODUCT INFORMATION

Frequent application

- Supply racking at workstations, order picking installation

Service options

- Manual replenishment and order picking

Storage options

- Load carriers can be stored long side or short side facing



AREAS OF APPLICATION

■ Automotive industry

As supply racking along assembly lines and as order picking unit in interim storage areas

■ Suppliers to businesses in industry and commerce

Single piece picking

■ Service providers

As pick rack for preparing one-on-one deliveries



STORAGE UNIT

■ VDA/KLT containers

■ Plastic bins and containers

■ Cardboard boxes

■ Custom load carriers used in the automotive industry

KLT containers / VDA/KLT containers

BASE OPTIONS:

BITO-KLT Smooth and flat base



C-KLT Rigid base

R-KLT Rigid base

RL-KLT Smooth and flat base



BITO PRODUCT CATALOG

Take a look at our product range complete with comprehensive product information:

Ask for our PRODUCT CATALOG.

Email us on

sales@us.bito.com

For further assistance please contact us:

Tel. +1 410 892 6658 or

sales@us.bito.com



Product brochures and in-depth information can be downloaded from

<https://www.bito.com/de-de/beratung-service/downloads/>

For further assistance please contact our customer service hotline:

Tel. +49 67 53 122-789, Fax +49 67 53 122- 382 or

info@bito.com

Advantages of the system

- Versatility and cost efficiency
- Shortens pick routes by 40% to 70%
- FIFO operation (first in, first out)
- Load carriers move gravity-driven to the rack front
- Increased productivity through separate loading and picking sides
- Permanent availability of goods
- Racking units are mobile and can be relocated to other workstations
- Ergonomic solution for supplying A, B and C-items
- Items are presented neatly and in an easy-to-pick way despite large material supply quantities



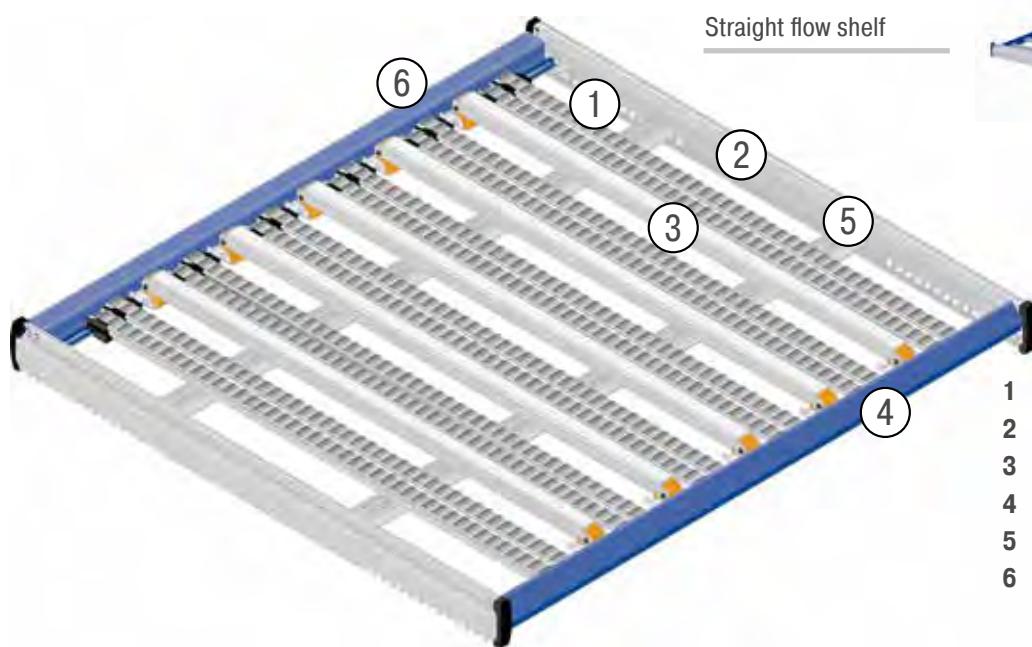
VDA/KLT FLOW SHELVES GUARANTEE A SMOOTH WORKFLOW

The push-fit construction allows later-on adaptation of the flow shelves to different load capacities or applications, while re-using the existing components.

They come in three variants:
Angled flow shelf

Straight flow shelf with
inclined picking tray

Straight flow shelf



- 1 Roller track
- 2 Flow shelf side profile
- 3 Push-flat guide rail
- 4 Flow shelf front profile
- 5 Flow shelf inner profile
- 6 Flow shelf rear profile

1. LIGHT-DUTY ROLLER TRACK

Profile made of torsion-resistant steel, fitted with smooth-running cylindrical rollers mounted on a steel axle. The rollers are characterized by minimal friction, low wear, dimensional stability and long service life.

- Very good travel characteristics
- Ideally suited for all types of load carriers
- Load capacity 8 kg per roller

Rollers are mounted on a steel axle



2. FLOW SHELF REAR PROFILE "KLT"

This flow shelf rear profile with a wider supporting surface has been specially developed for use with VDA/KLT containers.

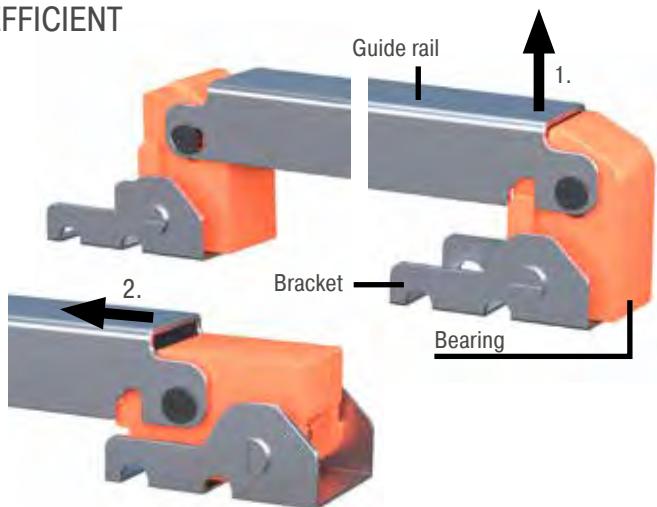
- Large, smooth surfaces for applying labels and lane markings



3. PUSH-FLAT GUIDE RAIL – TIME-SAVING AND COST-EFFICIENT

Can be used with large or small containers stored lengthwise or crosswise. No need to adapt lane width or to reposition guide rails. Even when a lane is already loaded with a certain container type, load carriers of a different type can be fed in.

- Different container types can be loaded without interrupting the workflow
- Accommodates different container sizes without the need for changing lane width
- Containers with different base types (mixed operation) can be loaded on the same flow level



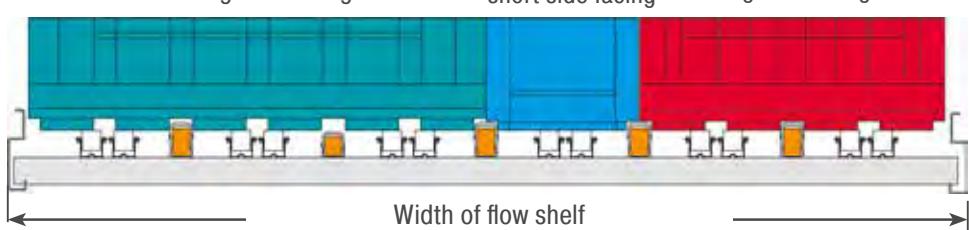
APPLICATIONS OF THE PUSH-FLAT GUIDE RAIL

Guide rail fixing in the same pitch as the container base pattern guarantees the smooth flow of any load carrier, irrespective of size or handling direction.

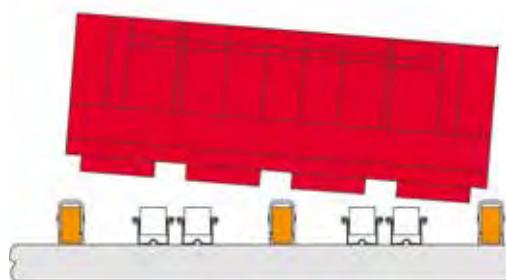
600 x 400 mm long side facing

300 x 200 mm short side facing

400 x 300 mm long side facing



Guide rails can be folded down (2) to accommodate containers with a flat base. No time is wasted for flow shelf reconfiguration.

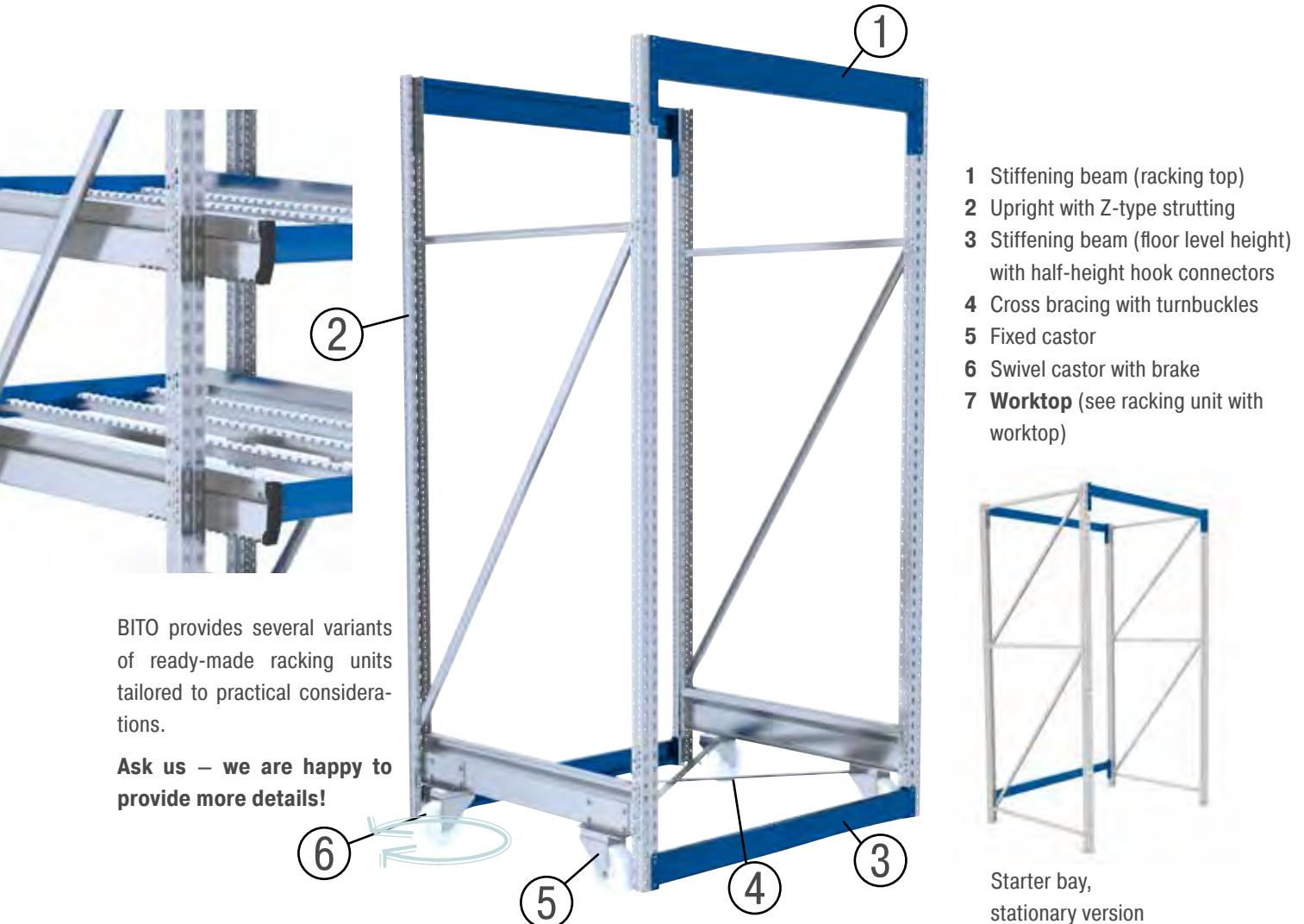


The robust guide rails absorb impact forces occurring during rough container in-feeding, thereby protecting the roller tracks from damage.

RACKING UNITS FOR PRODUCTION AND ASSEMBLY SETTINGS

These racking units ensure continuous supply of items at workstations or along assembly lines. In addition to the items in direct access at the front side, further supply is shelved in the lane. Supply racking units are available as stationary or mobile version.

Flow shelves can be adjusted in height in 12.5 mm increments.



BITO provides several variants of ready-made racking units tailored to practical considerations.

Ask us – we are happy to provide more details!

STIFFENING BEAM WITH HALF-HEIGHT CONNECTORS

Stiffening beams, diagonal bracing and flow shelves constitute a rigid structure that can be safely moved around your premises.

- Best use of space, since half-height hook connectors allow to position the first flow shelf immediately above the beam.



SWIVEL CASTORS AND FIXED CASTORS

2 swivel castors and 2 fixed castors allow effortless relocation of the racking unit. The brake on the swivel castors locks rolling and swiveling.

- Secure rack positioning
- Easy manoeuvring
- Castors from durable plastic or gray cast iron



RACKING UNIT WITH WORKTOP

Picked parts can be fitted directly at the rack. The solid beech wood worktop can be hooked into the slot pattern of the frames in 50 mm increments.



- Fast and easy adjustment in height
- Designed for rough handling
- Worktops can also be mounted to the short sides of a racking unit



RACKING UNIT WITHOUT WORKTOP



BITO SUPPLY RACKING FOR LIGHT-DUTY APPLICATIONS

This low cost live storage alternative is particularly suited for the supply of parts and components in plastic bins and containers or cardboard boxes. Based on BITO boltless shelving, this light-construction supply rack can be assembled easily and quickly. Starter and an x-number of extension bays will make a racking row in the required length.

All items can be conveniently accessed at the picking face and there is enough stock of each product line in the lanes.

Available in two variants.

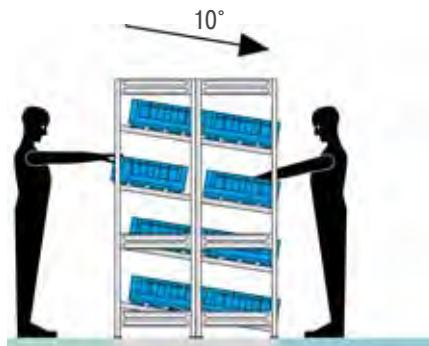
Dimensions: W x D x H

Starter bay: 1,358 x 1,250 x 2,000 mm

Extension bay: 1,308 x 1,250 x 2,000 mm

ADVANTAGES OF BOLTELESS SHELVING

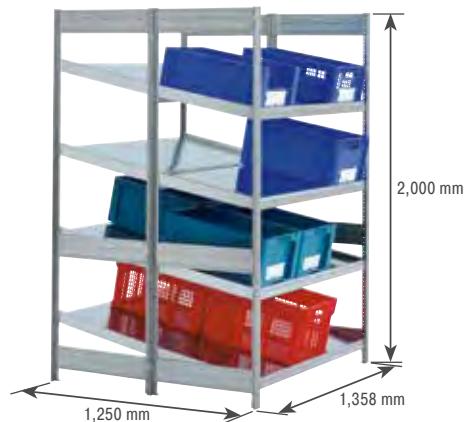
- Fast and easy assembly without bolts
- Bay load capacity = 2 x 800 kg
- Starter and extension bays make a racking row
- Gap covers form a closed and flat surface
- Side profiles provide guidance



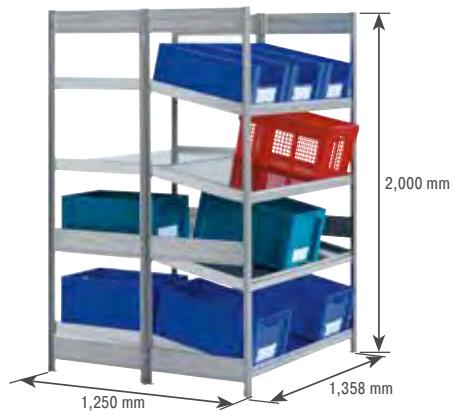
Loading

Picking

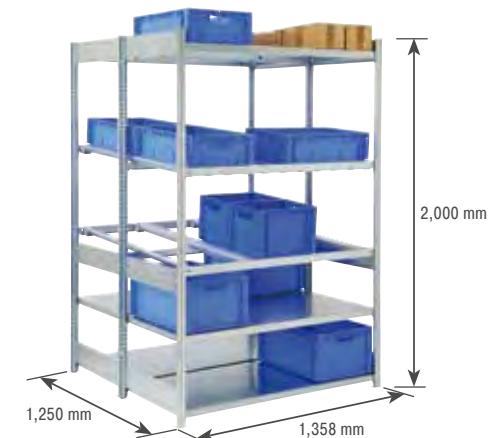
SUPPLY RACKING TYPE »BSS« 2 INCLINED SHELVES PER LEVEL



SUPPLY RACKING TYPE »BGS« 1 STRAIGHT/1 INCLINED SHELF PER LEVEL



SUPPLY RACKING TYPE "SDS-T"



MOBILE RACK WITH ROLLER TRACK LEVELS



1. BEAMS

Accommodate shelves and at the same time increase shelving rigidity.

- Easy to fit without bolts
- Safety pins prevent accidental dislodging
- Height adjustable in 25 mm increments



2. SHELVES

Shelves are simply placed onto beams or onto shelf clips.

- Shelf load capacity = 100 kg



3. SIDE PROFILES

These solid profiles are fitted over the entire shelving depth.

- They prevent jamming of storage units at the uprights
- Front-to-back guidance on either side stops goods from falling out sideways
- Easy to fit without bolts



5. RAISED SHELF EDGE

The front lip extends over the full width of a bay and prevents storage units from falling out at the picking face.

- Push-in fitting between shelf and front beam
- Sufficient height prevents goods from falling



4. GAP COVER

The gap cover is simply inserted into the gap between two shelves.

- Provides an even shelf surface



6. CONNECTOR CLAMP

- Connects two adjacent frames into a solid entity





**SK Pharma
Logistics GmbH**
Logistics provider

FEATURES

- Paperless order picking
- Integrated conveyors
- Subdivision into four picking areas

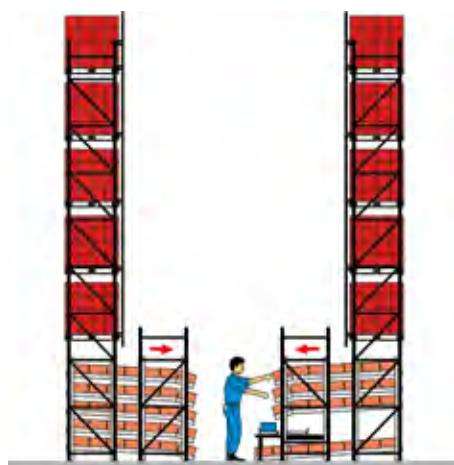
CUSTOMER REQUIREMENTS

SK Pharma Logistics GmbH in Herford is a logistic services provider of pharmaceuticals. Their warehouse now features a carton live storage system. The 664 live storage lanes are grouped into four picking areas which are again subdivided into reference item zones. Operators are guided by a pick-to-light system. They each work in a specific zone and pick products directly into a despatch carton which is filled in one picking zone only or in several picking zones. Upon completion of the order, the despatch carton is pushed from the non-powered conveyor lane onto the powered conveyor lane. After passing an automatic weighing station, the cartons are directed to one of the four packing stations where they are lidded and automatically corded for despatch.



BENEFITS

- Very short picking routes allow efficient order picking
- Higher throughput rates
- Shorter order processing times





DM
Drugstore chain

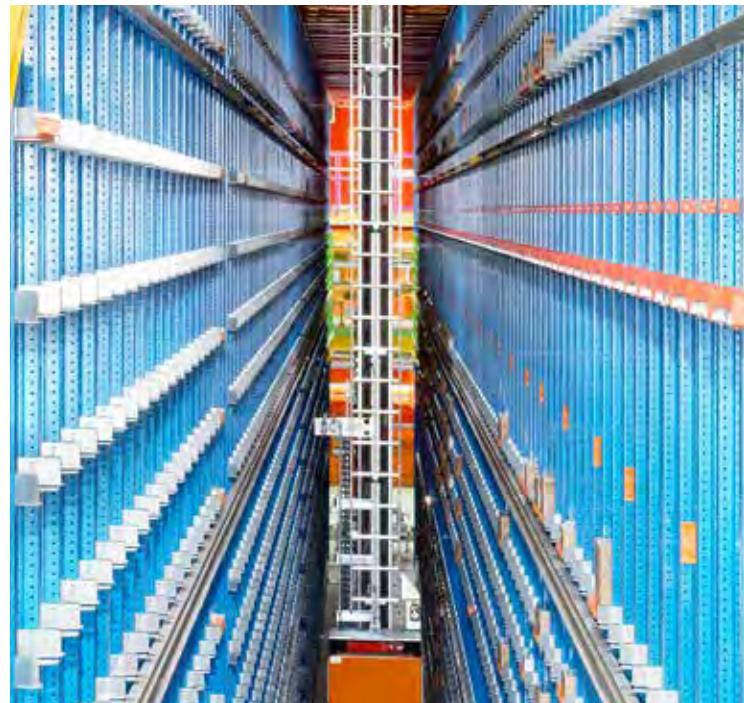
FEATURES

- Carton live storage installation FLEX with automated replenishment
- Bins with completed orders are fed out on integrated conveyor lanes
- Manual order picking with a pick-by-light system

CUSTOMER REQUIREMENTS

In 1973, the first dm store opened in Karlsruhe. Today, dm is operating as a retailer of drugstore products in twelve European countries with around 3,350 stores, over 1,800 of them in Germany. The logistics centre in Weilerswist near Cologne and the distribution centre in Waghäusl prepare ordered goods and distribute them to all local stores.

The customer's requirement for their Weilerswist distribution centre was that goods must be stored on the smallest possible footprint. Fast and efficient order picking was critical, since some 3,000 mixed load pallets have to be shipped every day. The automated high-bay warehouse with 140,000 storage positions is serviced by 52 stacker cranes that ensure all warehousing activities from storage, stock replenishment, product supply to the picking zones, product buffering and bin retrieval. The order picking areas have been furnished with BITO carton live storage racking.



BENEFITS

- Compact storage on 20% less floor surface
- Ergonomic working conditions
- Increased picking performance, shorter order processing times



Volg
Retail Trade Organisation

FEATURES

- Orders are picked from a carton live storage facility
- Single depth and double depth pallet racking is used as buffer stock
- Additional boltless shelving accommodates picking goods
- Approximately 1,050 items are picked by hand every day

CUSTOMER REQUIREMENTS

The consumer goods distributor Volg Konsumwaren AG supply their products to some 550 Volg countryside markets, 290 privately owned retailers and to more than 70 Agrola petrol station shops in Switzerland. Depending on the shop size, the countryside shops offer 2,500 - 5,000 products – mainly fresh produce such as fruit, vegetables, bread, milk and other dairy products as well as meat from certified producers, but also household and personal care products.

Since the extensive assortment of approx. 550 fresh products cannot be stored for more than two days, Volg needed an efficient storage and order picking solution for on-time delivery to the stores. The storage system had to be suitable for foods and for cold store products.



BENEFITS

- Separate loading and picking aisles enable simultaneous delivery and picking
- Different picking zones depending on the turnover frequency of the items
- Increase in productivity: 25% more orders can be processed
- Steel shelving ensures compliance with hygiene regulations



**Zwilling J.A.
Henkels AG**
Manufacturer
of cutlery

SYSTEM PARTNER



TGW, Wels (A)

FEATURES

- Automated replenishment
- Paperless order picking
- Integrated conveyors

CUSTOMER REQUIREMENTS

The Zwilling Group, headquartered in Solingen, Germany, is represented by sales offices in more than 100 countries. Their product portfolio includes knives, scissors, cooking pots, pans, cutlery, and cosmetics and hairdressing supplies for specialist wholesalers and retailers. Outdated workflow patterns, constant growth, new markets, and the enormous expansion of the product range forced a logistical overhaul.

The live storage installation accommodates A-items (fast-moving items) and is the cornerstone of the order picking system. It is automatically supplied with new bins from an AS/RS, while the lanes are manually loaded with B-items. C-items (slow movers) are picked from BITO small parts containers, series »KLT«, which are provided directly from the automated bin storage installation. Products are picked manually with the help of a pick-to-light system into despatch cartons (pick and pack system). These are fed out at the picking stations by a conveyor system and finally transported to the strapping and labeling station.



BENEFITS

- Direct order picking saves space which would otherwise be occupied by circulation bins
- No time-consuming repacking necessary
- Drastically reduced travel routes
- Shorter order processing times
- Pick-to-light system greatly reduces picking errors



HITACHI
Inspire the Next

HITACHI
Electrical and
mechanical engineering

FEATURES

- Carton live storage FLEX, roller tracks fitted with ESD plastic rollers
- Products are supplied in BITO XL stacking containers with antistatic inlays
- Storage items and order picking supplies are stored in live storage lanes

CUSTOMER REQUIREMENTS

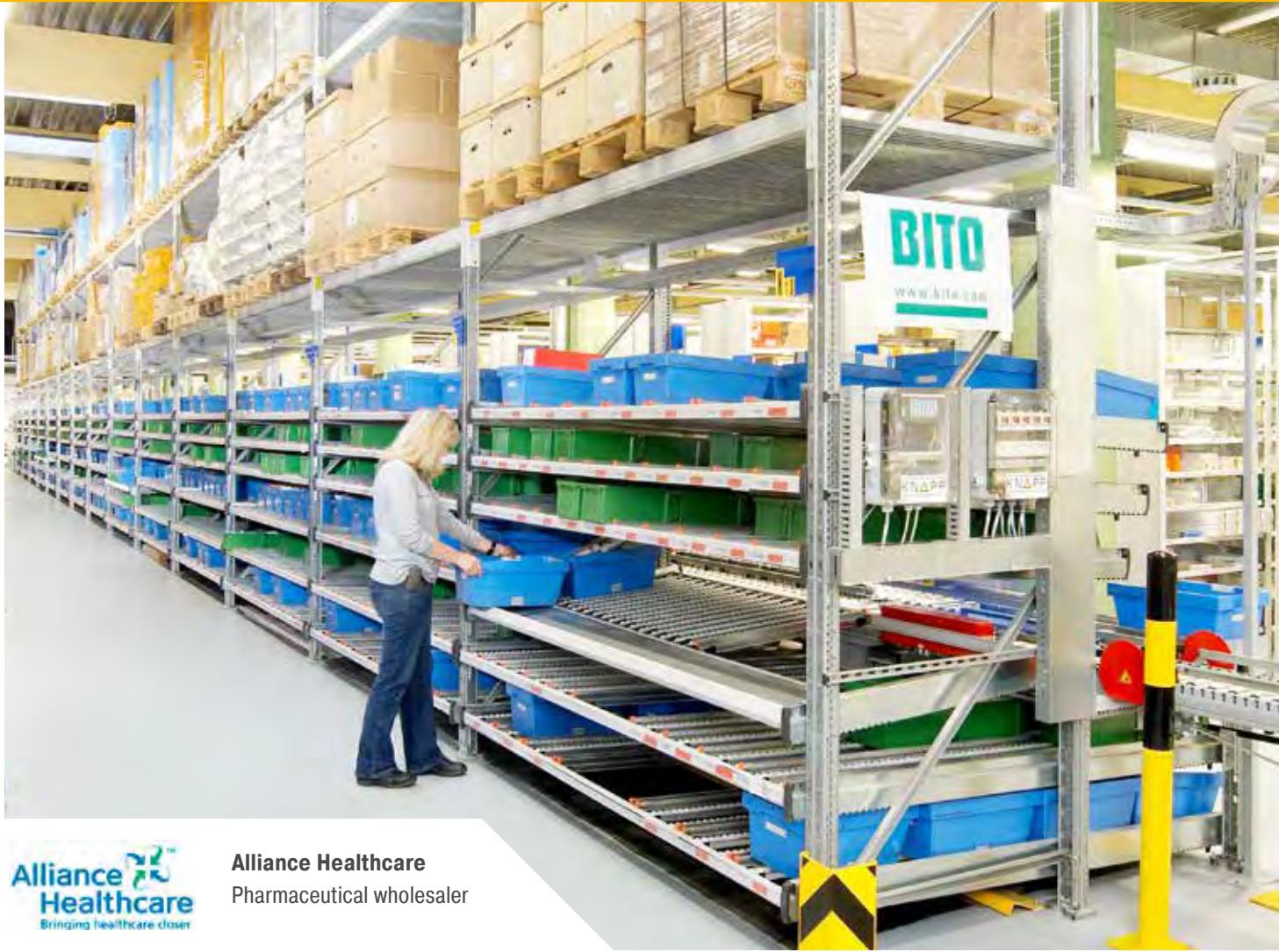
Since 1982, the globally operating Japanese electrical and mechanical engineering group Hitachi Europe Ltd has been supplying products, solutions and services for every sector - from data storage solutions to measurement technology and transport systems.

The future-oriented warehouse was to provide sufficient storage capacity for the next 15 years. The customer needed to ensure that the sensitive electronic components were stored in an anti-static environment and would not be damaged during storage and picking.



BENEFITS

- BITO Adapta Flow storage modules provide utmost flexibility for handling containers of different weights
- Efficient order picking: 50 live storage lanes are now available per racking bay instead of originally six pallets with one reference line each



Alliance Healthcare
Pharmaceutical wholesaler

FEATURES

- The picking lanes are topped by pallet buffer levels
- Integrated conveyors
- Combined with boltless shelving

CUSTOMER REQUIREMENTS

Alliance Healthcare Deutschland, headquartered in Frankfurt am Main, is one of the largest pharmaceutical wholesalers in Germany and, with 24 branches, has the most extensive delivery network in the industry. The logistics centre in Bremen stocks pharmaceutical products in pallet racking which has been upgraded with live storage levels at floor level height in order to increase picking performance. Products are picked in FIFO order and placed on conveyor lanes that connect the order picking zones.

BENEFITS

- FIFO storage
- Very good picking performance
- High storage density
- Short order throughput times



**TEGUT**

Food + non-food retailer

FEATURES

- Pallet racking with on-top pallet buffer stock, retro-fitted with flow shelves at operator reach height

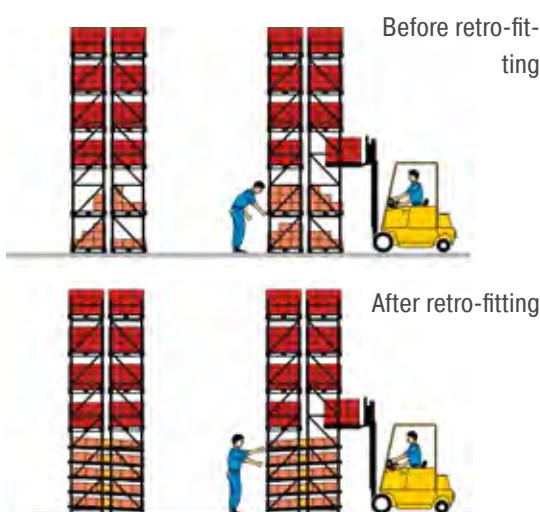
CUSTOMER REQUIREMENTS

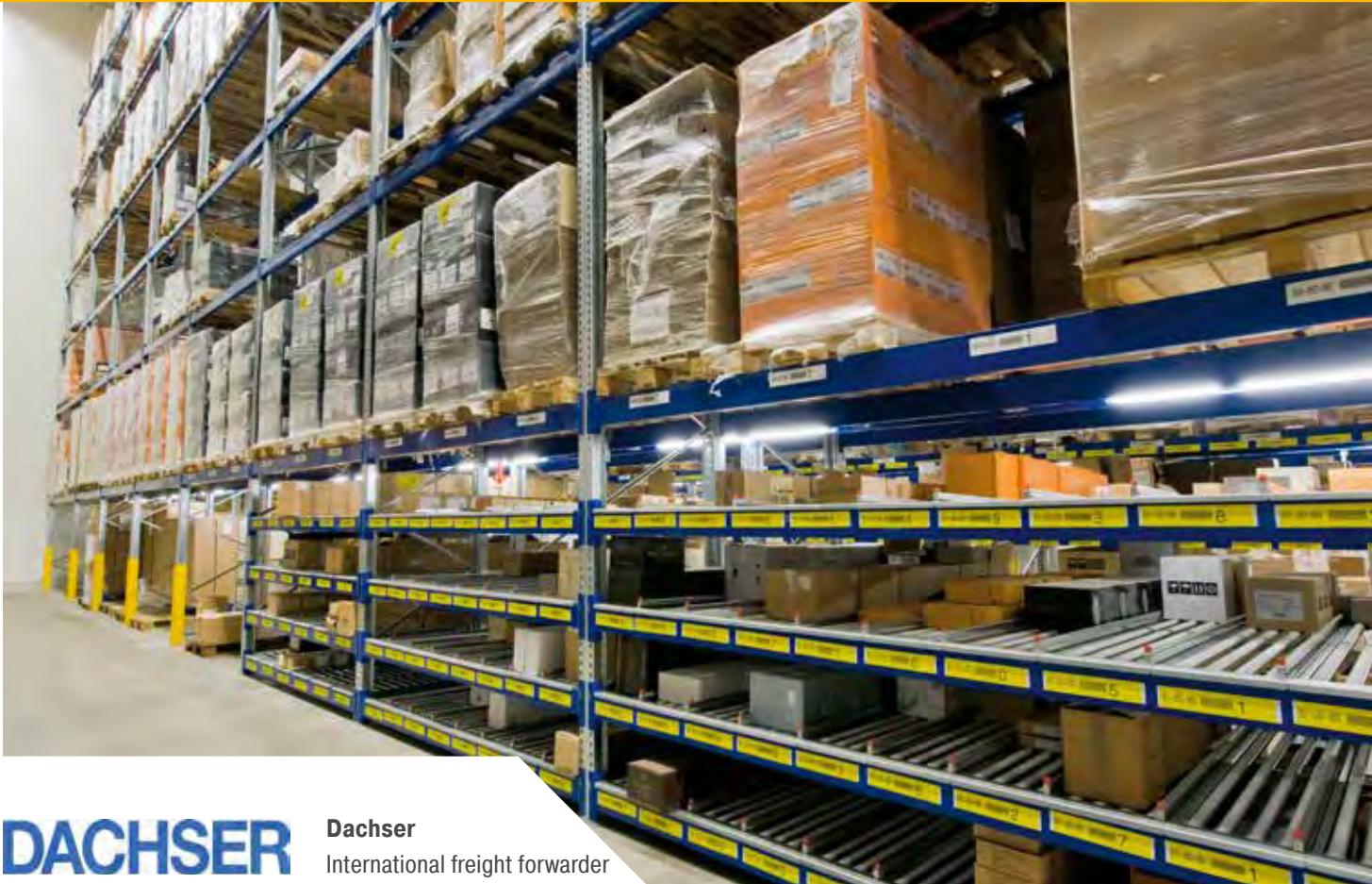
Since the 80s, Tegut in Fulda have been widening their product range by organic food. Meanwhile, the organic range includes 2,500 stock lines which are kept in pallet racking according to their stock rotation frequency.

The floor level of the existing third-party racks and of BITO pallet racking were retro-fitted with flow shelves to increase picking performance. The pallet positions on the upper levels were kept. Flow levels are simply hooked into existing pallet uprights using upright adapters to convert static racking into a dynamic system.

**BENEFITS**

- Huge time savings
- Low operating costs
- FIFO storage
- Increased number of stock lines at the picking face, giving a boost to picking performance





DACHSER

Dachser
International freight forwarder

FEATURES

- Pallet racking retro-fitted with Adapta Flow modules
- Dynamic and highly flexible live storage system

CUSTOMER REQUIREMENTS

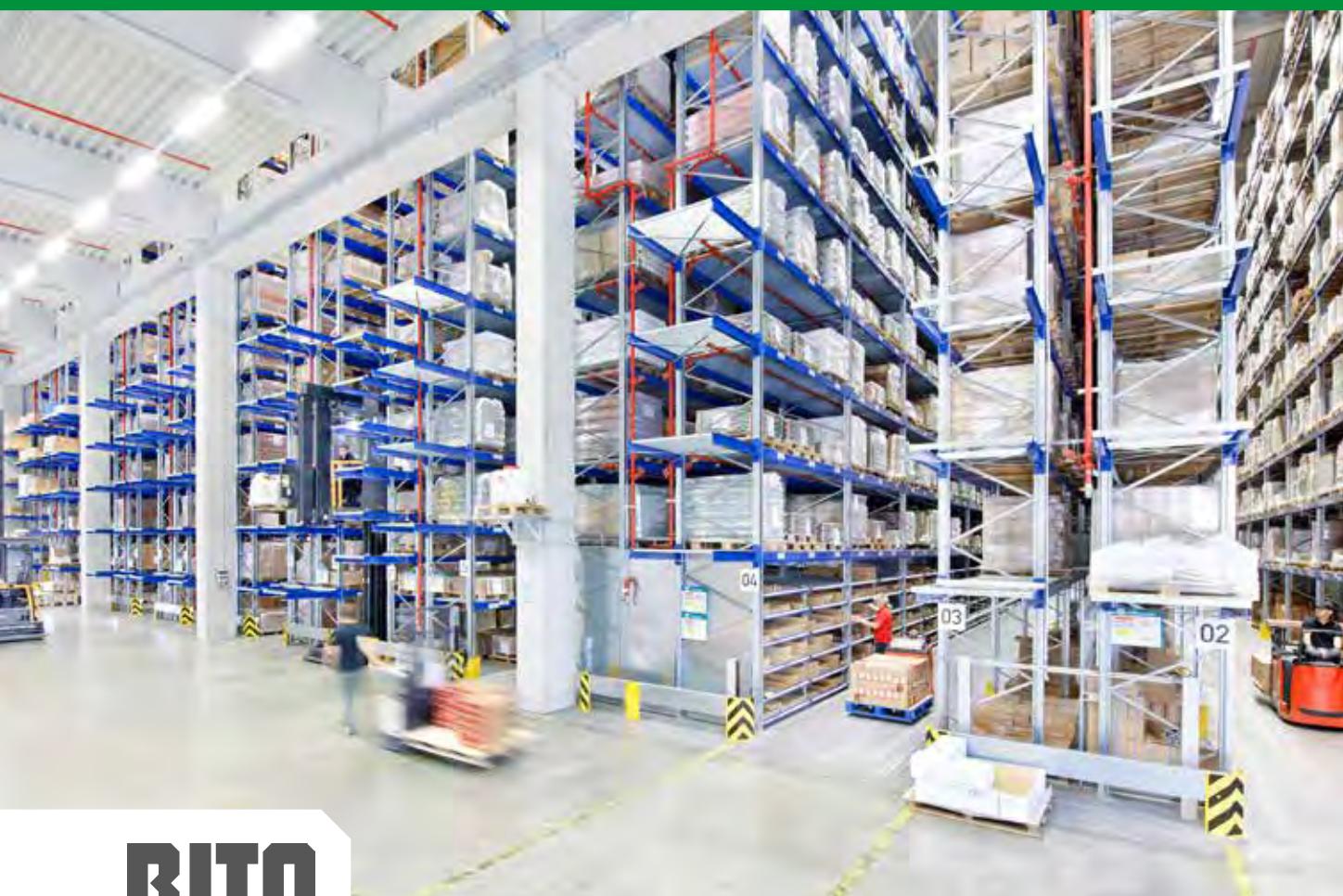
Dachser counts among Europe's leading forwarders. Their logistics centre in Kempten features pallet racking which has been retro-fitted with BITO Adapta Flow modules at operator reach height.

Retro-fitting was carried out quickly and inexpensively, as roller tracks or full-width roller segments only had to be placed on the beams. Instead of six pallet positions per racking bay, a total of 50 lanes present different product lines in various packaging sizes and variants to the order pickers.

BENEFITS

- High degree of flexibility
- Shorter order processing times
- Loading and picking in separate aisles
- Direct and safe access to products
- FIFO principle



**BITO**

www.BITO.COM

PRO Pallet racking

Despite modern technologies that are increasingly used in warehousing and order picking, “classic” pallet racking is the most commonly used system for goods that are stored on pallets.

Selective pallet racking enables direct access to every pallet. Moreover, the racking configuration can be easily modified and extended.

Relatively low investment costs and flexibility have made this system essential for storage and order picking.

The most common configuration is multi-position storage with 2 - 4 pallets per bay. On buffer stock levels, pallets are stored short side facing. Order pickers would retrieve entire pallet loads. If individual packaging units or items are to be picked, pallets are stored long side facing in order to facilitate access.

With its practical accessories, the BITO pallet racking system enables optimal storage of a wide variety of storage units.

PRODUCT INFORMATION

Frequent application

- Product buffering and order picking

Service options

- Manual order picking at floor level height
- Hand pallet trucks, electric lift trucks, reach trucks
- All common forklift truck types
- Automated loading and retrieval

Storage options

- Pallets are handled long or short side facing
- Single or double depth storage

Surface/volume utilisation

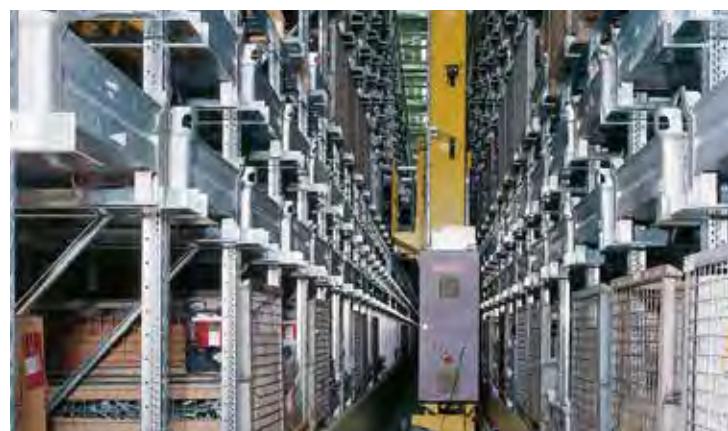
- Substantial increase possible with high-bay storage



High-bay pallet racking



Pull-out pallet position



Automated pallet live storage facility with single position storage

SAFETY



The German quality mark RAL-RG 614 guarantees the highest quality levels for structural safety, load capacity and sufficient rigidity both lengthwise and front to back.



All components fully comply with the latest safety regulations of the German Employers' Liability Insurance Association.

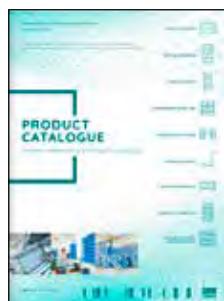
BITO PRODUCT CATALOG

To look at our complete product range with comprehensive product information, ask for our PRODUCT CATALOGUE. We will be pleased to send you a free copy. Simply e-mail us at:

info@bito.dk (DK)

info@bito.fi (FI)

info@bito.se (SE)



Product brochures and in-depth information can be downloaded at:
<https://www.bito.com/da-dk/service/vejledninger-og-brochurer/> (DK)
<https://www.bito.com/fi-fi/neuvaja-ja-palvelua/asennusohjeet-ja-esitteet/> (FI)
<https://www.bito.com/sv-se/raadgivning-och-service/monteringsanvisningar-och-broschyer/> (SE)

For further assistance please contact our project support at:

Tel. +45 70 21 51 51 (DK) Tel. +358 10 324 6510 (FI) Tel. +46 (0)42 151 910 (SE)



Identification & safety

System specific advantages of BITO pallet racking systems

- Assembled frames = faster overall assembly, or, depending on the project, unassembled frames to save on freight costs
- Bolted frames = time and cost-saving repair in case of damage caused by forklift trucks
- Fast assembly of basic components without bolts
- Components are galvanised or epoxy-coated for high corrosion resistance
- Long and short side pallet handling as well as single position and multi-position storage
- Wide range of accessories and safety features
- All racking components comply with the latest safety regulations of the German Employers' Liability Insurance Association
- Many level decking options
- Particularly hard-wearing components for a long service life

1. WIDE AISLE RACKING

- Buffer store

- Low to medium turnover frequency

- Low cost storage

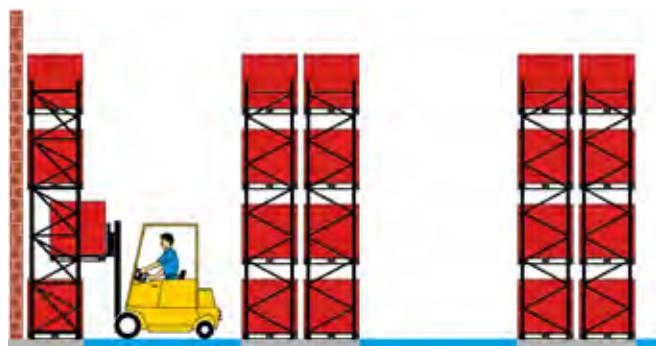
The standard solution for pallet racking is a wide aisle configuration. As a rule, wide aisle racking is serviced with man-operated stacker cranes or order picking trucks. Loads stored at floor level height can be conveniently handled with a hand pallet truck or an electric lift truck.

Your advantages:

- Low cost storage

- Easy servicing with front stackers

- Manual order picking at floor level height



2. PULL-OUT UNITS

- Ideal, strain-free order picking from 3 sides

- Convenient picking even if pallets are handled short side facing

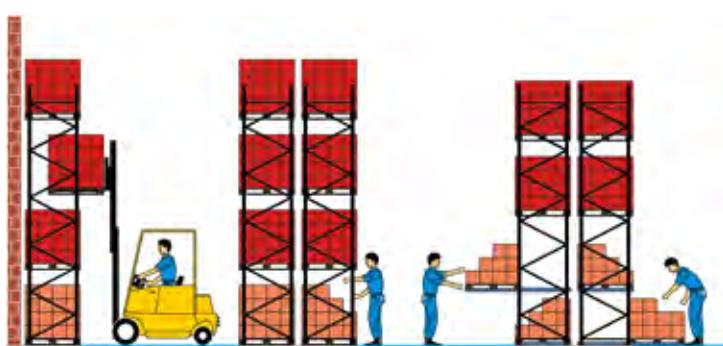
- Can be retro-fitted into existing pallet racking

As a rule, smaller unit loads are directly picked off the pallets stored at floor level height or, depending on the reach height, from pallets on the first level. Pull-out pallet positions facilitate order picking, because pallets can be accessed from 3 sides.

Your advantages:

- Strain-free order picking from 3 sides

- Prevents injuries – no head bumping on the beam of the level on top



Picking aisle

Loading aisle

Buffer area

Pick items

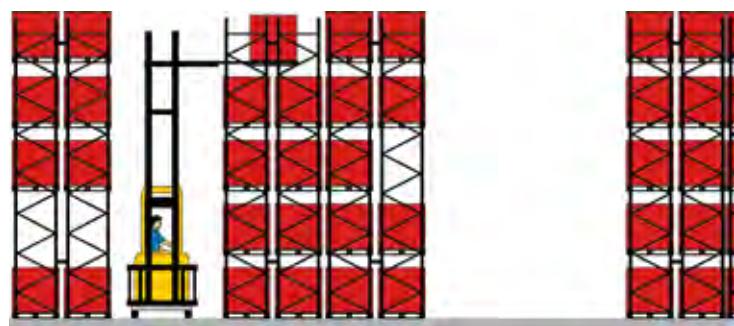
3. DOUBLE DEEP STORAGE

- Good alternative to narrow aisle storage with rail-guided service vehicles

Double deep storage requires a service vehicle with telescopic forks. As a rule, the service truck is equipped with a camera at the forks and a control screen in the driver cabin to see the "hidden" second pallet.

Your advantages:

- Less floor space required



4. NARROW AISLE RACKING

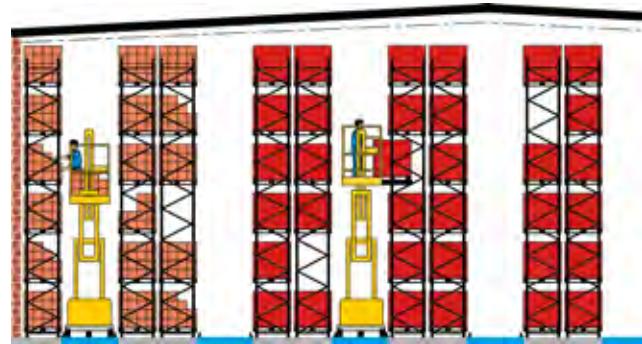
- High-bay construction with narrow aisles, rack servicing with reach trucks

- Individual unit loads can be picked from all levels

Narrow aisle installations provide efficient use of floor space. As a rule, these facilities are serviced with man-operated stacker cranes or reach trucks allowing individual load picking from all racking levels. Rail or wire guidance ensures that service vehicles always keep the ideal distance to the racking installation.

Your advantages:

- Very good utilisation of available floor space and headroom
- Ideal for huge quantities of the same item and a medium to high turnover frequency
- No relocation of stock required for order picking

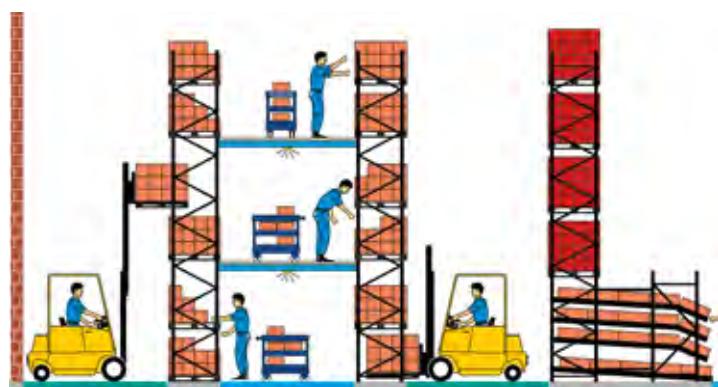


5. MULTI-TIER CONSTRUCTION

In multi-tier installations, items can be picked simultaneously by several order pickers. This means that a higher number of orders can be processed. The BITO pallet racking system can ideally be combined with other shelving and racking systems, for example, it can be fitted with live storage lanes.

Your advantages:

- Simultaneous order picking speeds up order throughput
- Good utilisation of headroom
- Random storage ensures that all storage locations are addressed as often as possible
- The backup pallet sits right behind the picking pallet
- Suited for pallets handled long side and short side facing



Picking aisle

Buffer area

Loading aisle

Pick items

System specific advantages of BITO pallet racking systems

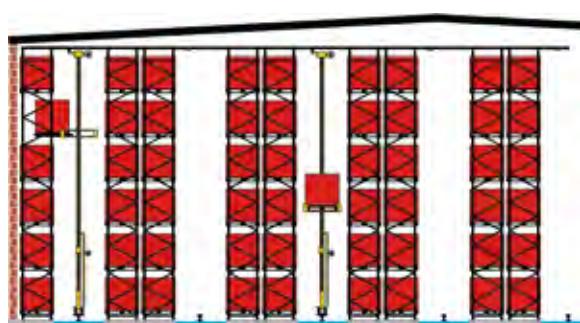


6. MOBILE PALLET RACKING

Since only one service aisle is needed for servicing the entire facility, the gain in space is substantial and can amount to 100 %. As aisles can be opened where required, all pallets can always be directly accessed.

Your advantages:

- Optimum utilisation of storage volume results in a very high storage density
- Instead of one aisle wide enough for truck circulation, it is also possible to open several narrow aisles.



7. AUTOMATED STORAGE AND RETRIEVAL

Although "classic" pallet handling with lift trucks is widely spread, automated installations are on the rise. Higher investment costs are quickly overcompensated by shorter order picking times and reduced lead times.

Your advantages:

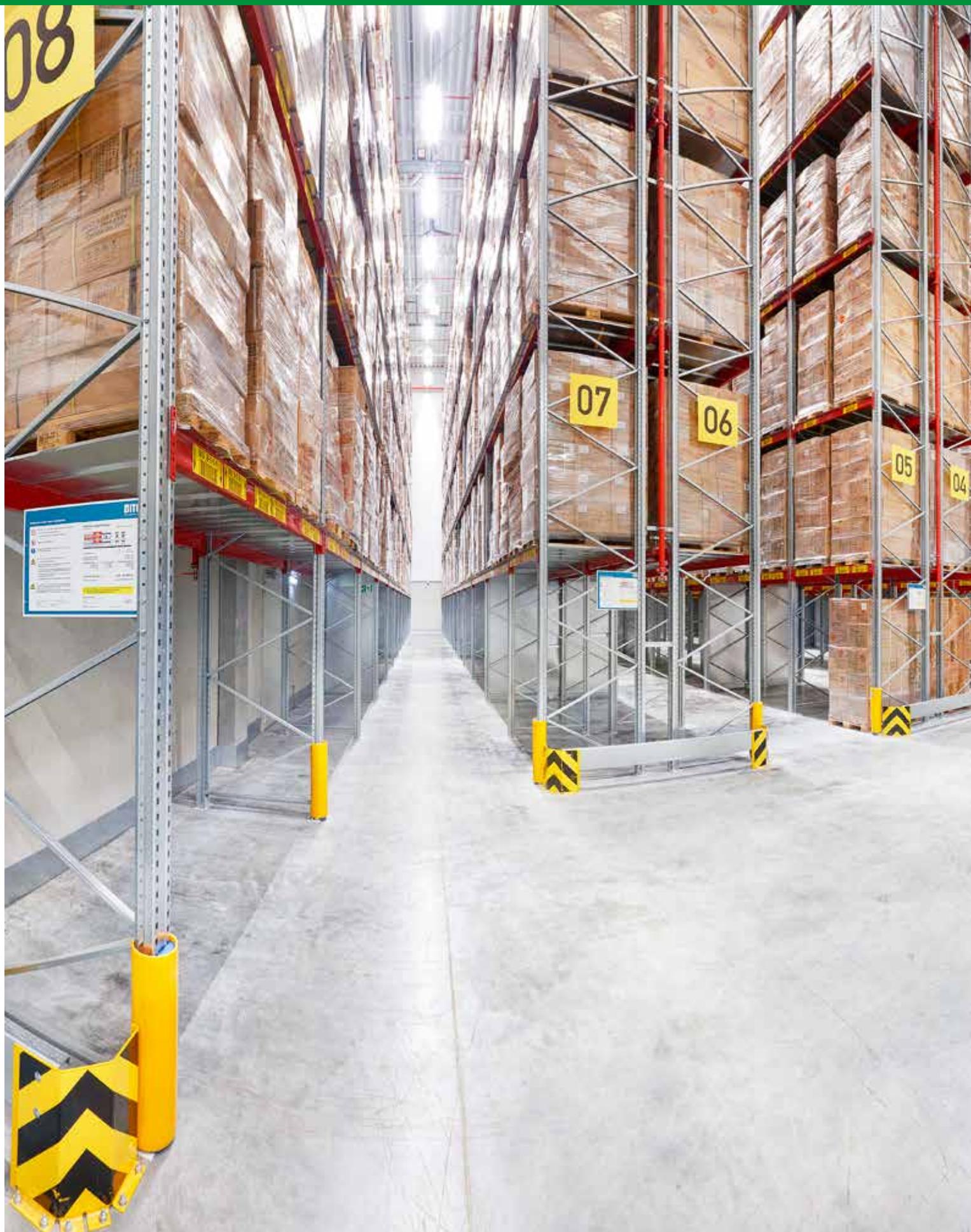
- Closed system without human intervention prevents workplace accidents
- Optimised travel routes improve efficiency
- Short order throughput and delivery times
- Very good availability of goods
- Computer-controlled warehouse management
- Continuous workflow

Picking aisle

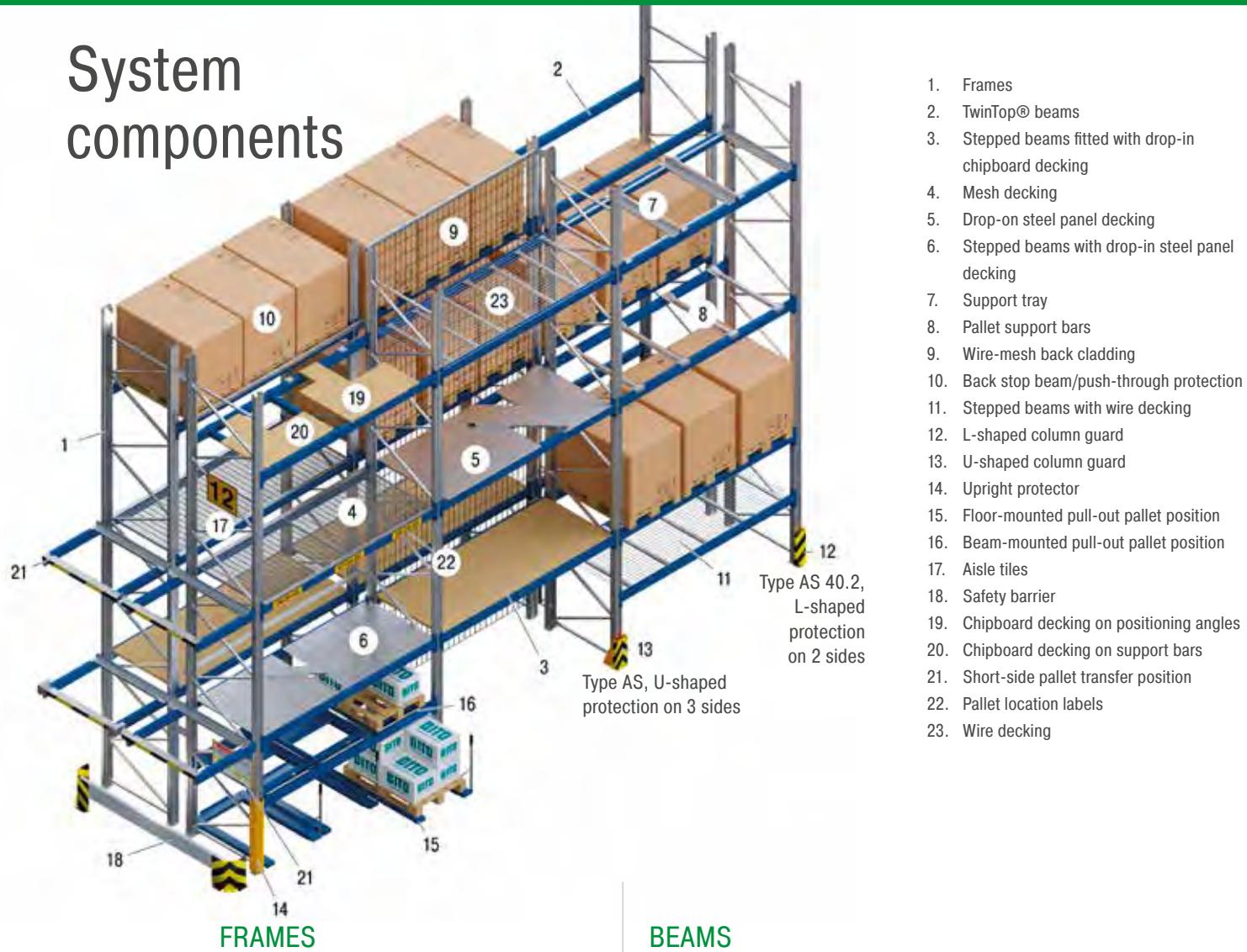
Loading aisle

Buffer area

Pick items



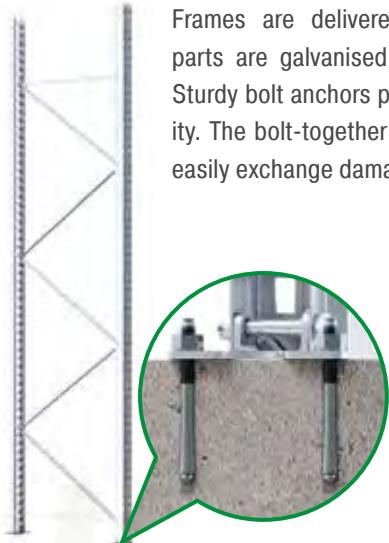
System components



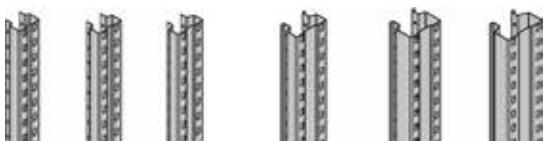
FRAMES

Frames are delivered pre-assembled. All parts are galvanised to prevent corrosion. Sturdy bolt anchors provide excellent stability. The bolt-together construction allows to easily exchange damaged components.

High-quality bolt anchors provide excellent stability.



Profiles are available in various height and material thickness options.

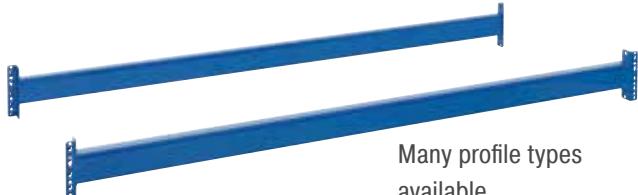


BEAMS

The easy-to-handle hook-in system allows fast and cost-effective assembly. Robust safety hooks which are secured against loss by a 90° turn prevent accidental lifting of the beams to avoid work accidents.



- Suited for heavy-duty applications
- They provide excellent lengthwise rigidity



Many profile types available

System components - Safety equipment

COLUMN GUARDS

Available in two types for 2-side or for 3-side protection of uprights in corner areas and passageways. This particularly robust component is floor-anchored directly in front of an upright. Height 400 mm (100 mm more than stipulated by most safety regulations).



UPRIGHT PROTECTOR

Protects uprights over a length of 700 mm. It is bolted to the upright and can be mounted at any racking level.



GUARD RAILING

Provides protection on the short side of racking rows. Floor-anchored, robust corner posts are connected with a steel profile.

A second steel profile can be added to fill the room between the floor and the upper profile.

Guard railing can be extended by adding intermediate posts.



WIRE-MESH BACK CLADDING

Protects trafficways and work areas behind one pallet deep racking. A sturdy frame with a wire-mesh 50x100 mm infill prevents goods from dropping.



BACK STOP BEAM

Prevents pallets or items from dropping onto passageways and workstations behind single depth racking rows and maintains a safety distance between back-to-back racking.



System components

Drop-on level decking

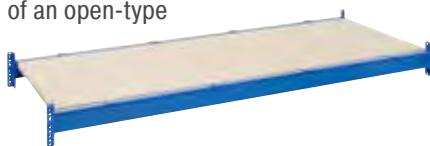
- Drop-on fitting on TwinTop® beams
- Closes open beam levels
- Later-on adjustment possible at any time



CHIPBOARD SHELVES ON SUPPORT BARS

Support bars increase the load capacity of chipboard shelves. Support bar dimensions have been adapted to the panel height in order to ensure that shelves sit flush with the upper edge of the box-type beams.

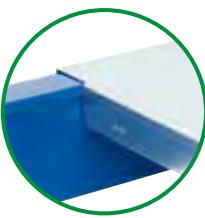
- Chipboard panel quality V20 E1
- Easy retro-fitting of an open-type level into a decked level



STEEL PANEL DECKING

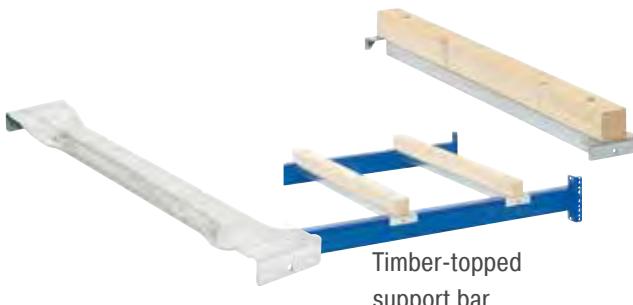
The galvanised drop-on steel panels are placed next to each other on the beams. They are 300 mm wide and form a flat surface which does not add to the beam height.

- Solid make
- High shelf load capacities



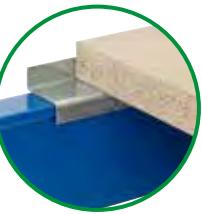
TIMBER TOPPED SUPPORT BARS

Pallet support bars provide additional front-to-back support, in particular for pallets handled long side facing.



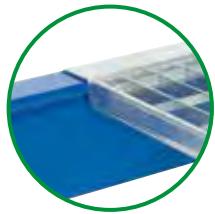
CHIPBOARD SHELVES ON POSITIONING ANGLES

The chipboard shelves are simply placed on the beams and secured against sliding with 4 Z-shaped positioning angles.



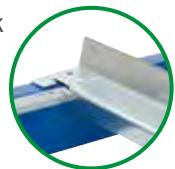
MESH DECKING

With their angled sides, wire-mesh segments sit safely on the box-type beams. They are suited for high load capacities, surface loads as well as point loads. They also allow sprinkler coverage of the stored goods. Location occupancy is easily visible from below.



LOAD SUPPORT TRAY

Bolted construction, optionally with back stop. The angular sides allow safe in-feeding and out-feeding of wire-mesh box pallets and flat pallets.



without back stop plate



with back stop plate

System components

Drop-in level decking

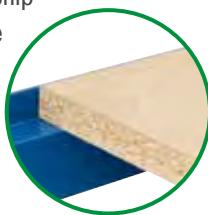
- Drop-in fitting on beams type PS
- Closes open beam levels
- 2 step heights: 23 mm and 38 mm



CHIPBOARD SHELVES

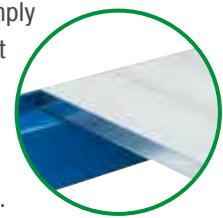
Stepped beams protect the edges of chipboard decking from potential damage during loading and retrieval. We supply high grade V20 E1 chipboard decking.

- Continuous, flat storage surface
- High-quality chipboard panels



STEEL PANEL DECKING

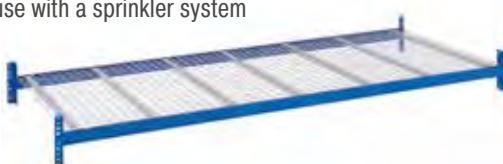
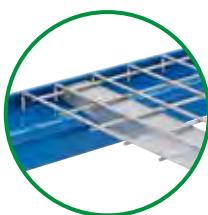
These low-weight steel panels are simply placed next to each other and form a flat storage surface which is easy to clean. The panels sit flush with the upper edge of the beam step for optimum protection from damage during loading and retrieval.



WIRE SHELVES

Wire shelves do not block light from the storage levels underneath and allow sprinkler coverage which helps you meet fire protection requirements.

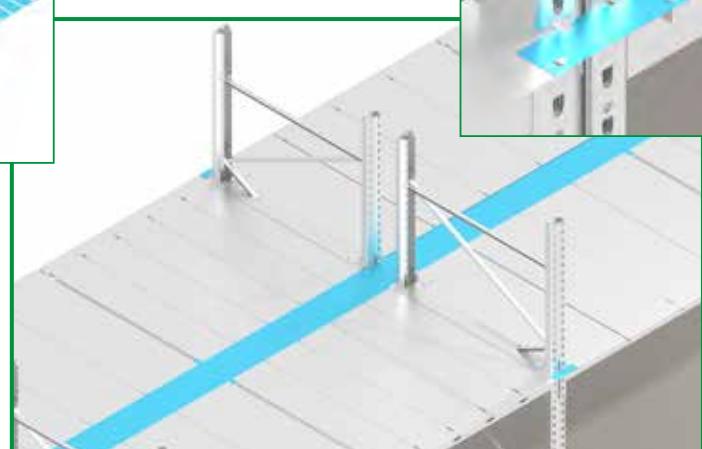
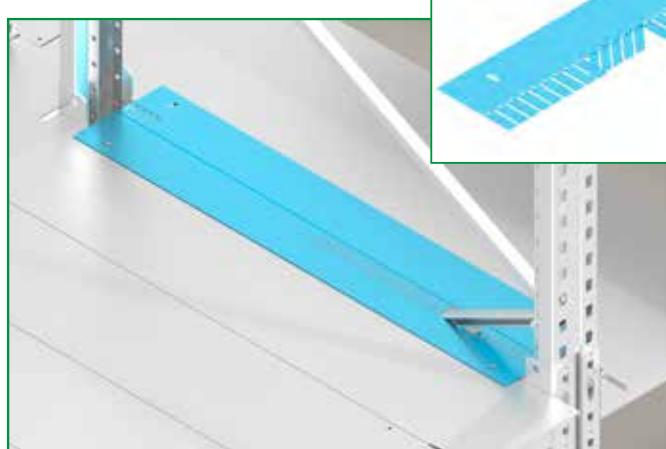
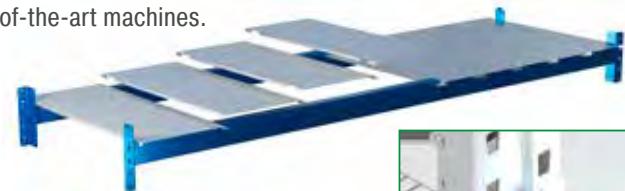
- They create a brighter work environment
- Ideal for use with a sprinkler system



HEAT SHIELD PANELS

Heat shield panels are fitted above the sprinkler levels. In case of a fire, heat accumulates under the panels, thereby triggering sprinkler function sooner and helping to contain and extinguish fires more quickly. Easy to fit on the beams, storage goods can be placed on top.

Our heat shield panels have been designed according to VDS CEA 4001 and FM Global specifications and are produced on state-of-the-art machines.



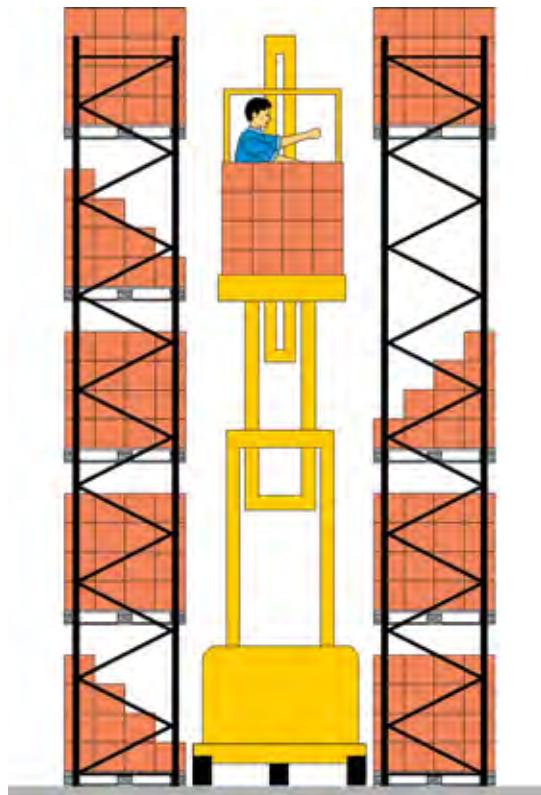
Narrow aisle racking



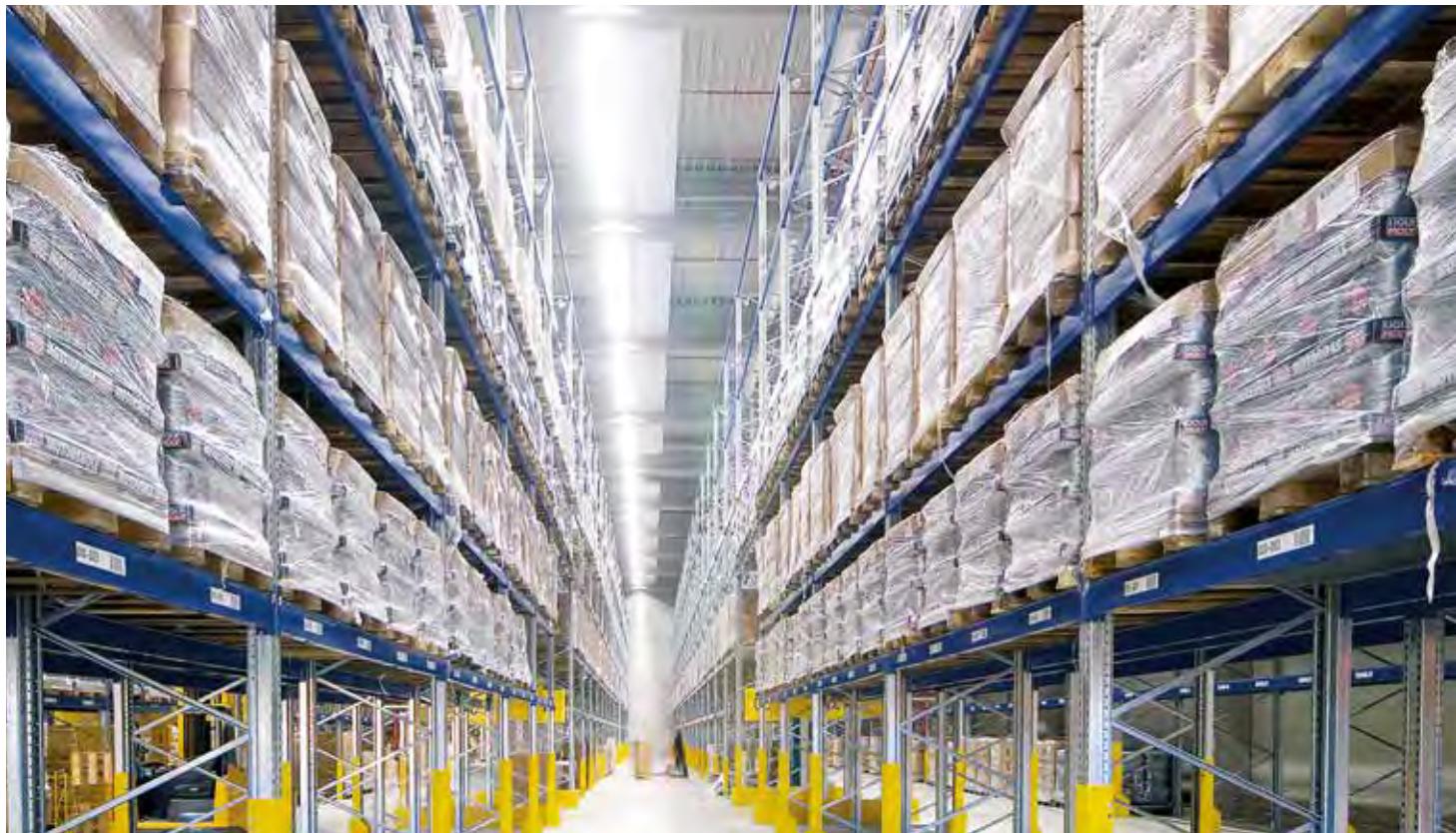
NARROW AISLE STORAGE

High-bay narrow aisle racking has a double space benefit: the reduced aisle width frees up floor space and the racking height makes full use of the available headroom. As a rule, these facilities are serviced with man-operated stacker cranes or reach trucks. This allows convenient picking of smaller unit loads from all racking levels. Guide rails or induction lines ensure that the service vehicles run precisely on track.

Narrow aisle storage is ideal for storing a huge number of reference lines with a medium to high stock turnover frequency. No relocation of picking stock required. Narrow aisle trucks provide a high level of operational safety, as no persons are walking in the racking aisles.



Wide aisle racking



WIDE AISLE STORAGE

Wide aisle pallet racking is the most commonly used system for storing palletised loads. The racking is serviced with front stackers, reach trucks or order pickers.

The aisle width depends on the dimensions of the service truck(s) used. Based on standard components, wide aisle racking is a cost-efficient, yet versatile solution. Another advantage is that it can be serviced with standard service vehicles.

Loads stored at floor level height can be conveniently handled with a hand pallet truck or an electric lift truck. Compared to narrow aisle facilities, wide aisle racking has a larger footprint.



Order picking at floor level height

PULL-OUT PALLET POSITIONS

Pull-out pallet positions allow individual pallets to be pulled out of stationary racking into the service aisle, enabling goods to be conveniently picked from 3 sides without straining the back. Pull-out units are particularly useful when relatively heavy or bulky goods are to be picked.

Another advantage is that pallets can be stored short side facing thanks to the improved access provided by the system. This also has a positive effect on the picking aisle length which would otherwise be longer.

For statical reasons, not all storage positions on a level can be fitted with a pull-out unit.

Depending on the height of a pallet load or the reach height, pull-out units can be mounted at floor level height or on the first beam level.



Video: Pull-out pallet positions



Pull-out pallet positions at floor level height and on the first beam level



PALLET RACK RETRO-FITTING / INCORPORATING DIFFERENT RACKING TYPES AT FLOOR LEVEL HEIGHT

If a picking system no longer proves efficient and ergonomic, a company must be able to react quickly to adapt their existing storage system to the new conditions. BITO Pallet racking has been designed to allow fast adaptation to different needs, providing customers with a maximum amount of flexibility. Our vast range of accessories and ancillary products allows many easy-to-implement reconfiguration variants. By fitting flow levels at floor height, pallet racking can be adapted for picking individual packaging units or single items whereas the pallet storage levels on top are used as a buffer store.

Your advantages:

- Substantially higher number of reference lines
- Shorter travel routes and reduced pick times
- Maximum configuration flexibility
- Excellent ergonomic conditions for strain-free working



Pallet rack with roller track levels for unit or piece picking (Drop-in segments)



Pallet rack with push-back roller track levels for unit or piece picking (sloped levels)



Pallet rack with full-width roller lanes for pallets



Pallet rack with container pick walls



Pallet rack with shelving (straight shelf levels)



Pallet rack with drop-on wire shelves



Pallet rack with chipboard panel decking



Pallet rack with shelving (inclined shelf levels)



Pallet rack with steel panel decking



FEATURES

- Pallet racking serviced with man-up narrow aisle trucks
- Order picking at floor level height, buffer stock on top
- Customer-specific pallets for dressmakers pattern paper
- Drop-on timber decking in customised dimensions
complies with fire protection regulations

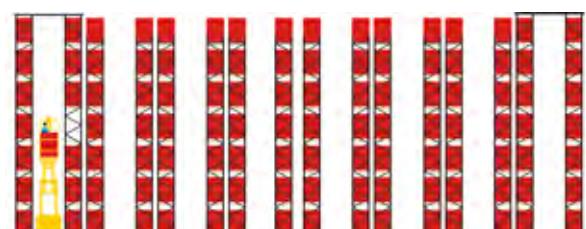
CUSTOMER REQUIREMENTS

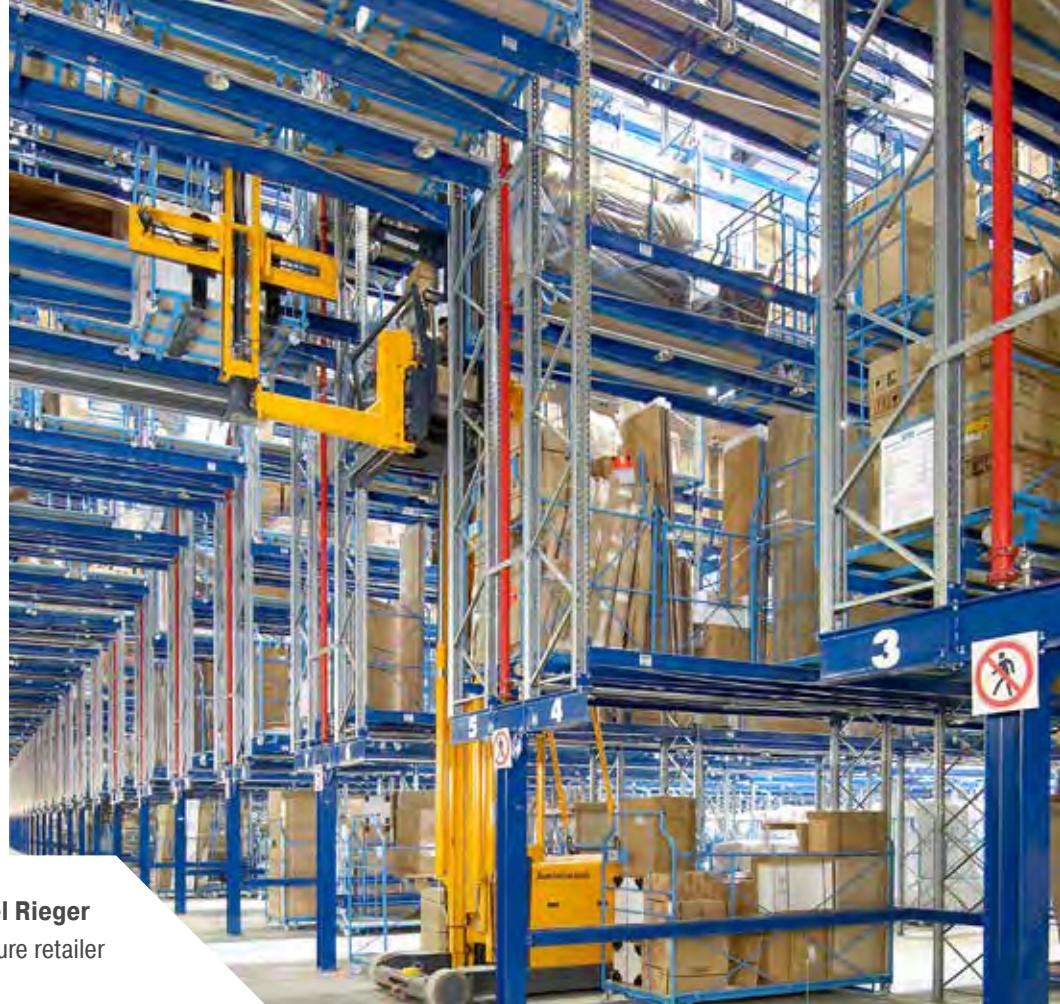
The Igepa Group is one of the leading paper wholesalers in Europe with more than 40,000 customers. The pallet racking facility in their distribution warehouse in Hemmingen handles full pallet loads with man-up narrow aisle trucks with inductive guidance. For large orders, full pallet loads are retrieved from the upper levels. As a rule, however, goods are picked with order picking trucks from the floor level and the first beam level.

With guard railing at the short sides, floor-anchored U-shaped column guards in front of every service aisle upright and walk-through barriers within back-to-back installations, the Igepa facilities comply with the strictest safety standards.

BENEFITS

- Huge number of pallet positions in limited space
- Safe working environment despite free-range narrow aisle trucks
- Heavy-duty timber decking allows to feed in different size pallets





RIEGER
Willkommen daheim.

Möbel Rieger
Furniture retailer

FEATURES

- Corlettes in various sizes are stored in a narrow aisle installation serviced with wire-guided VNA trucks
- Very high construction that needed more bracing
- Some frames feature X-grid bracing
- The nestable roll containers are supplied from "corlette stations"
- Specific aisles are dedicated to the relocation of products

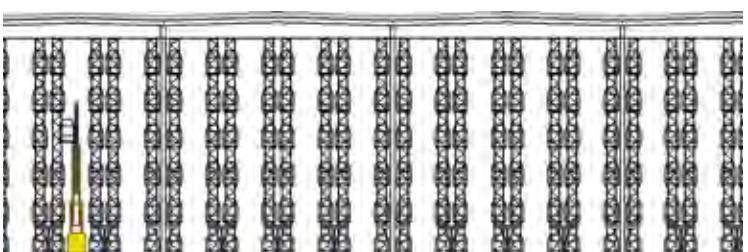
CUSTOMER REQUIREMENTS

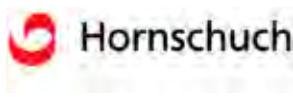
Möbel Rieger GmbH & Co. KG with headquarters in Göppingen has several locations in Germany. The family business is now managed by the third generation.

Their newly constructed distribution warehouse accommodates furniture corlettes in different sizes. About 70% of the goods have been pre-picked on a corlette before they arrive in the goods-out department where they can be pushed right away into delivery vehicles.

BENEFITS

- Safe transport of goods
- Efficient lorry loading
- Storage on a small floor surface





HornsChuck
Manufacturer of furniture
laminating films and
leatherette fabrics

FEATURES

- The BITO PRO narrow aisle high-bay racking provides approx. 12,500 pallet positions, height 20 m
- Picking area providing products on flow shelves
- Another pallet racking block with some 2,800 pallet positions and a shelving facility in an adjoining building are used for order picking.

CUSTOMER REQUIREMENTS

Konrad Hornschuch AG is one of the leading manufacturers of decorative design, functional and foam foils for end users as well as of artificial leather for customers from the furniture, construction and automotive industries and the entire contract sector.

In order to save costs, all products were to be stored, picked and shipped from a single distribution warehouse. Approx. 11,000 square meters of warehouse space and a large new building complex had to be furnished. Stock rotation was to be managed efficiently to cope with high daily turnover rates.



BENEFITS

- Compact storage
- Reduced access and order processing times
- The product buffer store ensures reliable product availability and short delivery times



BRIEM
Logistics services provider

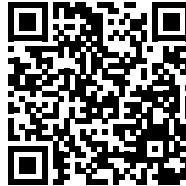
FEATURES

Filderstadt headquarters:

- Pallet racking with 8,500 pallet positions for Europallets
- Orders are picked from carton live storage racking
- Shelf trolleys provide small items

Münsingen warehouse:

- 13 m high pallet racking with 6 storage levels, 4,600 pallet positions for Europallets
- Sprinkler system and heat shield panels in the hazardous goods area



Video:
Logistics services provider
BRIEM

CUSTOMER REQUIREMENTS

BRIEM Speditions GmbH is a medium-sized, owner-managed family business that has developed from a traditional shipping company into a leading logistics services provider and partner for customers from a wide range of industries. Each of the new logistics facilities was therefore planned and set up according to specific customer requirements.

In the 7,000 m² new building in Filderstadt, Briem offer their customers classic storage and retrieval of a wide array of goods. The warehouse has been subdivided into different temperature areas - an area with +2 to +8°C, a normal temperature area and a heated area with up to +27°C. The logistics centre in Münsingen with an area of 11,000 m² and a multi-user area of 2,000 m² has been designed for the storage of hazardous materials which required compliance with strict fire protection regulations.

BENEFITS

- The high-rise design and the narrow-aisle layout allows maximum utilisation of the cubic capacity in both new logistics buildings
- The shelf trolleys can be used for a wide variety of small parts, they are easily manoeuvrable and cost-effective. Closed sides protect the goods from dust and dirt.
- Heat shield panels and vertical fire barriers meet the strict safety requirements for hazardous materials storage.





Coca-Cola
Beverage industry

FEATURES

- Pallet racking with 4 levels used for order picking
- Multi-position storage
- Single depth racking rows have been fitted with back stop beams and wire-mesh back cladding
- Racking uprights with upright protectors

CUSTOMER REQUIREMENTS

Coca-Cola HBC Česko a Slovensko produces, markets and distributes branded soft drinks of the Coca-Cola Company. Founded in 1991, the company is a leader in the dynamic market of soft drinks with a turnover of several million bottles per week. The customer requested optimal utilisation of the warehouse height and a maximum number of pallet positions. Just as much importance was attached to safe working conditions.



BENEFITS

- Top quality pallet racking, designed for highest demands on daily warehouse operation
- Maximum utilisation of warehouse space
- Column guards prevent damage in case of careless operation with service vehicles
- Major increase in goods turnover





VAN EUPEN
IHR LOGISTIK-DIENSTLEISTER

Van Eupen
Logistics service provider

FEATURES

- Pallet racking used for supplying and buffering products
- A 3-tier shelving facility supplies small items
- Manual order picking

CUSTOMER REQUIREMENTS

At 17 sites in Germany, Van Eupen provides 100,000 m² of storage surface in total, with state-of-the-art equipment for the full array of logistics services.

In their hub in Unna, reach trucks stock full pallet loads into pallet racking and relocate pallets into the order picking area as required. Unit loads are picked manually from pallets at floor level height whereas loads from pallets on higher levels are retrieved with mid-level order pickers.

Small parts are provided in a three-tier shelving installation and picked manually.

BENEFITS

- All reference lines are in direct access
- High levels of flexibility in case of changing product lines
- Fast order processing as staff levels can be adapted to actual needs
- Compact storage on a small surface
- Optimum utilisation of headroom



**schülke +**

Schülke
Industrial hygiene and
healthcare products

FEATURES

- Pallet push-back racking in the main storage area; brake rollers in all roller lanes
- Pallet racking in another picking and intermediate storage facility with 650 pallet positions
- Mezzanine floor with BITO shelving units
- The facility has a narrow aisle layout and is serviced with wire-guided stacker cranes

CUSTOMER REQUIREMENTS

Schülke is a chemical-pharmaceutical company founded in 1889 and an international leader in the field of industrial hygiene, infection prevention and chemical-technical preservation. All major business areas from research and development to management, production, marketing, sales and logistics are located at the headquarters in Norderstedt near Hamburg.

The new logistics centre with a total of 18,500 pallet positions required a versatile storage system to accommodate different types of containers such as IBCs, Europallets and custom-sized containers. In addition, strict fire and environmental protection regulations and requirements had to be met.



BENEFITS

- Storage and picking in a central logistics hub
- Short distances
- Brake rollers enable damage-free storage
- Maximum product availability in compliance with all aspects of fire and environmental protection



Soennecken
Office supplies,
stationery



FEATURES

- High-bay installation
- 6,000 pallet positions on 3 tiers
- 3-aisle AS/RS facility
- Order picking from a total of 24,000 storage positions in pallet racking, live storage racking and shelving

CUSTOMER REQUIREMENTS

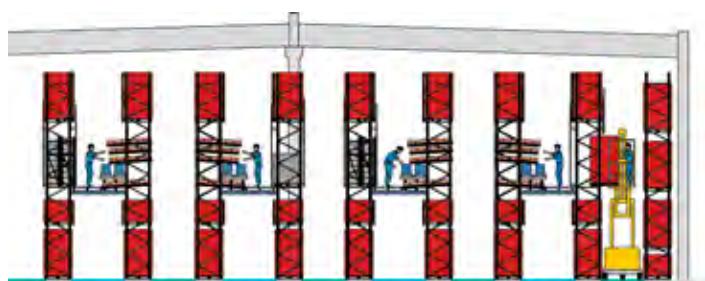
Soennecken eG is the leading cooperation for medium-sized office supply traders and related industries. In their central depot in Overath, narrow aisle service trucks transport office supplies from the high-bay store to the order picking area where the goods are supplied in static shelving, on flow shelves or as full pallet load.

In order to save time, small packaging units are transferred to modular pallets which hold items from several product lines. Mesh-clad hatches between the narrow aisle and the order picking areas ensure operator safety. Products are classified into A-, B-, C- and D-items.



BENEFITS

- The area between narrow aisle and picking area remains tidy
- Time efficient relocation of smaller sized units onto modular pallets
- Pick-by-voice enables hands-free and focussed picking resulting in a low error rate





QANTO®

QANTO
Food wholesaler
and retailer

FEATURES

- Pallet racking with 12,000 pallet positions used for order picking
- Multi-position storage
- Single depth racking rows have been fitted with back stop beams and wire-mesh back cladding
- Racking uprights with upright protectors
- Mezzanine floor with shelving units

CUSTOMER REQUIREMENTS

QANTO Group is a leading Czech wholesale supplier. Currently, QANTO operates 6 ASTUR & QANTO wholesale stores and 31 Quanto retail stores offering a wide range of products. The range of goods includes mainly alcoholic and non-alcoholic beverages, food, tobacco products and drugstore items for restaurants, hotels, catering companies, grocery stores and kiosks.

In order to open up new sales opportunities with an even wider range of products and offer customers even better service, the customer needed a solution that would make better use of the capacity of the existing premises. BITO manufactured the entire warehouse equipment according to customer specifications.



BENEFITS

- Top quality pallet racks, designed for highest demands on daily warehouse operation
- Maximum utilisation of warehouse space
- Column guards prevent damage in case of careless operation with service vehicles
- Increased goods turnover



Pfenning
Logistics service
provider

FEATURES

- High-bay narrow aisle pallet racking PRO in the goods-in and the goods-out department
- Pallet live storage racking for dispatch route related order preparation at the loading docks
- Approximately 140,000 pallet positions in total
- Guide rails on the floor allow higher truck travel speeds
- Pallet transfer positions on the short side of the racking rows

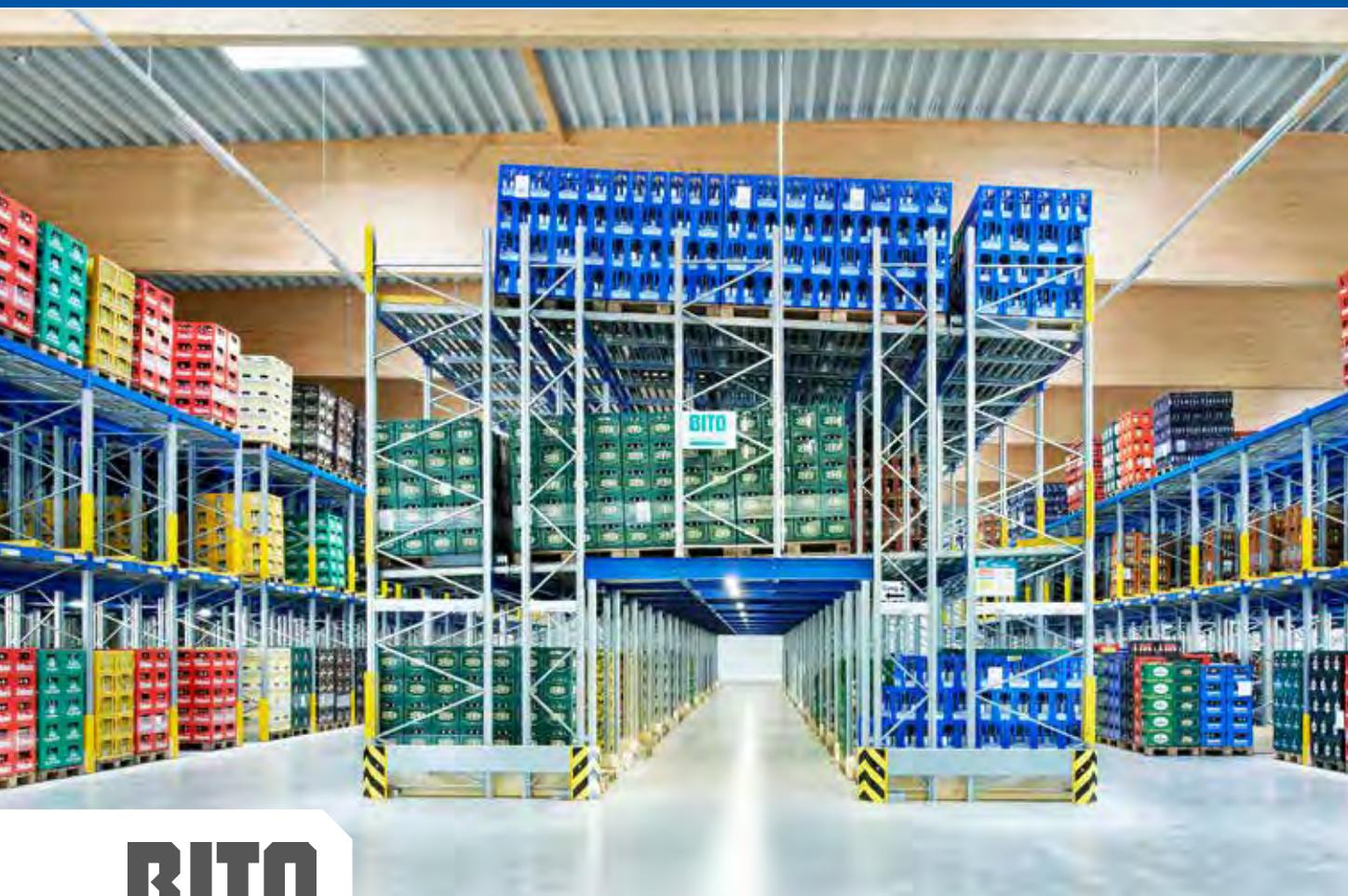
CUSTOMER REQUIREMENTS

Founded in 1932, the logistics company today specializes in warehouse management, distribution and transportation and offers reliable solutions for food logistics, automotive, chemicals & fresh produce logistics and the storage of hazardous materials. In 2018, the company employed 3,300 people at 90 locations in Germany. Optimum utilisation of the storage space in the state-of-the-art logistics hub in Heddesheim, Baden-Württemberg, was a prerequisite, as was a solution that would shorten lorry check-out times at the loading docks. The racking system also had to be easy to reconfigure to suit changing requirements and meet special hygiene regulations.

BENEFITS

- Significantly shorter process times allow to unload or load up to 175 freight trucks a day
- The 200 mm clearance underneath the first beam level enables optimal floor cleaning





BITO
www.bito.com

Pallet live storage system BITO PROflow

THE LATEST GENERATION OF PALLET RACKING

The BITO brand PROflow is based on the well-known and successful BITO PRO pallet racking system. Using gravity and inclined roller lanes, pallets move smoothly from the loading to the retrieval position. The product name PROflow summarises BITO live storage and push-back racking. Depending on the application, they both provide enormous streamlining potential compared to static pallet racking.

For a long time, the focus was on conventional pallet racking for product buffering in production settings or in storage and shipping areas, whereas nowadays, space-saving FIFO live storage racking or LIFO push-back racking are the preferred solution for fast moving goods.

The compact lane layout both in racking width and height provides high levels of storage density and makes optimum use of the available headroom.

The increase in floor space utilisation over conventional racking can be as high as 60%.

Sufficient replenishment quantities avoid down times during order picking.

PRODUCT INFORMATION

Frequent application

- Order picking, product buffering, dispatch route related supply of picked goods at the loading dock, distribution

Service options

- Manual picking, picking with hand pallet trucks, electric lift trucks, forklifts, order pickers, stacker cranes; automated servicing is possible

Storage options

- Goods can be stored long side or short side facing

Surface/volume utilisation

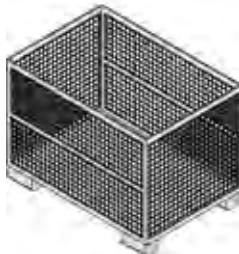
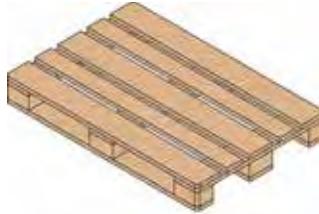
- Very good utilisation of floor space, average utilisation of cubic space

Stock rotation frequency

- Suited for A and B-items = high to medium stock rotation frequency

STORAGE UNITS

	WIDTH X LENGTH
Europallet	800 x 1,200 mm
Industry pallet	1,000 x 1,200 mm
Chemical pallet	1,200 x 1,200 mm
Düsseldorf pallet	800 x 600 mm
Chep pallet	1,000 x 1,200 mm
Hygiene plastic pallet	800 x 1,200 mm
Customer specific load carriers	
CP1-CP9 pallets	



BITO PRODUCT CATALOG

To look at our complete product range with comprehensive product information, ask for our PRODUCT CATALOGUE. We will be pleased to send you a free copy. Simply e-mail us at:
info@bito.dk (DK)
info@bito.fi (FI)
info@bito.se (SE)



Product brochures and in-depth information can be downloaded at:
<https://www.bito.com/da-dk/service/vejledninger-og-brochurer/> (DK)
<https://www.bito.com/fi-fi/neuvooja-ja-palvelua/asennusohjeet-ja-esitteet/> (FI)
<https://www.bito.com/sv-se/raadgivning-och-service/monteringsanvisningar-och-broschyer/> (SE)

For further assistance please contact our project support at:

Tel. +45 70 21 51 51 (DK) Tel. +358 10 324 6510 (FI) Tel. +46 (0)42 151 910 (SE)

EXAMPLE LAYOUTS



2-track segment for hand pallet truck retrieval

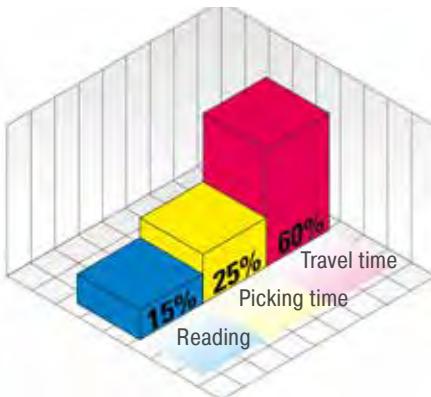
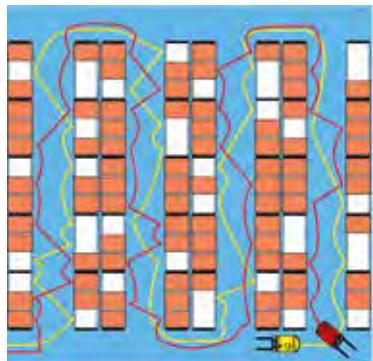
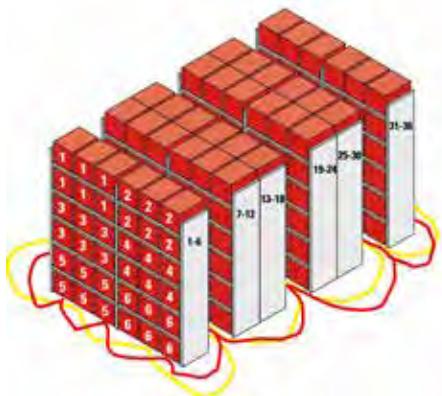


Tilttable/hinge-up roller conveyor segment

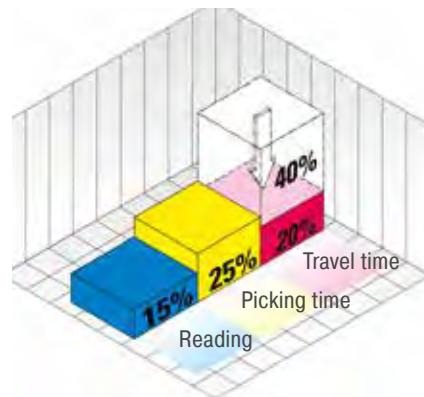
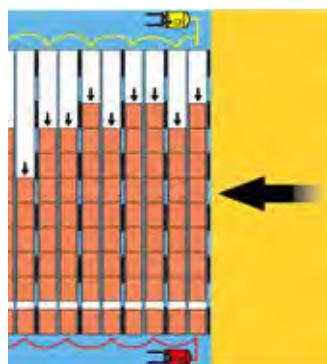
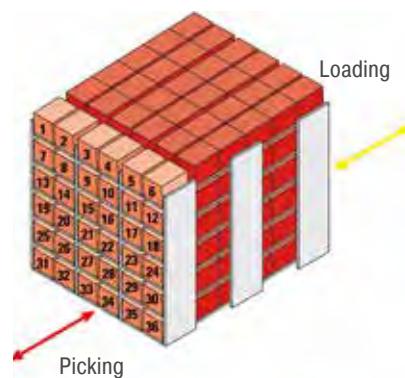


Economic evaluation

CONVENTIONAL PALLET RACKING



PALLET LIVE STORAGE SYSTEM



CASE STUDY

Our carton live storage example shows two storage units that provide 36 reference lines each.

It is obvious that a pallet live storage installation improves storage density and product presentation.

All 36 product lines are in direct access at the picking face. Each item gently moves to its pick position at the front. Sufficient replenishment quantities guarantee constant product availability.

High-density storage and a reduced number of service aisles save up to 60% of floor space.

Separate working aisles prevent that replenishment interferes with order picking which increases stock turnover.

Short travel times improve staff productivity – in particular at loading docks where pallets are grouped together according to the dispatch route.

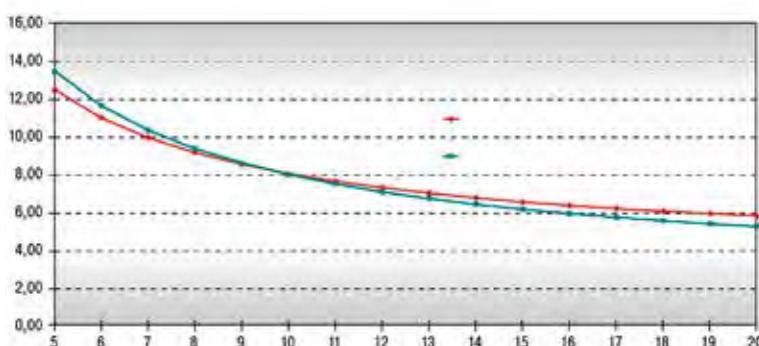
Whereas information and pick times remain the same for both solutions, travel times are drastically reduced.

Working time can be used for productive tasks which boosts order throughput.

HIGH TURNOVER SAVES MONEY

Inventory turnover has a decisive influence on logistics costs. Our example shows that pallet live storage saves money from an inventory turnover rate of 9 times a year.

A turnover frequency of approximately 20 times a year clearly compensates the investment into a pallet live storage installation.



BITO PROflow – Benefits for our customers

GENERAL ADVANTAGES OF PALLET LIVE STORAGE

- Compact product storage and a reduced number of service aisles result in substantial space savings
- The increase in efficiency over conventional racking can be as high as 60%
- Compared to floor stacking, live storage provides direct access to all reference lines on stock
- FIFO storage (first in, first out) facilitates control of sell-by dates, call-off quantities and production batches
- Picker-friendly system: the large supply quantity avoids downtime
- Increased picking performance, as loaders and order pickers do not disturb each other
- Specialised service vehicles speed up operational processes
- Shorter in-house travel routes, as goods move automatically to the order picking side



BITO PALLET LIVE STORAGE RACKING

- FIFO storage (first in, first out)

Stock is replenished from the loading aisle and moves by gravity to the opposite side for order picking. Products are stored in FIFO order. Wire-mesh cladding on the short sides prevents goods from dropping from the rack.

Benefits:

- Ideal for partially or fully automated warehouses
- Very good utilisation of cubic space
- Separate aisles for loading and order picking
- Compatible with paperless picking systems
- Dispatch route related order preparation

SPECIFIC ADVANTAGES OF BITO PALLET LIVE STORAGE

- Load-bearing construction based on the proven BITO pallet racking system
- Bolted beam connectors allow to adjust flow levels at any required height and angle
- Functional safety accessories and special equipment
- Lanes can be fitted with roller tracks or full-width rollers



BITO PUSH-BACK RACKING

- LIFO storage (last in, first out)

Pallets are loaded into a lane at the racking front by pushing them against the gradient. Upon retrieval, the other pallets in that lane move forward at the same speed the first pallet is taken out. Low-cost storage, as no braking mechanism or load separators are needed. Products are stored in LIFO order.

Benefits:

- Space-saving storage installation with only one service aisle
- Very good utilisation of cubic space
- In contrast to drive-in racking, all reference lines are accessible at the picking face
- Particularly appropriate for a huge number of reference lines





1. CONTRAFLOW LANE CONFIGURATION

The upper level is used for product buffering and as material supply stock for the floor level. Product picking and rack replenishment are done in the same aisle.

The opposite racking side is reserved for product relocation.

Your advantages:

- FIFO principle (first in, first out) is maintained



2. SINGLE-SIDED PICKING TUNNEL

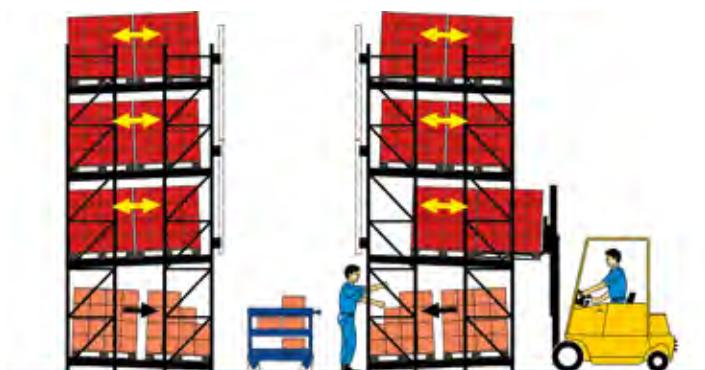
- Contraflow lane configuration

- Suited for large quantities per reference line

The upper levels are used for product buffering and as material supply stock for the floor level. Order pickers work in the picking tunnel.

Your advantages:

- Storage in FIFO order (first in, first out)
- Safe working in separate loading and picking aisles
- Loading does not interfere with order picking



3. PUSH-BACK PALLET BUFFER

- Cost-efficient buffering

- Suited for large quantities per reference line

The short lanes on the buffer levels on top enable push-back pallet infeeding which is an economic solution since no brake mechanism is needed.

Your advantages:

- Safe working in separate loading and picking aisles
- High-bay construction makes best use of cubic space
- Huge buffer quantities ensure that order pickers do not run out of stock
- High-bay construction makes best use of cubic space
- Many storage positions on a small floor surface



4. CENTRAL ORDER PICKING TUNNEL

- Suited for large quantities per reference line

The push-back and live storage levels on top of the picking tunnel are used as buffer store and ensure constant product availability in the floor level lanes.

Contraflow live storage levels in the buffer area provide supply for both sides of the picking tunnel.

Your advantages:

- Maximum utilisation of the available warehouse volume
- Safe working in separate loading and picking aisles

Picking aisle
Buffer area

Loading aisle
Pick items

5. REPLENISHMENT WITH MAN-UP LIFT TRUCKS

- Manual picking of individual storage units
- Suited for large quantities per reference line
- Stacker cranes ensure constant replenishment

Immediate replenishment on all tiers avoids downtime.

Your advantages:

- Pallets are handled long side facing for improved access to goods
- Fast restocking ensures constant product availability
- Maximum utilisation of headroom
- Simultaneous order picking on several tiers reduces order throughput times



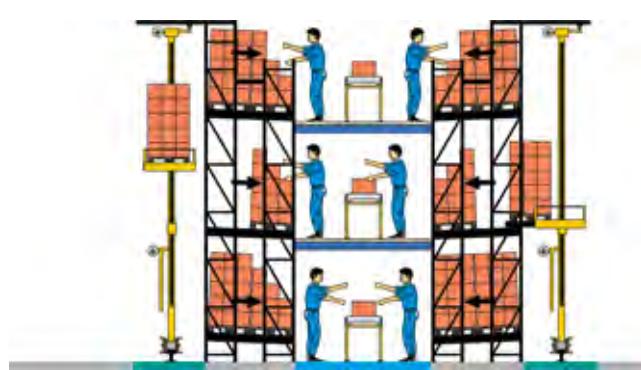
6. REPLENISHMENT WITH AUTOMATED STACKER CRANES

- Manual picking of individual storage units
- Suited for large quantities per reference line
- Automatic stacker crane handling speeds up replenishment
- Reference oriented order picking (batch picking)

Immediate replenishment on all tiers avoids downtime. No operator needed.

Your advantages:

- Pallets are handled long side facing for improved access to goods
- Fast restocking ensures constant product availability
- Maximum utilisation of headroom
- Simultaneous order picking on several tiers reduces order throughput times
- Computer controlled replenishment



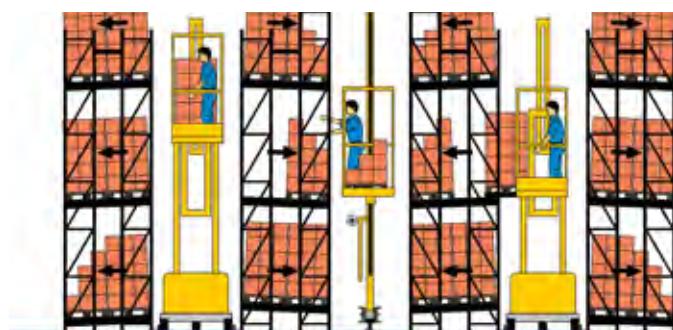
7. REPLENISHMENT AND RETRIEVAL WITH MAN-UP LIFT TRUCKS

- Manual picking of individual storage units
- Suited for picking small quantities per reference line
- Frequent replenishment is ensured

All tiers can be reached without effort. Replenishment staff and order pickers can easily access all goods in the aisle.

Your advantages:

- Pallets are handled long side facing for improved access to goods
- Fast restocking ensures constant product availability
- Maximum utilisation of headroom
- Excellent utilisation of storage volume



8. RETRIEVAL OF FULL PALLET LOADS

- Loading and retrieval of full pallet loads (ideally grouped together according to the despatch route)
- Suited for large quantities per reference line and a high stock turnover frequency

Separate loading and picking aisles ensure undisturbed working and improve picking performance.

Your advantages:

- Short distances from pick point to dispatch area
- Organised material supply and constant product availability at the picking side



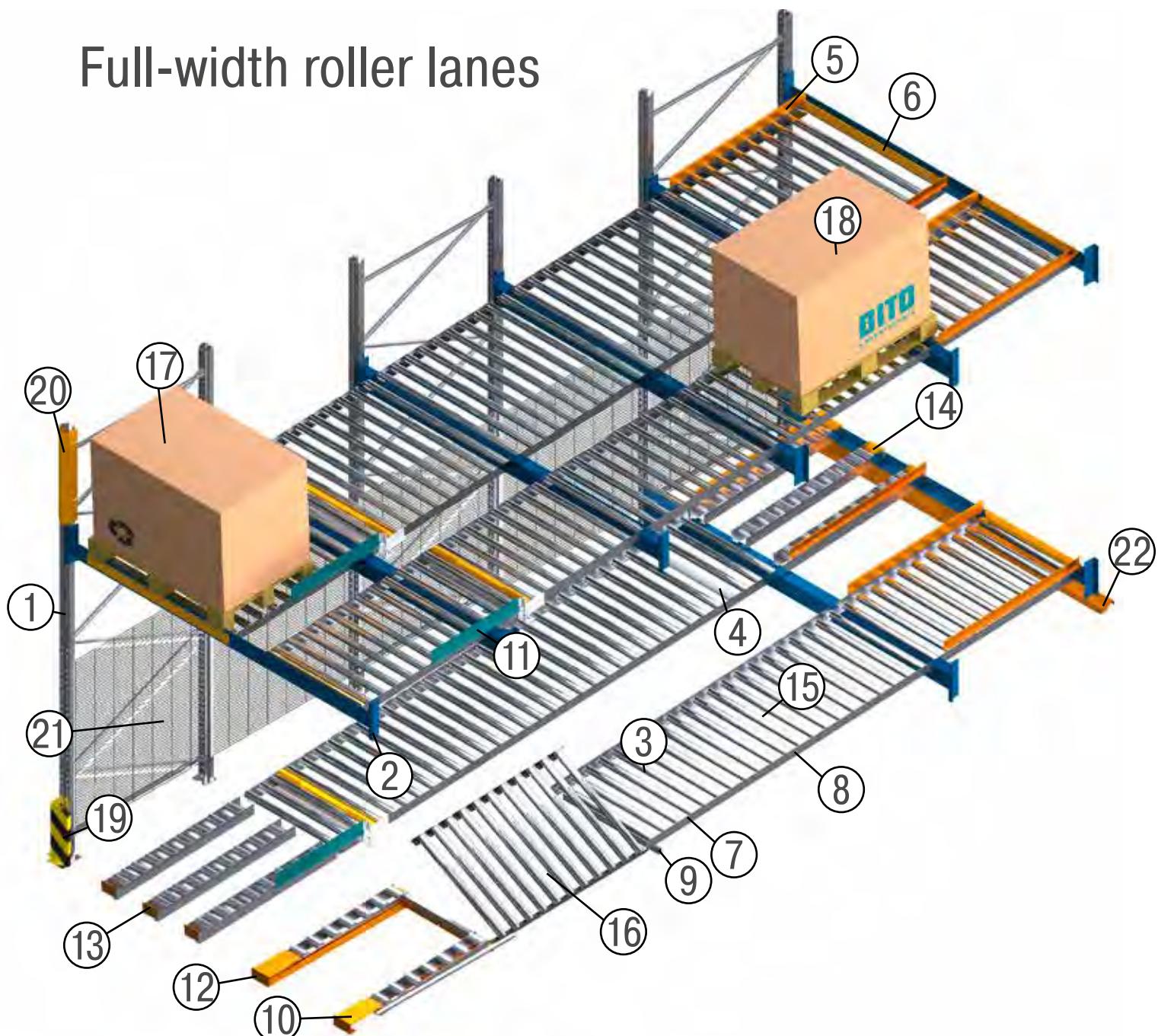
Picking aisle

Loading aisle

Buffer area

Pick items

Full-width roller lanes



- 1 Bolted beam connector for continuous lane adjustment
- 2 L-shaped beam
 - protects roller lane
 - low height construction
- 3 BITO Roller with low friction ball bearing
- 4 Brake rollers provide a smooth and uniform braking effect
- 5 In-feed guide
- 6 Front/rear roller lane protector
- 7 Roller conveyor side profile
- 8 Joining plate
- 9 Floor beam

- 10 Speed reducing end stop for lanes without load separator
- 11 FlowStop Load separator
- 12 2-track segment for hand pallet truck retrieval
- 13 Triple track retrieval segment
- 14 Triple track replenishment segment
- 15 Lane for mixed pallet operation
- 16 Tiltable/Hinge-up roller conveyor segment
- 17 Pallet handled long side facing
- 18 Pallet handled short side facing

SAFETY EQUIPMENT

- 19 Column guard protects corner uprights
- 20 Upright protector
- 21 Wire-mesh side cladding
- 22 Truck wheel stopper

BITO LOW-FRICTION LOAD ROLLER

Maintenance free, smoothly operating ball bearing for low friction resistance and a trouble-free pallet start at the loading side.

- High load carrying capacity
- Easy fitting



IN-FEED GUIDE

The in-feed guide is mounted directly to the roller lane side profiles.

- Convenient in-feeding and pallet centering
- Easy fitting

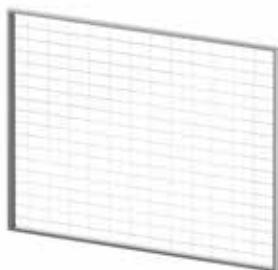


epoxy-coated in
RAL 1003 Signal yellow

WIRE-MESH SIDE CLADDING

Mounted to the side of racking rows to prevent access to the lanes.

- Compliance with the German safety at work act DGUV 108-007
- Prevents accidents
- Grid infill 50 x 50 mm



BITO BRAKE ROLLER

Accepts different pallet weights. No height levelling needed.

As a rule, there is one brake roller per pallet position.

- Easy mounting, no height adjustment required
- High load carrying capacity
- Maintenance free, minimal wear and tear for a long service life



FRONT/REAR ROLLER LANE PROTECTOR

Prevents potential damage by forklift trucks. Roller lanes that have been fitted into L-shaped beams do not need front or rear roller lane protectors.

- Particularly robust component
- Efficient roller protection



epoxy-coated in
RAL 1003 Signal yellow

WHEEL STOP PROFILE

Floor-anchored in front of the picking side to create safety distance.

- Keeps a fixed distance between service truck and racking
- Protection of racking components against collision damage



epoxy-coated in
RAL 1003 Signal yellow

FLOWSTOP LOAD SEPARATOR

This maintenance free component is mounted behind the first pallet position to ensure that service vehicles can retrieve the first pallet without having to compensate for lane pressure. This ensures maximum efficiency and safe handling.

- Safe retrieval
- The next pallet moves unassisted to the picking face



CONVENIENT AND SAFE ORDER PICKING IN A PICKING TUNNEL

A picking tunnel clearly separates storage from picking areas. Replenishment products are buffered on pallets in the live storage lanes or push-back lanes on top of the picking tunnel. The lanes in the order picking tunnel are loaded from the rear by simply relocating the goods from top to bottom - without any loss of time due to long distances.

In the case of mixed orders, full pallet loads can be taken from the upper buffer area and transferred directly into the goods-out department, while individual packing units are picked by hand in the order picking tunnel. Depending on the turnover frequency of the reference lines, it is possible to subdivide the order picking tunnel into different "pick slots" and to store slow moving products in a less frequented area.

Picking tunnels can be positioned centrally in a racking facility - in this case, products can be picked from both sides of a picking aisle - or they can be located in the peripheral area of a racking installation, i.e. products are only picked on one side of the tunnel.

While front stackers or reach trucks are used on the loading side of the racking system, picking in the tunnel can be done with picking carts or hand pallet trucks. It is also possible to install a powered conveyor lane in the centre of the tunnel to transport picked goods to transfer stations at the short sides of the racking.

YOUR ADVANTAGES

- High degree of operational safety, as operators work in separate loading and picking aisles
- Improved picking performance, as re-stockers and pickers do not disturb each other
- Constant product availability
- Optimal utilisation of floor surface and room height
- Dual use of space: full pallet loads in the buffer area on top and single unit picking at floor level height

TILTABLE/HINGE-UP ROLLER CONVEYOR SEGMENT

Even if stocked products are handled with all necessary care, damage to packaging units by forklift trucks cannot be excluded. Spilt products can soil the floor underneath the roller lanes.

Special attention to this problem has to be given in (fresh) food areas.

As a solution, BITO has developed roller conveyor lane segments which can be hinged up for thorough cleaning of soiled floors.

- Avoids hygiene problems, particularly in food storage areas
- Prevents damage to rollers by broken packaging units and their contents
- No disturbances in operation due to soiled areas underneath the roller lanes





Lanes with front incline are ideal for single bottle picking, whereas straight lanes are preferred for beverage case picking



A rigid stop profile at the loading side stops backfeeding – profile with forward incline for easy loading

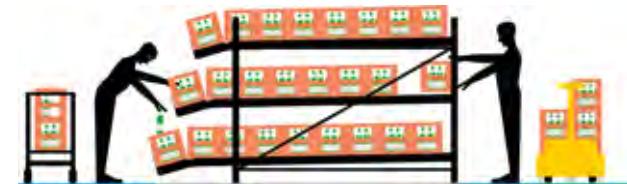
Beverage case handling

Full-width roller lanes for beverage cases are available in 3 variants for picking either entire beverage cases or individual bottles. The straight roller lane version is ideal for stacking beverage cases.

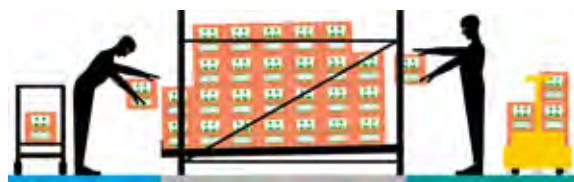
All variants can be additionally equipped with lateral guide profiles.

This high-density storage system always holds sufficient products in stock. As soon as a beverage case has been picked, the other cases in that lane move forward so that order pickers/customers never run out of stock.

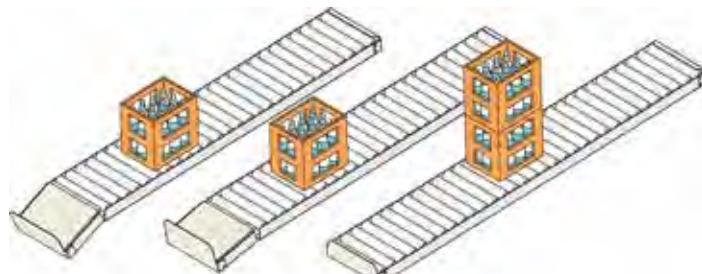
- Large storage volume with plenty of reserve. In contrast to vending machines, there is less need for refilling and the system is maintenance-free!
- Clear presentation of all reference lines on stock
- Short pick paths
- Individual beverage case picking
- Single bottle picking
- Final customers can pick products without help from shop assistants



Single bottle picking



Beverage case picking



Roller tracks

In comparison to full-width rollers which are ideal for building long lanes, the roller track system is the more economical solution for short lanes.

BITO system specific solutions such as the push-back rail system for two-pallet deep storage are convincing options both in terms of functionality and a good price/performance ratio.

The roller track system is not limited to pallet storage. Lanes with a narrow roller pitch enable safe handling of load carriers with a different skid design such as wire-mesh box pallets.





ADVANTAGES OF BITO ROLLER TRACKS FOR LIGHT-DUTY AND MEDIUM-DUTY APPLICATIONS

Roller tracks are ideal for short lanes with little incline and without braking mechanism as well as for push-back pallet racking.

BITO roller tracks are available in two different height options and with three roller types which is why they can be used in many industries and for a wide range of applications.

- Three different roller types
- Steel axle
- Once fitted into the track, the rollers are self-locking; no additional securing needed
- High load carrying capacity
- Push-back rail system (see page 141) enables cost-efficient two pallet deep storage
- Top quality low-friction ball bearings guarantee smooth operation
- Load capacity between 65 kg and 130 kg per roller
- Flanged rollers help storage units to stay on track

ADVANTAGES OF BITO ROLLER TRACKS FOR HEAVY-DUTY APPLICATIONS

Heavy-duty roller tracks combine the advantages of the light-weight and the heavy-duty variant. Wide rollers with a narrow roller pitch are ideal for conveying pallets and wire-mesh box pallets.

- Suited for long side or short side pallet handling
- Narrow roller pitch – 48 mm for pallets handled long side facing and 96 mm for pallets handled short side facing
- Load capacities of 160 kg per roller
- Low-friction ball bearings
- Ideally suited as feeder lanes, f. ex. at loading docks
- Suited for pallets of different widths such as Europallets (800 mm wide) and industry pallets (1,000 mm wide)

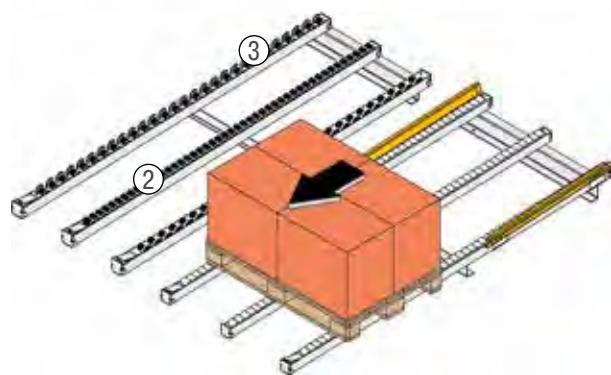
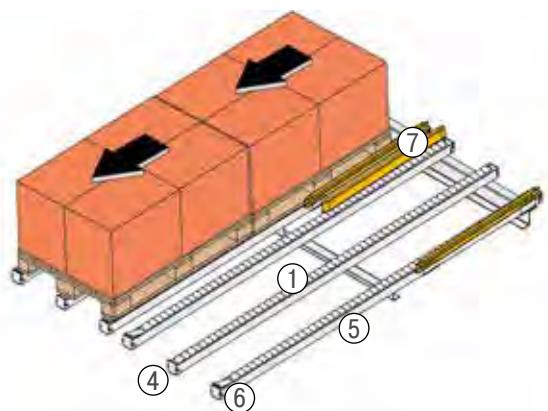
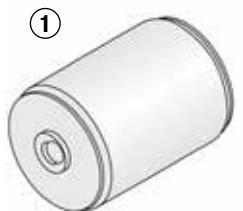
ROLLER TYPES

There are 3 roller types available:

- 1. Cylindrical steel rollers
- 2. Cylindrical plastic rollers
- 3. Flanged plastic rollers

All rollers are mounted on a steel axle into the roller track profile. The steel axle is clipped into the toothing of the track profile and cannot be removed without mechanical tools. This guarantees that the rollers stay in the correct position. No additional securing required.

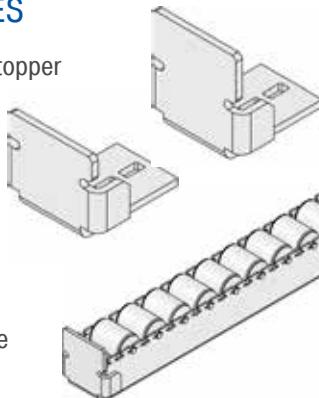
- Load capacity between 65 kg and 130 kg
- Flanged rollers help storage units to stay on track
- No start-up resistance, smooth operation
- Self-locking steel axle prevents rollers from falling out



4. ANGLED STOPPER PLATES

To protect the roller rail, an angled stopper plate is fitted at either end. It is simply pushed on the rail and bolted either directly to the racking structure together with the roller track profile or anchored to the floor.

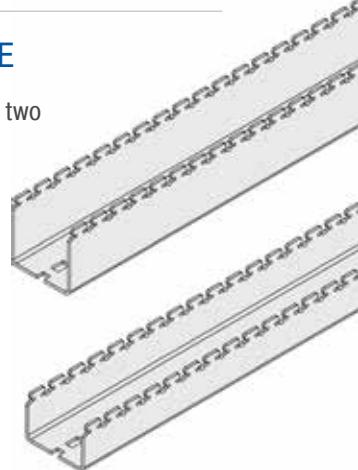
- Easy to fit without bolts
- Protects roller tracks from damage
- End stop for pallets



5. ROLLER TRACK PROFILE

Roller track profiles are available in two height options.

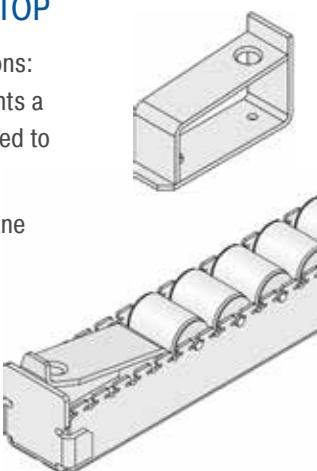
- Particularly robust component
- Tooth-shaped edge indentations prevent rollers from falling out



6. SPEED REDUCING END STOP

This component combines two functions: it reduces the travel speed and prevents a hard impact. Pallets move gently braked to the stopper plate.

- No hard impact at the end of the lane

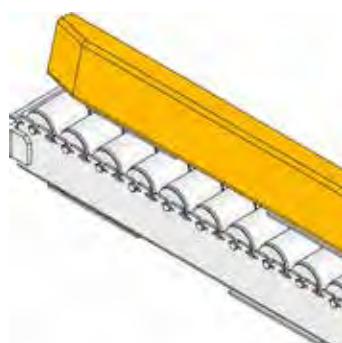


7. IN-FEED GUIDE

The in-feed guide is bolted at the picking side of the roller track profile.

Convenient in-feeding and pallet centering

- Easy pallet in-feeding
- Protects roller flanges from damage during stock replenishment



ENHANCE SAFETY AT WORK: Pallet Live Storage (PLS) Access Kit

YOUR SOLUTION FOR EASY AND SAFE ACCESS INTO RACKING LANES



SPOTLIGHT ON STAFF SAFETY

YOUR ADVANTAGES

- The Pallet Live Storage Access Kit offers your employees maximum safety when troubleshooting, eliminating malfunctions, and performing maintenance and cleaning work in a pallet live storage installation.
- Staff safety at all times: Certified anchor points on racking uprights allow to access all racking levels
- Slip-proof boards allow safe walking on roller lanes
- Problems can be identified and fixed without any risk of being overrun by locking “trouble” pallets
- Compliance with the latest health and safety standards and regulations
- Improves workplace safety
- One-time investment

The BITO PLS Access Kit has been designed in close cooperation with the German Accident Insurance Association (DGUV), Department of Trade and Product Logistics.



TROUBLESHOOTING

Safe de-blocking of pallets that got stuck in a flow lane, easy fault clearing within a lane

MAINTENANCE

Convenient repair and maintenance of components in an affected lane (f. ex. FlowStop load separator, load rollers, brake rollers, in-feed guides etc.)

CLEANING

Easy cleaning of roller lane components, ideal for use in the food sector

The trouble pallet can be easily accessed walking into the adjacent lane, which has previously been covered with boards for safe access. The BITO blocking device prevents the trouble pallet from moving down the lane unexpectedly. Secured with a sling hook and a twistlock carabiner, the operator can walk into the lane with no risk to analyse and eliminate the malfunction.



The same applies for repair work, f. ex. on damaged load rollers or brake rollers. After all pallets have been removed from the “trouble” lane, a properly secured assembly person can safely access that lane using a maintenance platform and walk in on the access boards.



Removing dust, dirt, liquids and other contaminants as well as foreign objects such as packaging film is just as easy with the PLS Access Kit. The place to be cleaned can be conveniently reached walking on the access boards.



YOUR SOLUTION FOR SECURE ACCESS INTO PALLET LIVE STORAGE LANES

Select a safe anchor point for fitting the BITO easyHOOK, lock in the twist-lock carabiner, attach the fall arrester and connect it to the body harness. Place the starting and intermediate board, then lay connecting boards into the adjacent lane or into the affected lane until the trouble area is reached.

STAY SAFE WITH THE PLS ACCESS KIT

- Safe access to a trouble spot within a lane
- Safe repair work
- Safe maintenance (f. ex. on the FlowStop load separator, load rollers, brake rollers or guide rails)
- Convenient cleaning of racking components



Doosan Bobcat EMEA
Manufacturer of compact
loaders and excavators

FEATURES

- Customised pallet live storage racking
- Levels are fitted with heavy-duty roller tracks
- LIFO and FIFO storage
- Column guards and upright protectors on all racking levels

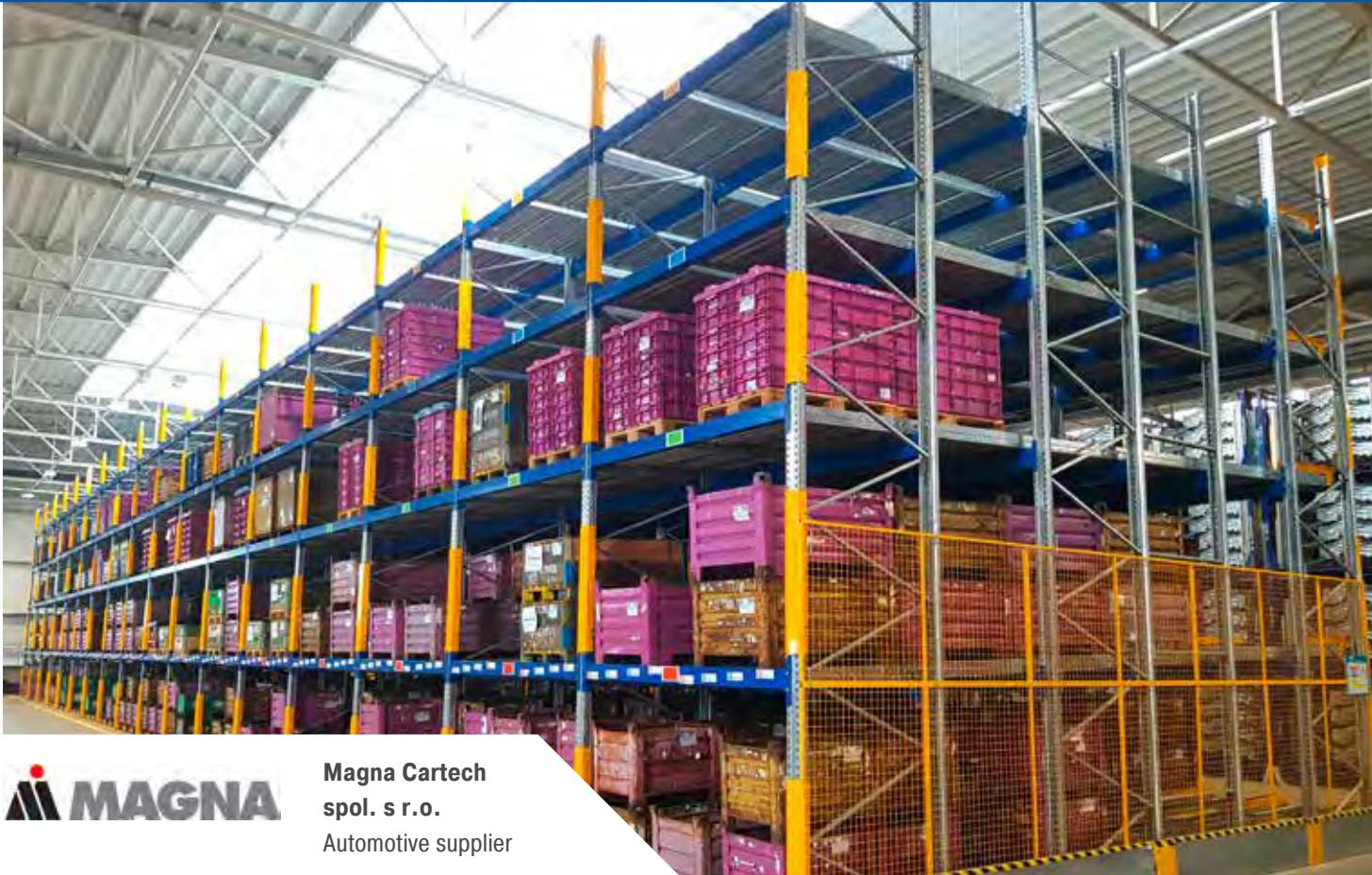
CUSTOMER REQUIREMENTS

Doosan Bobcat is one of the leading manufacturers of compact loaders and excavators. The plant in the Czech Republic produces 80% of the machines for the EMEA (Europe, Middle East and Africa) economic region. With the aim of streamlining their production processes, the customer was looking for a solution for storing their large components directly at the assembly lines to ensure immediate availability. Both LIFO and FIFO storage were required. In order to optimise work safety, all racks were to be equipped with collision protection elements, upright protectors on each shelf level and mesh cladding on the racking short sides.



BENEFITS

- Custom-made solution for special size pallets and large components
- Efficient use of cubic space
- Optimised supply of parts and components at the assembly lines
- Storage in LIFO and FIFO order
- Maximum occupational safety



Magna Cartech
spol. s r.o.
Automotive supplier

FEATURES

- Pallet live storage facility with reinforced roller tracks
- Narrow roller pitch of 72 mm to handle smaller containers
- Double-height wire-mesh cladding and guard railing on the short sides, upright protectors on all levels

CUSTOMER REQUIREMENTS

Magna Cartech in České Velenice is part of the multinational Magna International Group. Magna is one of the world's largest suppliers of parts for the automotive industry. The group currently employs more than 169,000 people at 338 production sites in 28 countries. MCT is part of the Cosma Division, where sheet steel body parts are pressed and welded. Since its establishment in 1996, the company has developed dynamically and, with 1,100 employees, is one of the largest and fastest growing companies in the South Bohemia region. A robust solution was sought for storing the heavy goods in solid-wall metal boxes and smaller metal containers, while at the same time offering the greatest possible level of occupational safety.



BENEFITS

- High-density storage for optimum space utilisation
- Maximum safety for staff and operational processes
- FIFO stock rotation



DMK -
Deutsches Milchkontor
Dairy products

FEATURES

- Pallet live storage facility at the loading docks
- Dispatch route related supply of prepared orders on the floor level, buffer stock on the upper levels
- FIFO stock rotation
- Retrieval with electric stackers

CUSTOMER REQUIREMENTS

With a staff of 7,400 operating in 26 locations in 10 federal states, DMK is the biggest dairy processing company in Germany. The annual supply of 6.8 billion kg of milk from around 8,900 active milk producers is processed into high-quality products. DMK's customer base includes national and international trading companies, food manufacturers and bulk consumers.

In order to avoid building a new warehouse, the customer wanted to optimise the use of space at the existing location and create an additional 500 storage positions. Both Europallets and H1 plastic pallets were to be stored in a mixed operation. To reduce pick times, the finished products were to be provided in a racking installation in the goods-out department in despatch route related batches.



BENEFITS

- The increase in capacity has eliminated the need for an expensive building extension
- No lorry waiting times, since picked goods have already been collated by sort keys such as customer or dispatch route
- Substantial reduction of read, travel and pick times



Getränke Essmann
Beverage wholesaler

FEATURES

- Pallet live storage installation enables direct access to A-items
- Retrieval with reach trucks
- Picking tunnel for manual picking of smaller order quantities

CUSTOMER REQUIREMENTS

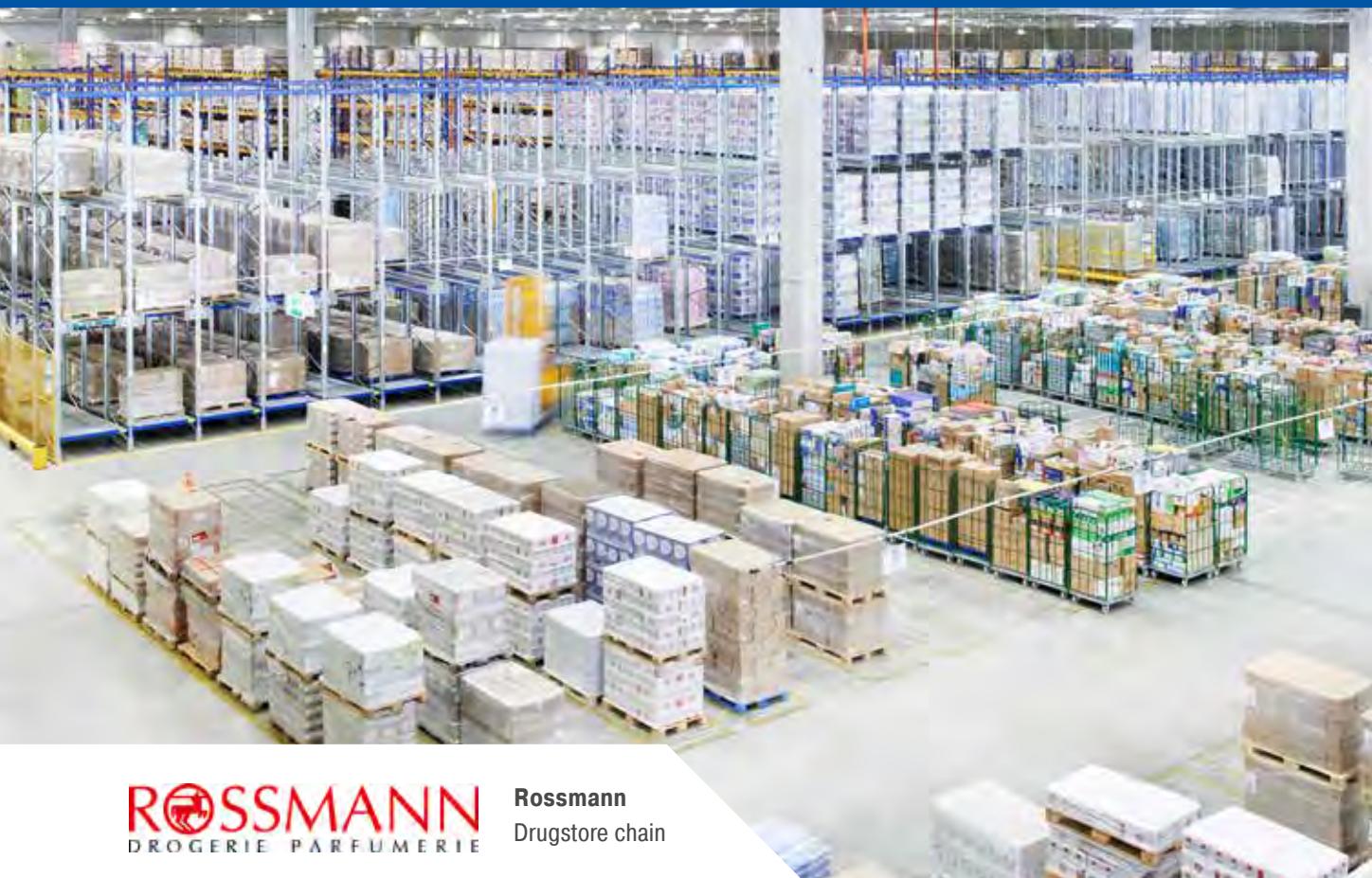
As a logistics service provider with a long tradition in the beverage trade, Getränke Essmann GmbH supplies more than 2,000 beverage varieties to customers in the retail, catering, beverage wholesale and other services sectors from several logistics centres in Lower Saxony, North Rhine-Westphalia, Bremen, Hamburg and Schleswig-Holstein.

Due to the increasing variety of reference lines, it was necessary to expand warehouse capacities, while ensuring permanent access to all fast-moving items. Seasonal sales fluctuations had to be taken into account in the planning phase. In addition, an efficient solution was sought to streamline time-consuming picking of individual items.



BENEFITS

- Storage of an increasing assortment on the same floor space
- More efficient and safe handling through separate loading and picking aisles and integration of a picking tunnel
- No down times for the order pickers - the next pallet with new supplies moves to the picking position



ROSSMANN
DROGERIE PARFUMERIE

Rossmann
Drugstore chain

FEATURES

- Pallet racking with 10 m deep lanes
- Order picking at floor level height
- 2 storage levels on top accommodate 176 buffer lanes serviced by 5 PROmotion shuttle vehicles

CUSTOMER REQUIREMENTS

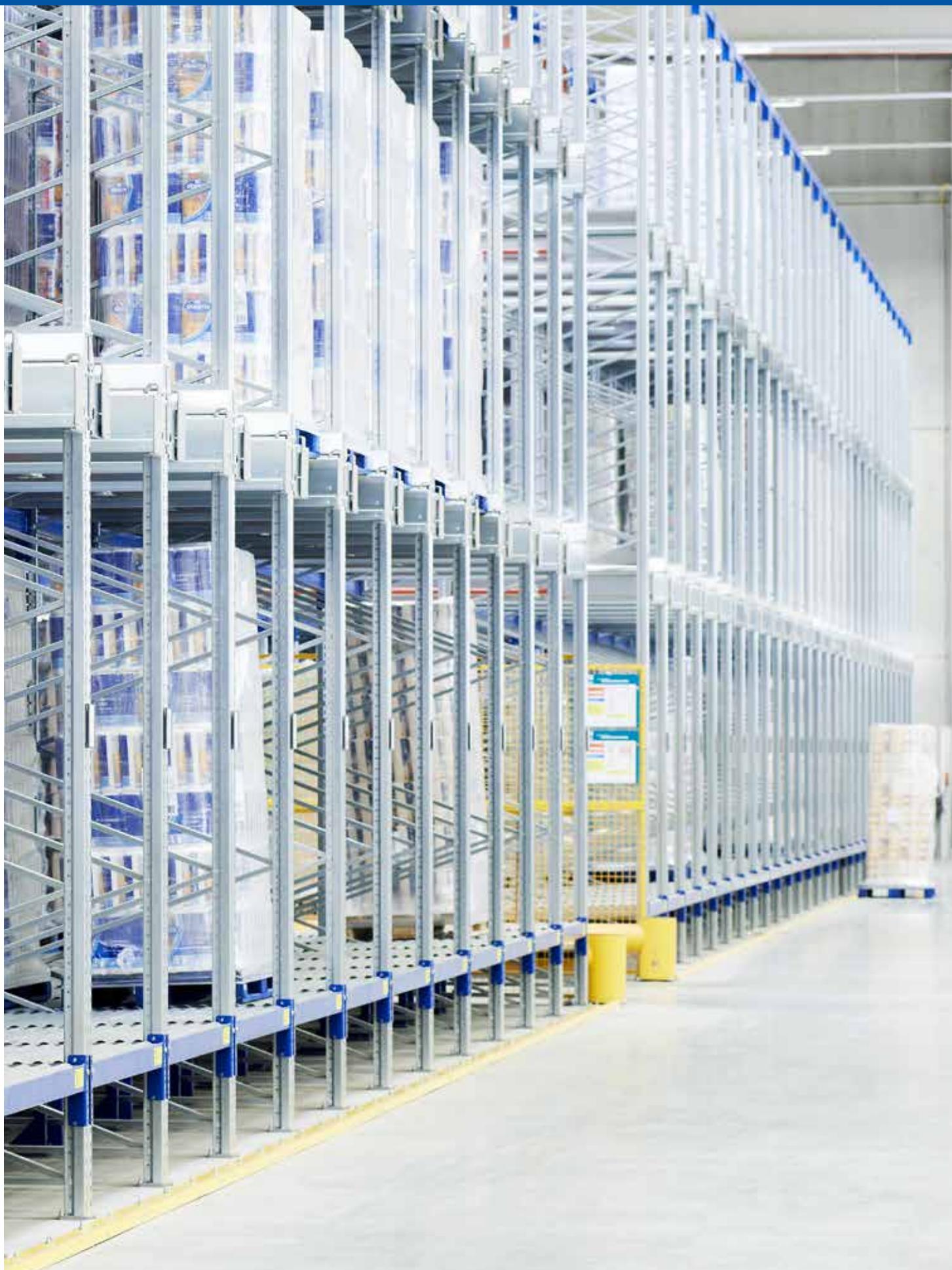
Dirk Rossmann GmbH is one of Europe's largest drugstore chains, headquartered in Burgwedel near Hanover. Growing progressively since the first shop was opened in 1972, Rossmann operates today more than 1,850 stores in Germany as well as several distribution centres with a total floor surface of almost 240,000 m².

The customer required a very compact storage system for pallets with varying weights from 80 to 1,500 kg. A sprinkler system was to be integrated. To ensure safe and convenient retrieval from deep lanes, the customer opted for PROmotion shuttle racking.



BENEFITS

- Long lanes make good use of the available floor space
- Products can be stored in FIFO and LIFO order
- Storage on various roller track types according to pallet weight, ensuring optimum travel characteristics and safe storage
- Technically mature and seamless safety concept developed in cooperation with BGH Mannheim (Institute for statutory accident insurance and prevention in distributive trades)



**Fristo**

Beverage wholesaler

FEATURES

- Pallet live storage racking
- Picking tunnel with carton live storage lanes
- Tilttable/Hinge-up roller lanes on the floor level

CUSTOMER REQUIREMENTS

Fristo is a medium-sized company that has been successfully operating beverage stores for over 50 years. The company is represented in 8 federal states and in the Austrian part of Tyrol with more than 228 stores.

For more efficient order processing, a logistics solution was to be implemented at the logistics hub in Zimmern ob Rottweil to ensure the continuous supply of 31 stores in southern Baden with 200,000 beverage cases per month. More than 965 different product lines must be stored in FIFO order to comply with best-before dates.

**BENEFITS**

- High-density storage
- Shorter order processing times
- Safe working in separate loading and picking aisles
- Mixed reference pallets are prepared in the picking tunnel
- Hinge-up roller lane segments enable convenient floor cleaning



Electrolux
Manufacturer of household
appliances

FEATURES

- BITO PROflow pallet live storage racking with 5 levels
- Storage and supply of 16 different B-item lines in pallet boxes
- Milk-run container transport along the assembly line in immediate vicinity to the racking system

CUSTOMER REQUIREMENTS

Electrolux is one of the world's leading manufacturers of household and kitchen appliances. The company, founded in Sweden in 1919, is one of the most innovative companies in the industry. Electrolux has been operating in Germany since 1925 and currently has around 2,000 employees, with 1,300 working at the Rothenburg ob der Tauber plant.

The warehouse was to be designed in a way to ensure that the supply of goods in the entire production process follows the FIFO principle. The storage surface was to be used in the best possible way and transport routes kept as short as possible.



BENEFITS

- Space-saving storage
- High level of safety at work, very low risk of accidents
- FIFO storage
- Short travel routes
- No disruptions in the production workflow,
no downtime on the assembly line



Meradog
Pet food producer

FEATURES

- BITO PROflow Pallet live storage racking with FlowStop load separators
- Tilttable/Hinge-up roller lanes
- Goods are picked order-related from live storage lanes

CUSTOMER REQUIREMENTS

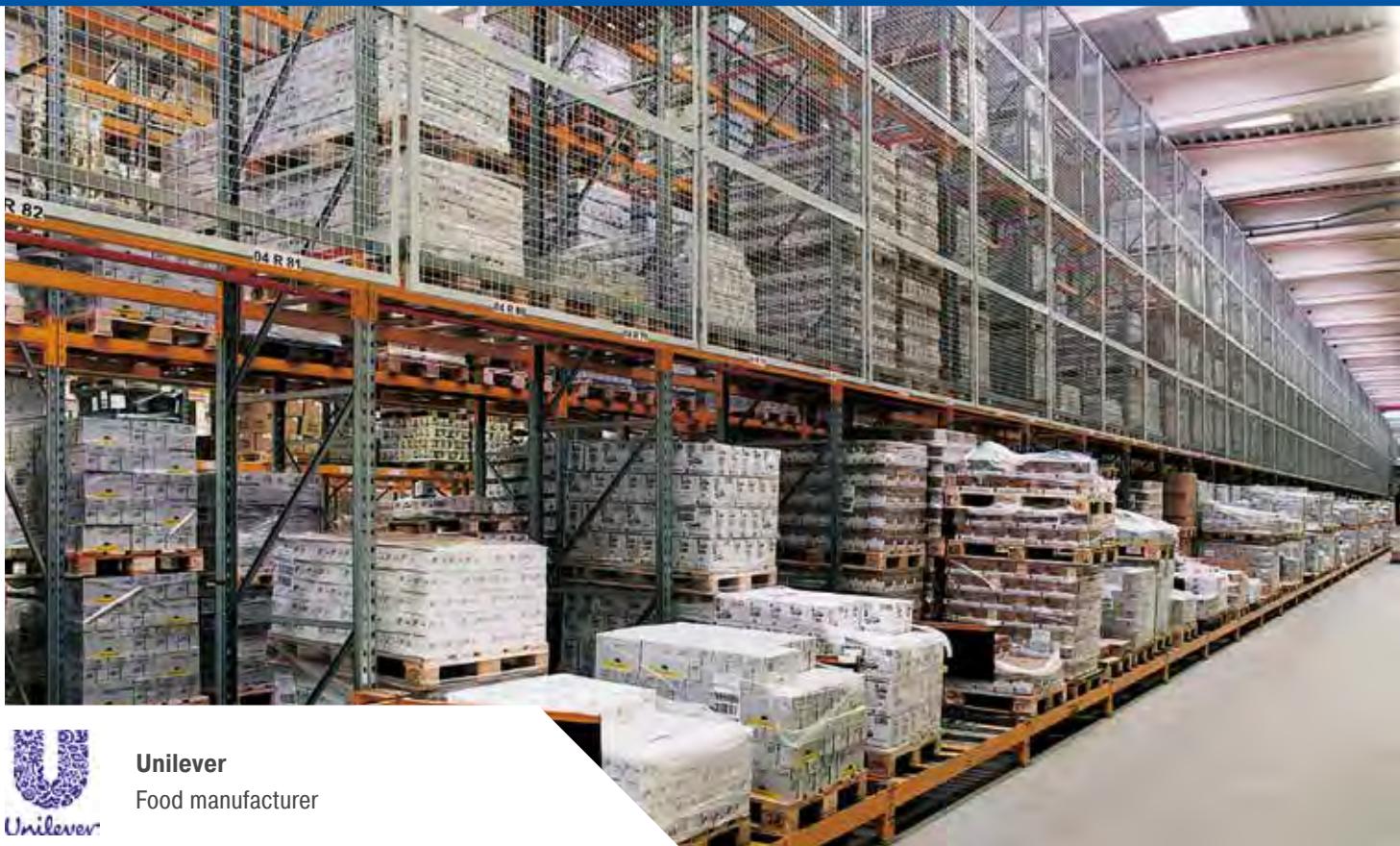
Pet well-being is the goal and commitment of Mera Tier-nahrung GmbH from Kevelaer in the Lower Rhine region. The family business has been specialising in the production of high-quality pet food for over 60 years. The production process on state-of-the-art manufacturing machinery complies with high food standards and the strictest international quality standards.

In their new warehouse, space was to be used optimally and high hygiene standards were to be maintained. Products must be stored in FIFO order to observe best-before dates. The racking system was to function perfectly in order to guarantee a high turnover of goods.



BENEFITS

- Optimal FITO buffer storage
- Increased turnover of goods
- Hinge-up roller lane segments allow convenient floor cleaning
- FlowStop load separators ensure pallet retrieval without lane pressure
- No damage to the goods and improved safety in the workplace



FEATURES

- Picking of individual unit loads
- Pallet live facility is replenished by automated stacker cranes

CUSTOMER REQUIREMENTS

The pallet live storage facility is used for order picking at floor level height and for product buffering on the upper levels.

The live storage lanes on the floor are replenished from the static pallet buffer lanes by an automated stacker crane. The pallets on the floor level move unassisted on roller lanes to the picking side where vertical order pickers are used to pick unit loads.

BENEFITS

- Short pick paths that do not cross enhance productivity and safety in the workplace
- Connection to the in-house conveyor system
- Compact and safe storage, immediate overview of products on stock and good utilisation of the available storage space
- AS/RS type stackers provide constant product supply
- Link-up to warehouse management system enables permanent stock control
- Storage in FIFO order
- The number of service vehicles and operators can be adapted to requirement





VET CONCEPT
GmbH & Co KG
Pet nutrition and accessories

FEATURES

- High-bay pallet racking with 6,000 pallet positions
- 1,200 stock items, 800 are stored in the pallet racking facility and 400 in the automated small parts warehouse
- Picking tunnel with carton and pallet live storage lanes

CUSTOMER REQUIREMENTS

The pet food manufacturer Vet-Concept GmbH & Co. KG in Föhren near Trier produces and sells high-quality dry and wet food, as well as pet food supplements, grooming products, chewing articles and other accessories. BITO has accompanied the company since its foundation. Meanwhile, Vet-Concept is working with almost the entire BITO product portfolio. When choosing their warehouse equipment, it was particularly important for the customer to comply with strict hygiene standards and to meet their freshness guarantee. The stock products include large and heavy containers as well as small items. Vet-Concept also ensures a near-100% availability of all items.

The heavy animal food bags and canned food are stored in pallet live storage racks. The upper levels serve as replenishment and buffer store, the floor level provides picking stock in live storage lanes. The products are either provided in BITO plastic bins with view and pick opening, in seller-supplied packaging units suitable for flow lane handling or in conveniently sized bags on Europallets. The bins with prepared orders are transported on roller conveyors to the packing stations.



BENEFITS

- FIFO storage guarantees strict observance of sell-by dates
- Sufficient supply is stocked in 6 metre deep lanes
- The order picking tunnel connects the storage area with the order picking area - this saves a lot of space and also keeps distances short
- Increased picking performance, high product turnover
- The warehouse layout allows for further growth without the need for a building expansion or modification



Schubert & Salzer
Investment casting

FEATURES

- Pallet live storage installation with heavy-duty roller tracks
- BITO FlowStop load separator in all lanes to compensate lane pressure
- Storage and in-house transport of steel profiles in BITO heavy-duty containers SL
- Upright protectors, column guards and roller tracks with front stopper plate
- Manual, reach truck aided order picking

CUSTOMER REQUIREMENTS

Schubert & Salzer Feinguss Lobenstein GmbH is a family run, medium-sized company and is one of the most modern investment foundries in Europe. Customers include several hundred companies from over 40 industries, who are supplied with components made from more than 150 standardised and customer-specific steel grades in a lost wax process.

For Schubert & Salzer, it was therefore important to store the different steel alloys neatly and in a space-saving way and to be able to directly access each reference line. The pallet live storage facility in combination with BITO heavy duty containers is the ideal solution for the company: space-saving storage in FIFO order enables consistent compliance with storage times that need to be observed before further processing. In addition, the BITO SL containers with a low proper weight facilitate handling and are ideal for smaller batch sizes, since they have a smaller size than standard box pallets.



BENEFITS

- Compact racking layout enables optimum use of the available space.
- Improved staff safety and a largely reduced risk of collision damage thanks to FlowStop load separators, column guards and upright protectors
- Trouble-free traveling of BITOBOX SL86 containers on roller tracks lanes
- The low empty weight of SL containers enables manual handling

**BITO**
www.BITO.COM

PROmobile pallet racking

Space optimisation and storage density are key concepts in any consideration of reducing storage costs. Whenever storage space is to be optimally utilised and space occupancy reduced in favour of new storage space, opting for mobile racking systems provides the most efficient solution.

This compact storage solution can increase storage capacity by up to 180% or save up to 50% in floor space. A significant reduction in investment costs can thus be achieved when building a new hall.

In combination with warehouse management systems as well as sound planning and project support, space-saving warehouse concepts can be implemented without any problem.

PRODUCT INFORMATION

Frequent application

- Supply store
- Seasonal store
- Frozen/cold food storage
- Tool store

Service options

- Manual replenishment and order picking
- Fork lift truck servicing
- Fork lift truck servicing with remote control support

Space utilisation

- Excellent, with gains in floor space of up to 75%

Stock rotation frequency

- Low to medium

Product portfolio

- A huge number of product lines can be stored

SAFETY

The German quality mark RAL-RG 614 guarantees the highest levels of quality for structural safety, load capacity and sufficient rigidity both lengthwise and front to back.

All components fully comply with the latest safety regulations of the German Employers' Liability Insurance Association DGUV 108-007.

CE Certificate of Conformity

BITO herewith declares that all engine parts of the PROmobile system conform to the latest safety regulations and standards.

The mature and comprehensive safety concept was developed by BITO-Lagertechnik. We carefully selected

- premium quality components to ensure that your mobile racking
- meets all functional requirements and
- provides a very high degree of operational safety



BITO PRODUCT CATALOG

To look at our complete product range with comprehensive product information, ask for our PRODUCT CATALOGUE. We will be pleased to send you a free copy. Simply e-mail us at:
info@bito.dk (DK)
info@bito.fi (FI)
info@bito.se (SE)



Product brochures and in-depth information can be downloaded at:
<https://www.bito.com/da-dk/service/vejledninger-og-brochurer/> (DK)
<https://www.bito.com/fi-fi/neuvaja-ja-palvelua/asennusohjeet-ja-esitteet/> (FI)
<https://www.bito.com/sv-se/raadgivning-och-service/monteringsanvisningar-och-broschyer/> (SE)

For further assistance please contact our project support at:

Tel. +45 70 21 51 51 (DK) Tel. +358 10 324 6510 (FI) Tel. +46 (0)42 151 910 (SE)

REFERENCE EXAMPLES



Mobile pallet racking in a cold store



Mobile cantilever racking storing long loads



Mobile pallet racking facility

Advantages of the system

GENERAL ADVANTAGES OF MOBILE RACKING

- Optimum floor space utilisation
- Increase in storage capacity
- Lower floor space costs as compared to conventional static storage
- Increase in storage capacity by up to 180% over conventional solutions
- Good utilisation of cubic space
- Cost-effective system
- 100% product availability
- Reduced energy consumption costs in cold store environments



Maximise floor space utilisation

HIGH DEGREE OF WAREHOUSE SPACE UTILISATION

CONVENTIONAL PALLET RACKING WITH REACH TRUCK SERVICING



Aisle width: 4 x 3,000 mm
 Pallet levels: 6
 Storage capacity (Europallets): 1,008

Building cost: approx. EUR 560,000
 Racking cost: approx. EUR 20,160
 Conveyor technology: approx. EUR 24,000
 Total investment: approx. EUR 404,160

Total cost per pallet position: approx. EUR 600

Space utilisation
40 %

Comparison of performance

- Increase in storage capacity
- Gain in floor space
- Cost reduction

CONVENTIONAL PALLET RACKING WITH NARROW AISLE TRUCK SERVICING



Aisle width: 5 x 1,800 mm
 Pallet levels: 6
 Storage capacity (Europallets): 1,260

Building cost: approx. EUR 560,000
 Racking cost: approx. EUR 25,200
 Conveyor technology: approx. EUR 57,000
 Total investment: approx. EUR 642,200

Total cost per pallet position: approx. EUR 510

PROMOBILE PALLET RACKING WITH REACH TRUCK SERVICING



Aisle width: 1 x 3,000 mm
 Pallet levels: 6
 Storage capacity (Europallets): 1,764

Building cost: approx. EUR 560,000
 Racking cost: approx. EUR 105,840
 Conveyor technology: approx. EUR 24,000
 Total investment: approx. EUR 689,840

Total cost per pallet position: approx. EUR 391

Space utilisation	Increase in storage capacity	Increase in floor surface	Cost reduction	Space utilisation	Increase in storage capacity	Increase in floor surface	Cost reduction
51 %	25 %	11 %	18 %	75 %	75 %	35 %	53 %

Economic evaluation

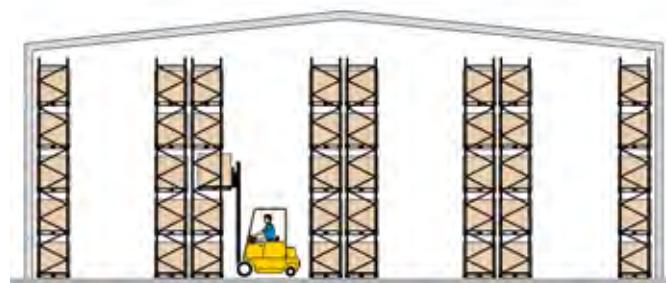
A NEW HALL BUILDING TAKES UP MUCH LESS SPACE

If a new warehouse is to be built, 100% access to the stored pallets is to be guaranteed, and the expected turnover rate is low to medium, mobile racking systems are a very economical solution.

- High-density storage requires less storage volume
- Reduced floor space occupation as only one aisle is required
- Energy cost savings, particularly in cold stores
- Substantially reduced investment cost

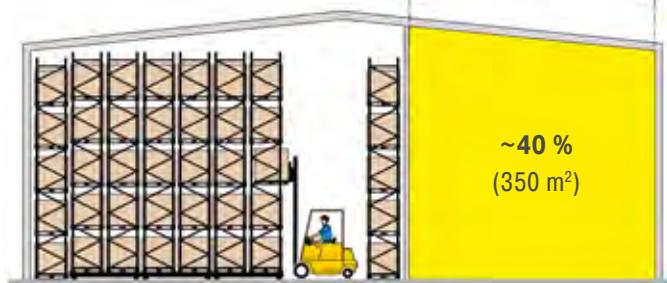
Example:

Floor space 800 m² = 1,008 pallet positions



Conventional pallet racking

Floor space 450 m²
= 1,008 pallet positions



BITO PROmobile pallet racking

Floor space
occupation reduces by:

~40 %
(350 m²)

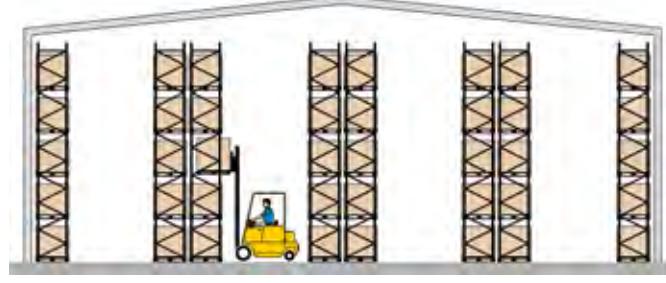
IMPORTANT GAINS IN STORAGE CAPACITY IN EXISTING PREMISES

If a new hall cannot or is not intended to be built, mobile racking system offers the possibility of increasing storage capacity in the already existing warehouse. While conventional racking needs a service aisle between each racking row, mobile racking needs just one service aisle. This leaves plenty of space for additional racking rows.

- Substantial increase in storage capacity on the same floor area
- No investment into a new building
- Improved utilisation of warehouse space
- Optimum use of floor space in existing premises

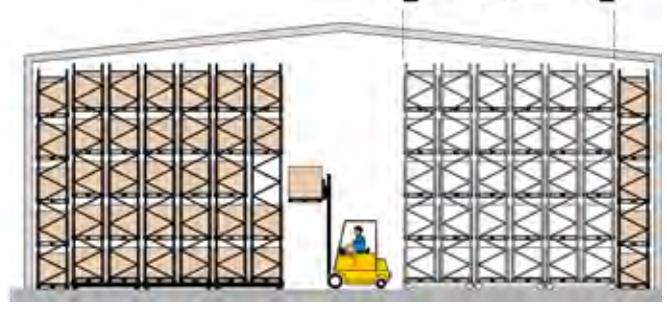
Example:

Floor space 800 m² = 1,008 pallet positions



Conventional pallet racking

Floor space 800 m²
= 1,764 pallet positions



BITO PROmobile pallet racking

Increase in storage capacity of
~75 %
(756 pallet positions)

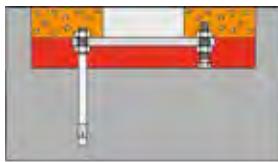


PROmobile track options

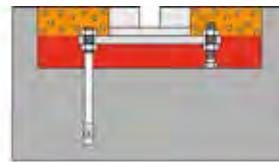
FLAT TRACKS - FOR EXISTING HALL FLOORS

- Various track widths for light, medium and heavy duty applications
- Customer provides ready-milled track beds
- BITO provides undercasting with shrinkage-free mortar
- Bed in-fill to be supplied by customer

Running track



Guided track



A - Bed in-fill

B - Shrinkage-free undercasting supplied by BITO

C - Existing floor slab

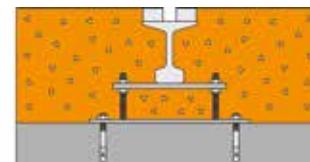
CRANE TRACKS - FOR NEW HALL FLOORS

- Various track types for light, medium and heavy duty applications
- Mounting on raw concrete with subsequent casting of the final layer
- Mounting on strip foundations in case of monolithic floor slabs (single-layer floors)
- Floor plate dimensioning and static calculations are to be made by the customer

Running track



Guided track



A - Floor plate / Final floor layer

B - Strip foundation / Raw concrete

PROmobile bases

Mobile bases are made from solid, torsionally rigid, hot-rolled profiles that guarantee excellent stability and rigidity when the base is moved. Flat steel tension bars reinforce rigidity. Mobile base frames are welded and have proven their reliability many times in practice.

MOTOR WITH GEARBOX

- Each mobile racking base is driven by at least one electric motor
- The number of drives is determined by the length and the load to be carried
- Robust flange couplings
- Driving speed 4.7 m/min.



FULL-LENGTH SHAFT

- All racking bases are connected to the motor by a full-length shaft.
- Parallel running of all mobile base units is guaranteed.



CONNECTOR PLATE

- During the travel process solid connecting plates optimally transmit loads from the bearing and torques.



LIGHT BARRIERS

- Proactive to protect bases and objects in the aisle.
- The light barrier unit is protected by a solid steel angle



FOOT PANEL AND PROTECTIVE WHEEL COVER

- Optimum protection of wheels and tracks
- Neat front finishing on the short side of a mobile base





PROmobile control system

SWITCH CABINET

The heart of the mobile racking system is a control system that is housed in a switch cabinet built with reliable quality components. A touch screen display is on the cabinet front.



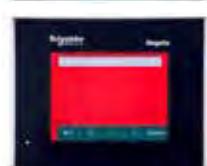
CONTROL MODULE

- Most recent version
- All-in-one embedded controller
- High degree of flexibility
- Customer specific programming clears the way for innovative solutions
- It is possible to change the travel direction while the base is in motion
- Quick analysis and correction of operating errors



FREQUENCY CONVERTER

- Standard feature which ensures smooth starts and stops
- Allows to move a mobile base into its exact position



TOUCH SCREEN DISPLAY

- Simple and innovative operation
- User-friendly touch screen display
- No downtimes and delays if an operating error has to be corrected
- The display is available in various sizes

REMOTE CONTROL TERMINAL ON EACH MOBILE BASE

- Easy-to-read control terminal on each mobile base facilitates operation
- Emergency stop button (part of the BITO safety concept)
- Intuitive operation



FRONT LIGHT BARRIER

- Stops mobile base motion as soon as a truck or an operator enters the aisle
- Optionally available additional light barriers count forklift entries and exits. The system gives automatic aisle clearance which minimises the risk of errors. In compliance with the highest safety requirements, the system is able to distinguish trucks from persons.



PROmobile control options

INTERFACE FOR INTELLIGENT AISLE LIGHTING

- As soon as an aisle is opened, aisle lighting switches on automatically
- Reacts as soon as a mobile base starts to move
- Time setting is possible via touch screen display



REMOTE CONTROL COMMUNICATION

- The storage facility can be controlled with one or more radio remote controls
- One radio control per truck is advisable



REMOTE CONTROL PANEL

- Typical solution for cold stores
- Switch cabinet is installed in normal temperature environment



MANUAL ORDER PICKING FUNCTION

- 4 pick settings can be programmed by the customer
- If required, several aisles for order picking can be opened simultaneously
- Inventory control function
- Night setting is supplied as standard function



KEYLESS GO

- Allows to assign operator authorisations
- The operator identifies himself via RFID chip and obtains the go-ahead to operate the system.



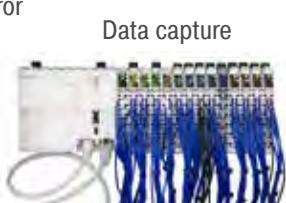
ELECTRIC SOCKETS ON MOBILE BASE

- External equipment can be plugged in, such as a vacuum cleaner for weekly cleaning of tracks



DATA CAPTURE AND LOG FILE CREATION

- The system lists all in-feeding and out-feeding operations as well as error messages
- Material flow analyses are possible

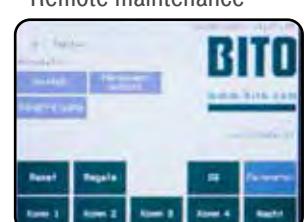


REMOTE MAINTENANCE

This option allows external network access to displays and control systems for analysing and eliminating operating errors.

The system infrastructure is to be supplied by the customer.

Remote maintenance





FEATURES

- PROMobile pallet racking in use in the company's cold store
- Despatch route related / customer related storage of picked products
- Mobile bases with sufficient floor clearance for hand pallet truck servicing

CUSTOMER REQUIREMENTS

For more than 80 years, Brezel Ecker GmbH in Homburg-Erbach has been selling frozen foods ranging from pretzels and pizzas to nougat croissants. The IFS (International Food Standards) certified company stores its products in cartons packed on pallets. Arriving goods are stored in the PROMobile pallet racking facility which consists of two blocks separated by an aisle. All product lines can be directly accessed. The products are picked on order/customer dedicated pallets which are sorted according to despatch route. System specific advantages make PROMobile pallet racking particularly efficient in cold store applications, as every cubic foot of space is used, thus saving on energy costs.



BENEFITS

- High-density storage solution
- Very efficient for cold storage
- Suited for a huge number of reference lines
- 100% selectivity
- No downtimes
- Versatile and scalable





Schwäbchen
Dairy products

FEATURES

- Mobile pallet racking with 4 levels
- The buffer levels provide full pallet loads
- 1,300 pallet positions

CUSTOMER REQUIREMENTS

Since 1938, Schwäbchen is a very successful creamery running three sites – Mainz, Ilsfeld and Kornthal-Münchingen. Whereas only 4 million litres of milk were processed annually in 1938, today's processing capacity has risen to almost 150 million litres a year. Schwäbchen is known for its regional products and for supplying catering size packs to gastronomy.

Previously, a part of the pallets were stored at the premises of an external service provider. This meant that more time was required for order preparation. External storage caused additional costs. The strong growth in recent years was now to be addressed with the construction of a new cold storage facility. In order to reduce energy costs, space utilisation had to be optimized.

BENEFITS

- Space saving, compact storage solution
- By switching from static shelving to the mobile solution, space utilisation rose from 40% to 75%
- Space saving storage of fresh produce in the chilled storage area (+5°C) saves on energy costs



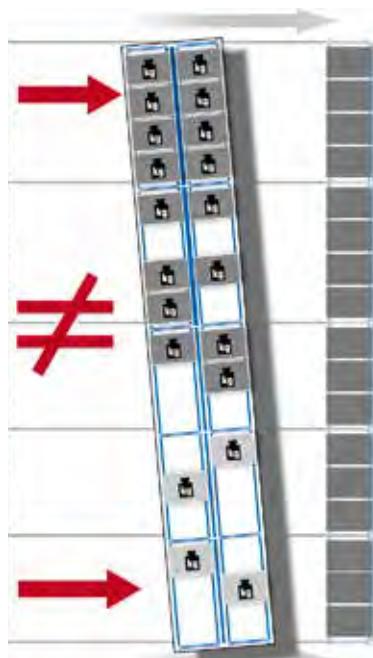
PROmobile synchro: precise and permanent distance monitoring (permanent distance control)

WHAT IS »PERMANENT DISTANCE MONITORING«? (permanent distance control)

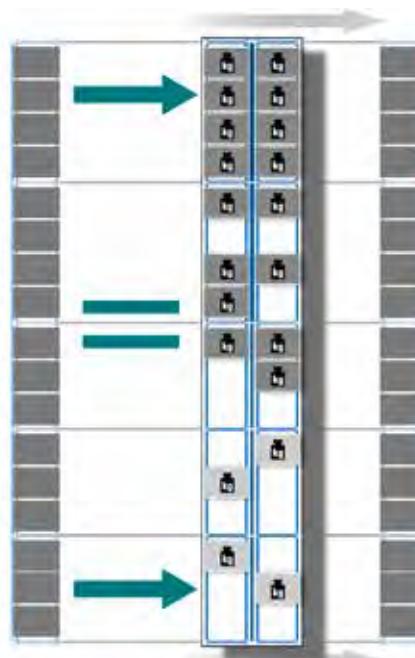
- BITO PROmobile ensures that the same distance between the mobile bases is maintained at any given point along the racking row throughout aisle opening or closing.
- Electric motors have replaced conventional mechanical operation.

PATENT-
REGISTERED

Without BITO PROmobile synchro



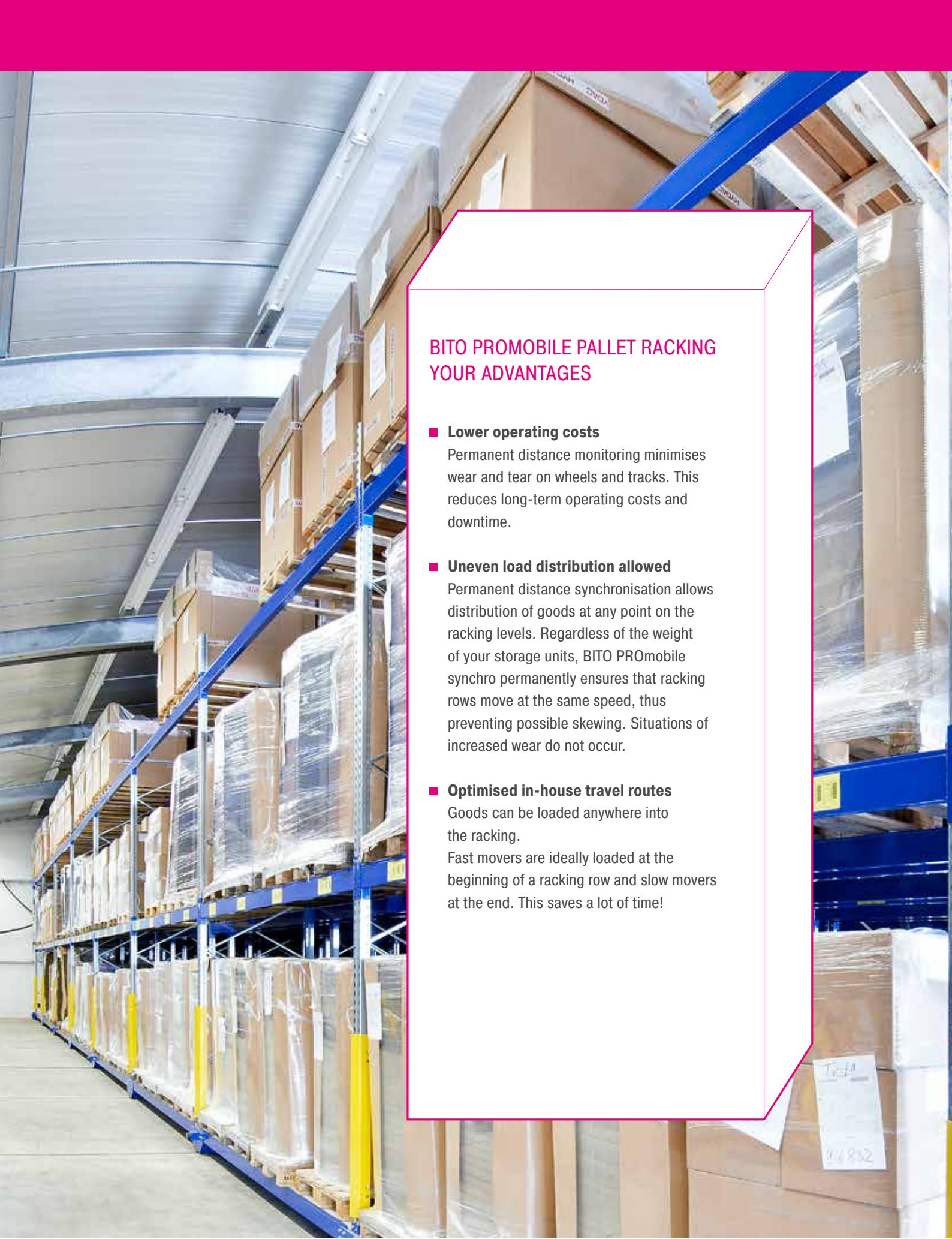
With BITO PROmobile synchro



> Without synchronisation control
and with unevenly distributed loads,
racking rows run askew.

> Electrical control replaces
conventional mechanical guidance
for perfect synchronisation





BITO PROMOBILE PALLET RACKING YOUR ADVANTAGES

- **Lower operating costs**

Permanent distance monitoring minimises wear and tear on wheels and tracks. This reduces long-term operating costs and downtime.

- **Uneven load distribution allowed**

Permanent distance synchronisation allows distribution of goods at any point on the racking levels. Regardless of the weight of your storage units, BITO PROmobile synchro permanently ensures that racking rows move at the same speed, thus preventing possible skewing. Situations of increased wear do not occur.

- **Optimised in-house travel routes**

Goods can be loaded anywhere into the racking. Fast movers are ideally loaded at the beginning of a racking row and slow movers at the end. This saves a lot of time!



Hager Papprint
Manufacturer of
packaging solutions

FEATURES

- PROMobile synchro pallet racking with a total width of almost 29 m on 5 mobile bases
- 930 pallet positions for pallets weighing up to 600 kg
- 20 space-saving over-aisle pallet positions bridging the required emergency exit route
- 7 bays per racking row with a clear width of 3,600 mm and a depth of 1,100 mm in single rows, 2,400 mm in double rows

CUSTOMER REQUIREMENTS

Whether it is folding cartons, sales displays or wrapping cartons made of solid cardboard or laminated corrugated cardboard – Saarland-based Hager Papprint GmbH is one of the leading packaging manufacturers and offers the right solution to customers throughout Europe in the pharmaceutical, food, non-food, consumer electronics, automotive, wellness, sports and leisure industries. The service portfolio also includes design and packaging engineering, printing, finishing, right through to ideas for sales promotion.



PROJECT CHALLENGES

In order to be able to offer their customers an even better service, the packaging manufacturer wanted to implement the just-in-time principle more efficiently and, in the course of consolidating their locations, converted a nearby building into the company's own logistics hub. Since the floor plan was not to be changed, the existing area of approx. 1,000 sqm had to be used in the best possible way.

BENEFITS

- Very high storage density, because only one service aisle is needed
- Special advantages provided by the BITO synchro function
- Perfect synchronisation of the carriages - even with uneven loading
- Longer service life of the system and lower maintenance costs, as additional friction and therefore wear on tracks and wheels are prevented
- Process-optimised replenishment of the racking system, for example fast-moving items can be stored at the front and slow-moving items at the back
- Optimum safety at work through sensors that permanently record the position of the system





Sielaff
Vending machine
designer and manufacturer

FEATURES

- PROMobile racking installation, approximately 29 m in length and in width
- 2 static single racking rows, 1 static double racking row, 6 mobile double rows
- 3,100 storage positions for pallets, wire-mesh box pallets and corlettes
- Load capacity per level 19,200 kg, bay load capacity 3,200 kg, load capacity per mobile base 347,200 kg
- Pallets are handled short side facing, rack servicing with reach trucks
- The project also included delivery of static pallet racking and 15,000 XL stacking containers sized 600 x 400 x 170 mm

CUSTOMER REQUIREMENTS

The Franconian vending machine specialist Sielaff GmbH und Co.KG in Herrieden develops and manufactures vending machines on 68,000 square meters, for example for hot and cold drinks, snacks, stamps or the return of beverage bottles. When space in the high-bay warehouse ran out and containers with small parts had to be stacked in the assembly area, the decision was taken to build a new production and logistics hub for the final assembly of vending machines.

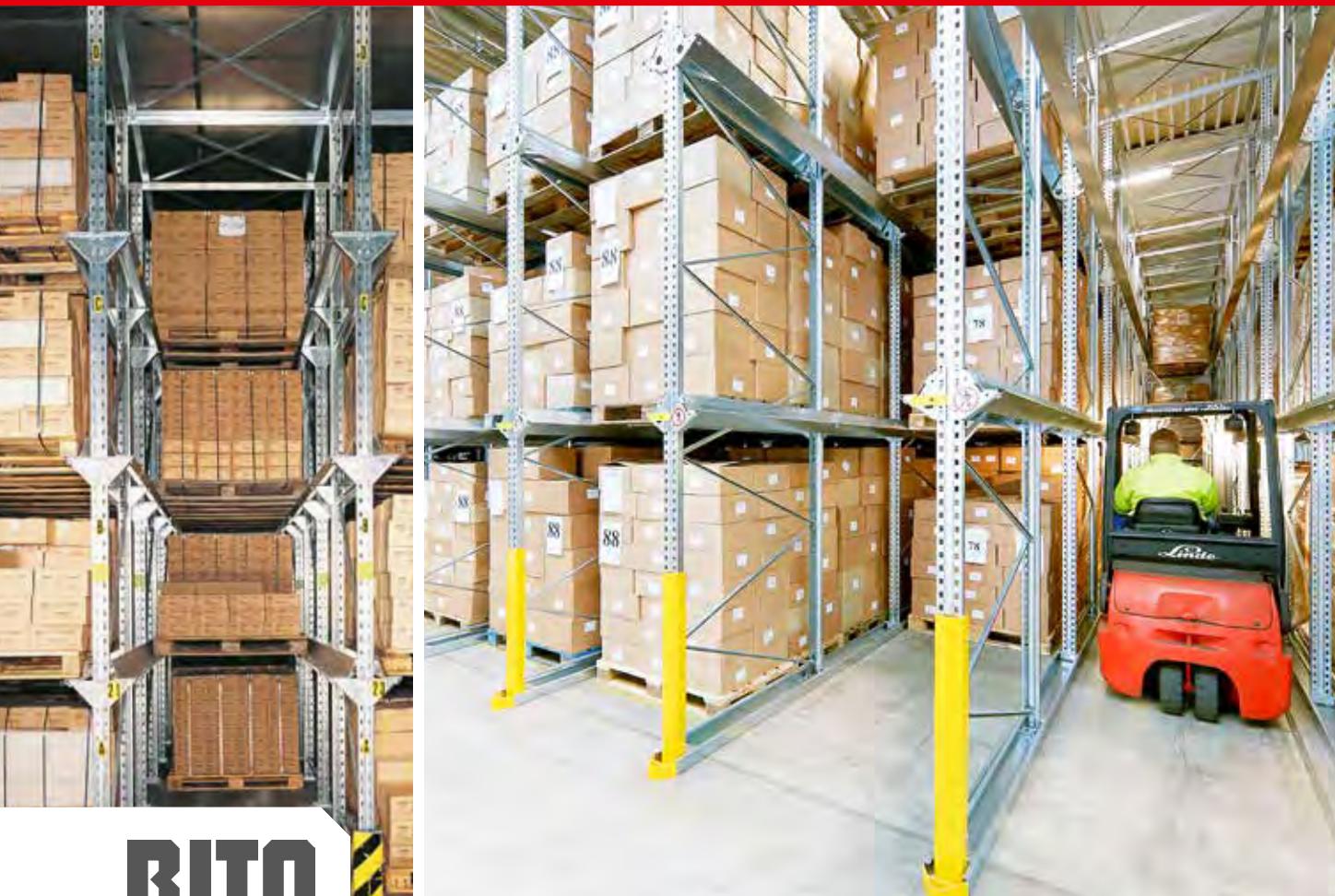


PROJECT CHALLENGES

An enormous amount of parts had to be stored in limited space and at the same time quick access had to be guaranteed. The BITO PROmobile system is ideally suited for this purpose: The selected aisle opens at a speed of 4.7 m per minute, and as soon as the operator has left one aisle, the next aisle can already be opened. It is also possible to open two aisles at a time so that two stackers can work simultaneously. Frequency converters ensure smooth and precise motion - regardless of the weight loaded on the mobile bases. Each picking route can be optimised through online monitoring.

BENEFITS

- Considerable increase in storage density / space optimisation
- Enormous increase in efficiency thanks to modern process control and safety technology as well as communication with the practice-based warehouse management system
- Intelligent programming that can be adapted to the user
- Intuitive controls help to avoid operating errors.

**BITO**

WWW.BITO.COM

Drive-in racking

Basically, drive-in racking is a pallet rack, however there are fewer aisles and pallets sit on support rails that are several storage positions deep. Similar to floor stacking, this possibility provides a very high degree of space efficiency with optimal utilisation of floor area and room height. It should be noted that storage and retrieval are subject to a specific sequence.

Drive-in racking is particularly suited for pressure sensitive goods or unstable loads which are stored in big quantities. The range of items stored in drive-in racking is small to medium-sized with a relatively low picking frequency. This storage solution is therefore ideal for applications with a low pallet turnover such as for seasonal storage.

PRODUCT INFORMATION

Frequent application

- Buffer stores, seasonal stores

Service options

- Front stacker with a mast width of 950 mm maximum

Storage options

- Pallets are handled long side facing
- Several pallets in depth

Surface/volume utilisation

- Good utilisation of storage capacity
- Medium gain in floor space



STORAGE UNITS

PALLETISED LOADS

Stock rotation frequency

- Huge storage quantities per reference line
- Small to medium sized range of products
- Low turnover frequency

Stock characteristics

- Pressure sensitive goods
- Unstable loads



BITO PRODUCT CATALOG

To look at our complete product range with comprehensive product information, ask for our PRODUCT CATALOGUE. We will be pleased to send you a free copy. Simply e-mail us at:
info@bito.dk (DK)
info@bito.fi (FI)
info@bito.se (SE)



Product brochures and in-depth information can be downloaded at:
<https://www.bito.com/da-dk/service/vejledninger-og-brochurer/> (DK)
<https://www.bito.com/fi-fi/neuvooja-ja-palvelua/asennusohjeet-ja-esitteet/> (FI)
<https://www.bito.com/sv-se/raadgivning-och-service/monteringsanvisningar-och-broschyer/> (SE)

For further assistance please contact our project support at:
Tel. +45 70 21 51 51 (DK) Tel. +358 10 324 6510 (FI) Tel. +46 (0)42 151 910 (SE)

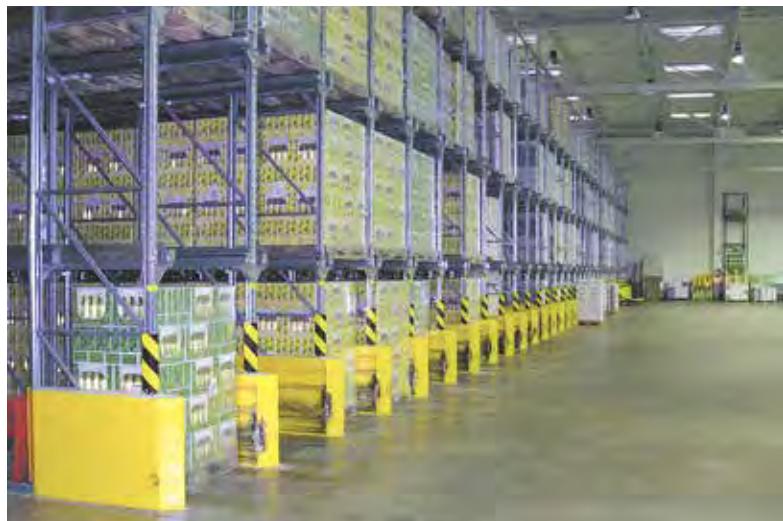


Economic evaluation

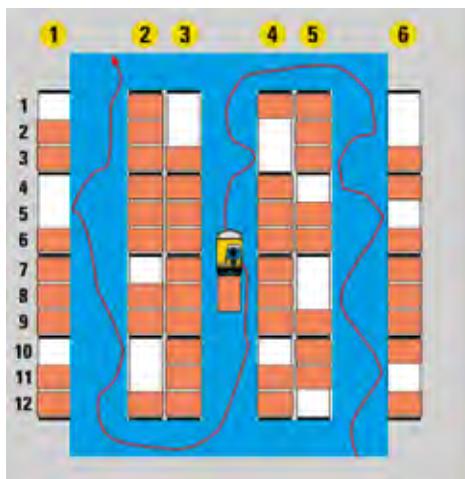
In comparison to conventional pallet racking, drive-in pallet racking enables very cost-efficient and compact storage. The floor space gained can be used for increasing storage capacity or for a different purpose.

It is recommended to dedicate a racking lane to a specific reference line, as there is no permanent access to all pallets in store.

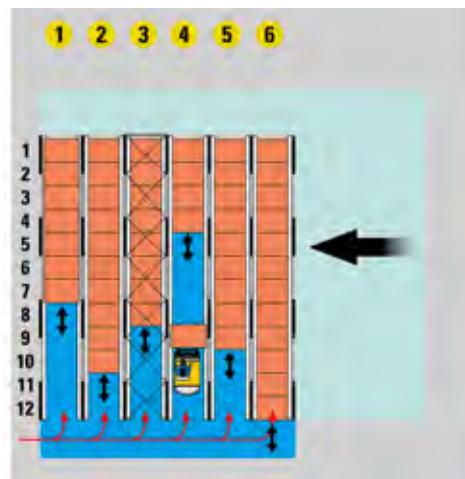
- Very economical pallet storage
- Cuts costs by reducing required storage space



CONVENTIONAL PALLET RACKING



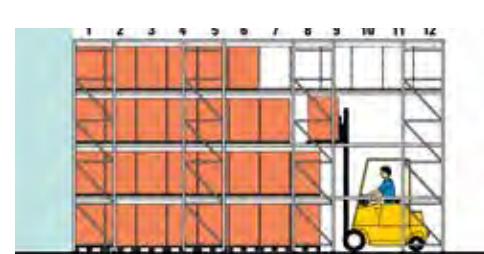
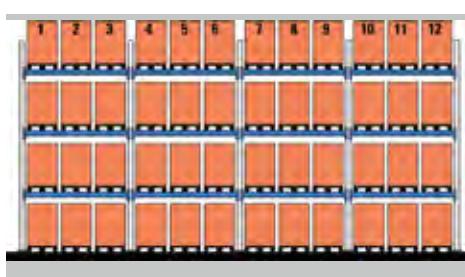
DRIVE-IN PALLET RACKING



CASE STUDY

Our example is based on a pallet racking installation with 6 racking runs, each providing 12 pallet positions per storage level. There are 4 storage levels in total, including the floor level.

The enormous gain in space is already evident when comparing the floor plans of the racking systems.



The front views clearly show the savings in cubic space.

Advantages of the system

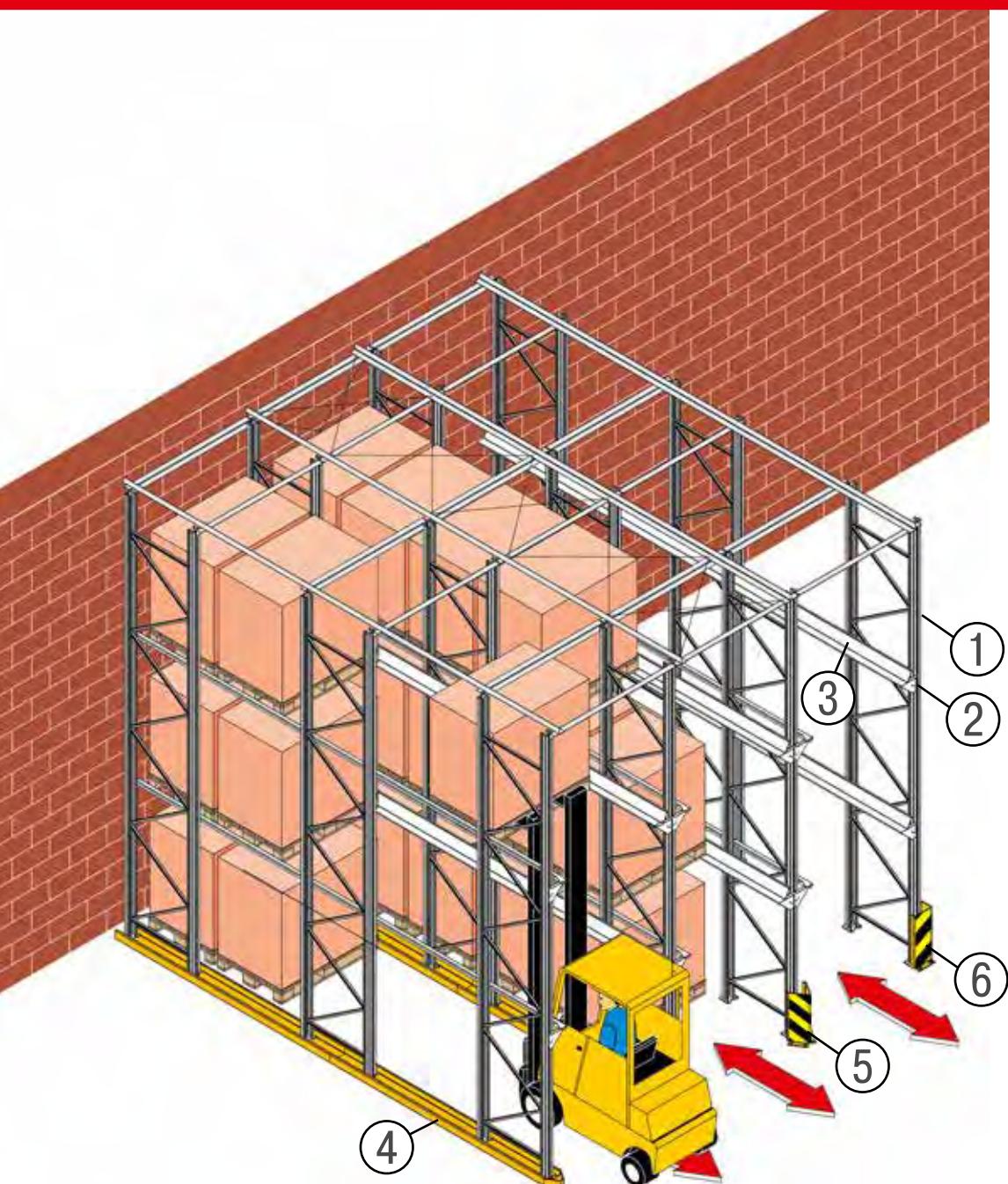
GENERAL ADVANTAGES OF DRIVE-IN RACKING

- High-density storage solution
- No pressure damage
- Safe storage of pallets with unstable loads
- Compacted storage lanes provide high volume storage

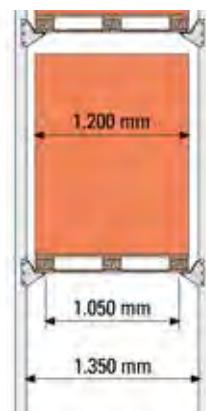
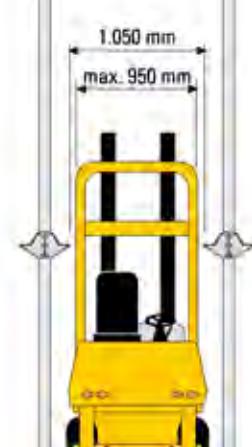
SPECIFIC ADVANTAGES OF BITO DRIVE-IN RACKING

- Frames are the same as those used for field-proven BITO pallet racking
- Pallet support rails can be adjusted in height on a 50 mm pitch
- Support rails provide a safe seat for pallets
- Easy and fast fitting of hook-in brackets (for pallets without overhanging loads)
- Support rails with sloped sides provide safe pallet guidance
- Diagonal bracing ensures adequate racking rigidity
- All components come with a quality galvanised surface finish

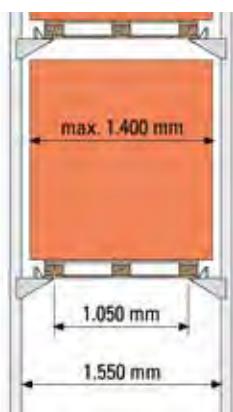




- 1 Frame
- 2 Hook-in bracket
- 3 Pallet support rail
- 4 Vehicle guide rail with entry guide
- 5 Column guard type EF
- 6 Corner column guard type AS 40.2



Hook-in brackets
for pallets without
overhanging loads



Bolted brackets
for pallets with
overhanging loads

Pallets are loaded and retrieved with a front stacker that drives into the rack. Maximum mast width of 950 mm.

RACKING FRAMES

BITO drive-in racking is made with the same frames as our well established pallet racking system. The frames are an all-bolted construction designed for high load capacities. At the top end, the frames are connected to each other with struts in side-to-side and in front-to-back direction. Additional horizontal and diagonal bracing ensure excellent racking rigidity.

- Designed for heavy-duty applications
- High load carrying capacity



PALLET SUPPORT RAIL

Bolted to the bracket. The broad seat surface and the sloping sides ensure safe pallet positioning.

- Safe pallet positioning
- Designed for heavy-duty applications



COLUMN GUARD TYPE EF

Protects front uprights between the right/left hand corner of a racking block against collision damage. This robust component is epoxy-coated in RAL 1003 and has additional yellow/black signal striping.

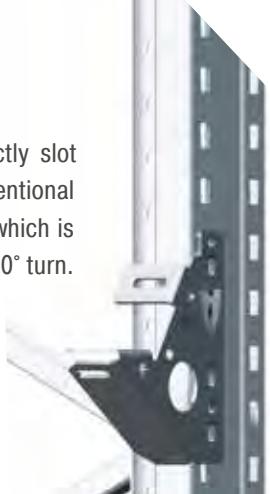
- Reliable upright protection
- Height 400 mm
- Yellow/black signal striping shows need for increased attention



HOOK-IN BRACKET

The 4 hooks of the bracket perfectly slot into the upright perforations. Unintentional lifting is prevented by a safety pin which is secured against dropping out by a 90° turn.

- Fast adjustment without bolts
- Height adjustable in 50 mm increments
- High load bearing capacity



Brackets with a broader pallet seat are used for pallets with overhanging loads. They are bolted to the uprights.

- Suited for pallets with overhanging loads



VEHICLE GUIDE RAIL WITH ENTRY GUIDE

Optionally, the drive-in lanes can be equipped with vehicle guide rails to keep service vehicles on track.

- Rail guidance for service vehicles
- Facilitates vehicle centering



CORNER COLUMN GUARDS

Employer Liability Insurance Associations stipulate that frames in corner areas must be secured against collision damage from service vehicles. With a height of 400 mm, the column guard AS 40.2 exceeds the required minimum height by 100 mm.





Service provider / Forwarder

FEATURES

- Drive-in racking serves as supply and buffer store for big bags on Europallets
- Pallet height between 1,250 mm and 1,650 mm
- Maximum pallet weight 750 kg
- 12 pallet positions per level, 11 pallet positions in depth
- 396 pallet positions per racking block

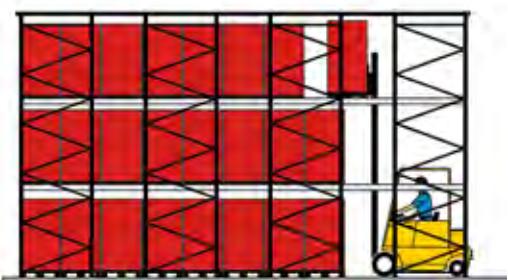
CUSTOMER REQUIREMENTS

A shipping company uses drive-in racking for supplying and buffering bulk products such as sweetener in big bags. Since neither floor stacking was an option nor building a new hall, the service provider opted for drive-in racking to increase the storage capacity of the existing warehouse. The racking system stocks a limited variety of goods in easily deformable and unstable packing units. Larger batches are temporarily stored in order-related pools. The big bags are fed into racking lanes that are dedicated to a despatch route/customer - ready for loading into freight trucks. The facility is serviced with front stackers.



BENEFITS

- Maximum utilisation of headroom
- Clearly defined storage areas allow to immediately locate any stock line
- Lanes can be dedicated to a specific product lane
- No damage to products





Krage & Gerloff Logistik GmbH

International freight forwarder

FEATURES

- Drive-in racking used for supplying and buffering products
- 3 levels
- No service aisles needed like in conventional pallet racking
- Easy monitoring of incoming and outgoing goods
- No pressure damage
- Maximum storage capacity in a given space
- Small footprint

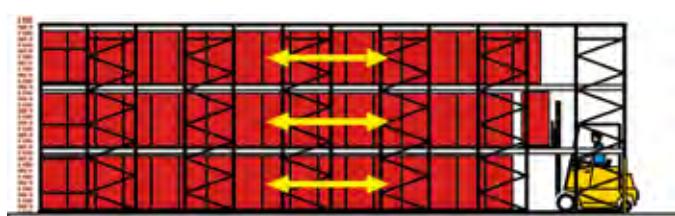
CUSTOMER REQUIREMENTS

The owner-managed service provider Krage & Gerloff Logistik GmbH has specialised in storage and transport logistics. At the Schwanenbeck site in Saxony-Anhalt, pallet drive-in racking provides a substantially higher number of pallet storage positions than conventional pallet racking. This budget friendly solution makes optimal use of the existing floor space and enables pressure-free storage of a wide product range. The greatly reduced risk of product damage as well as the limited floor space requirement help to reduce costs. All goods are loaded and retrieved with front stackers.



BENEFITS

- Maximum utilisation of cubic space
- Warehouse space utilisation is substantially improved
- Clearly defined storage areas for stock lines
- No product damage
- High-density storage solution



**BITO**

www.bito.com

BITO PROmotion shuttle racking

BITO PROmotion pallet shuttle racking is a deep lane/channel storage solution and a smart alternative to drive-in racking, push-back racking and pallet live storage. A pallet shuttle is battery-powered, remote-controlled carrier that moves pallets into and out of racking lanes. The carrier travels autonomously on guide rails into the storage lanes at speeds of up to one meter per second. Once a task is completed, the shuttle vehicle returns to its initial position at the racking front, ready for relocation into another storage lane/channel by a standard fork lift truck.

The PROmotion shuttle system enables warehouse operation in FIFO order (first in, first out) as well as in LIFO order (last in, first out).

To ensure that the PROmotion shuttle system meets highest safety standards, BITO has developed and implemented unique safety features in cooperation with the Expert Committee for Material Storage and Handling under the lead of BGHW Mannheim (German Occupational Accident Prevention and Insurance Association for Trade and Merchandise Logistics).



PRODUCT INFORMATION

Frequent application

- Seasonal stores
- Buffer stores
- Dispatch route related order preparation at the loading dock
- Frozen/cold food storage

Service options

- Stacker trucks
- Autonomous guided vehicles (AGV)

Storage options

- Pallets are handled long side facing, several pallets in depth

Space utilisation

- High degree of floor space utilisation
- Good utilisation of storage capacity

Stock rotation frequency

- Low to medium



SAFETY

All safety features of the BITO PROmotion shuttle system have been developed in cooperation with the Expert Committee for Material Storage and Handling (lead: BGHW Mannheim) and approved by BGHW in Mannheim, Germany. In consultation with manufacturers, the German trade supervisory authority and employer liability insurance associations, all identified safety aspects were discussed and appropriate solutions were developed for hazards that may arise. The safety concept includes the following features:

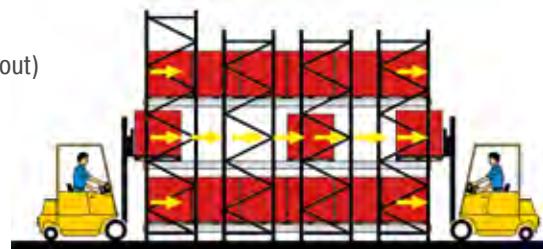


- Laser scanners in both directions of travel for the detection of persons (and objects) in the travel path
- Emergency button for immediate shuttle switch-off
- Every shuttle start is announced with an acoustic signal
- Concept for fault clearance or removing a defective shuttle from a lane using an access and maintenance platform that safely transports staff to the point of trouble.
- Proper instruction at racking installations (warning, prohibition, mandatory signs)
- Protective cladding at the racking block sides along trafficways
- Button for switching on battery voltage after voltage recovery upon start-up or battery replacement
- Mechanical end stops and sensor technology keep the shuttle in its lane

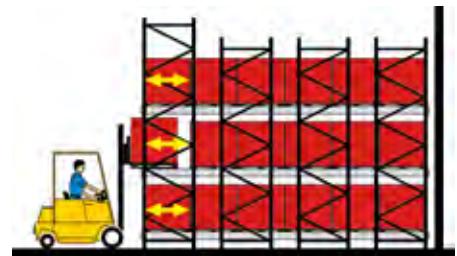
The BGHW Expert Committee for Material Storage and Handling has assessed all safety features as compliant with the relevant safety requirements.

STORAGE OPTIONS

FIFO storage
(first in, first out)



LIFO storage
(last in, first out)



BITO PRODUCT CATALOG

Take a look at our product range complete with comprehensive product information: Ask for our PRODUCT CATALOG.

Email us on
sales@us.bito.com

For further assistance please contact us.



Advantages of pallet shuttle racking

GENERAL ADVANTAGES

- High-density storage
- Good use of warehouse volume, as the lanes do not require a gradient
- High degree of floor space utilisation through deep lanes
- FIFO and LIFO principle applicable
- No damage to pressure-sensitive goods
- Each lane can be individually accessed
- Cost efficient storage of a limited number of product lines

SPECIFIC ADVANTAGES OF BITO PROMOTION SHUTTLE RACKING

- The system also accepts low-quality pallets
- Same frames used as for BITO PRO pallet racking
- Suited for pallets weighing up to 1,500 kg
- Choice of support rails according to pallet weight ensures optimum travel characteristics and safe storage
- Low-weight, long life lithium-ion battery
- Rugged remote control for operating up to 4 shuttles
- Technically mature and comprehensive safety concept developed in cooperation with BGHW Mannheim
- No electronic installations necessary in the rack
- Also ideally suited for deep-freeze environments

PROmotion racking technology



More information on frames, beams, upright protectors and column guards on pages 112 - 113.

RACKING FRAMES

- Same as used for the field-tested BITO PRO pallet racking system
- Quality bolt anchors ensure excellent structural safety
- High load carrying capacity
- Lanes can be adjusted in height on a 50 mm pitch

BRACING

- Double C-profiles increase construction rigidity without adding to height

GUIDE RAILS

- Developed to meet highest demands
- Suited for pallets weighing as much as 1,500 kg
- Various profile thickness options ensure safe and economical storage
- Long service life, designed for up to 50,000 shuttle rides

IN-FEED GUIDE (OPTIONAL)

- Allows easy and convenient pallet in-feeding and centering

COLUMN GUARDS

- Mandatory for corner areas of a racking block to protect uprights

UPRIGHT PROTECTORS (OPTIONAL)

- Bolted onto uprights
- The sturdy design protects against impact damage
- Upright protectors prevent damage to the racking structure

PROTECTIVE CLADDING

- Fitted to the long side of a racking block to protect operators from moving shuttles
- Integral feature of the BITO PROmotion safety concept
- Protection from unauthorised access

LANE DEPTH

- The technically mature structural design and optimal component construction enable lane depths of up to 80 meters

PROmotion functionalities

STANDARD FUNCTIONALITIES

PALLET INFEEDING

In a first step, the shuttle is placed on the support rails of a lane with a front stacker. The truck driver will now deposit the pallet on the shuttle carrier and activate the shuttle programme. The shuttle lifts the pallet and moves it to the end of the lane, deposits the pallet and returns to its starting position at the lane front.

PALLET OUTFEEDING

The truck driver will place the shuttle into the lane and press the outfeeder button on his remote control. The shuttle will move down the lane, underride the first pallet, lift it, transport it to the lane front and deposit it there.

CONTINUOUS INFEEDING

The same steps are followed as for one-time infeeding, however the infeeder button only needs to be pressed once. Provided that pallets are continuously fed into the lane by the truck operator, the shuttle will keep on transporting pallet after pallet from the front to the rear of the lane.

CONTINUOUS OUTFEEDING

The same steps are followed as for one-time outfeeding, however the outfeeder button only needs to be pressed once. Provided that pallets are continuously retrieved by the truck operator, the shuttle will keep on transporting pallet after pallet from the rear to the front of the lane.

MANUAL MODE

For operation in manual mode, each action of the shuttle vehicle must be actuated individually by remote control, such as pallet lifting, moving the pallet to the front or the back of the lane, shuttle stopping and pallet depositing.

DIAGNOSIS SOFTWARE

If an error occurs during infeeding or outfeeding, the type of error will be specified on the remote control display.



ADDITIONAL FUNCTIONALITIES

CONTINUOUS OUTFEEDING PLUS

Speeds up outfeeding. Just as in the continuous outfeeding mode, the shuttle will transport a pallet to the front. However, instead of waiting under the pallet until it has been retrieved by the truck operator, the shuttle will move back immediately to the rear of the lane and take the next pallet to the front. Waiting under the second pallet until the first pallet at the picking face has been retrieved, the shuttle will then deposit the second pallet on the first pallet position and bring the next pallet from the rear of the lane. This means that there are always two pallets ready for outfeeding at the lane front.

IMPROVING STORAGE DENSITY

The shuttle vehicle assumes lane organisation without operator intervention by automatically relocating pallets from front to rear and rear to front.

INVENTORY CONTROL FUNCTION

While moving pallets up and down the lane, the sensors are counting the number of pallets stored in this lane and send this information to the remote control unit. This feature is particularly useful for installations with very deep lanes.

PROGRAMMABLE DISTANCE CONTROL BETWEEN PALLETS

The shuttle software allows to preset the clear distance between pallets. The system is set at 50 mm as standard, however pallets with overhanging loads can be positioned with a clear distance of up to 120 mm.

ANTI-COLLISION PROTECTION

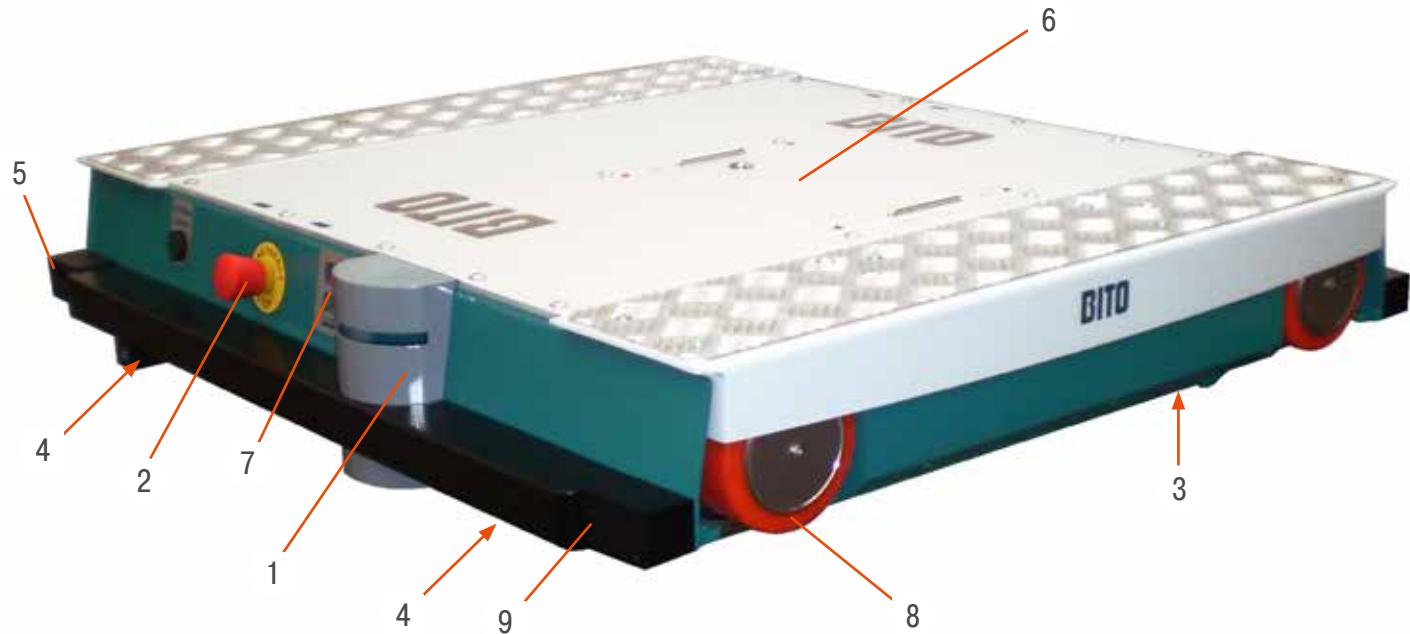
If several shuttles operate in the same lane, it is mandatory to control shuttle traffic. Shuttle-integrated sensors recognise each other and make sure that shuttles do not collide. This function is required for FIFO handling and for racking blocks serviced from both sides with a shuttle.

HANDLING OF MULTIPLE PALLET TYPES

This option increases storage flexibility by allowing different size pallets in the same lane such as 1,200 and 800 mm deep pallets. For this application, a shuttle for 1,200 mm deep pallets is required. It picks up the 800 mm deep pallet and moves it a bit forward into the envisaged direction. The shuttle will then put the pallet back on the pallet support profiles, readjust its position, pick up the pallet again and move it to the proper position at the beginning of the lane.



PROmotion safety features



1. SAFETY LASER SCANNER

- 2 scanners per shuttle vehicle
- Detects objects and persons up to a distance of 2 metres from the shuttle vehicle
- The braking command is triggered in good time



REMOTE CONTROL UNIT

- Easy handling
- Sturdy design for everyday use
- Manages up to 4 shuttles at a time



2. EMERGENCY STOP BUTTON

- Hazard prevention
- Located at the short sides of a shuttle vehicle



3. RAIL DETECTION SENSOR

- Prevents derailing



4. SHUTTLE SEAT PROFILES WITH ANTI-SLIP COATING

- Ensure safe shuttle relocation by fork lift truck



5. DISTANCE SENSOR

- 2 sensors per shuttle vehicle, located in the corner areas
- Identifies the mechanical stopper at the end of a lane and determines the shuttle location within the lane by communicating with the safety laser scanner



PROmotion safety features

SOUND WARNING SIGNAL

- Gives a sound at every shuttle start.
- Increases safety by giving advance warning.
- "Low battery" warning signal



7. PALLET SENSOR

- One sensor each at the shuttle short sides
- Detects other pallets in the lane
- Measures the distance to other pallets



ACCESS AND MAINTENANCE PLATFORM

- Used to clear lanes from obstacles and to pull shuttles back to the lane front in case of disruptions
- Integral part of the BITO safety concept
- Ideal for racking safety inspections



9. TOWING EYEBOLTS

- Provide a safe connection to the maintenance platform if a shuttle vehicle has to be removed from a lane



6. LITHIUM-ION BATTERY

- Includes charger with overload protection
- Proper weight as low as 13 kg
- Charging time approx. 3 hours
- Up to 12 hours of battery operation
- Can be recharged at least 900 times
- Works in all temperature environments, also in cold storage warehouses
- Stops shuttle vehicles automatically at the beginning of a lane when the battery is empty
- The battery is easy to remove and to recharge
- The battery allows opportunity charging because there is no memory effect



8. WHEELS

- Durable wheels made of polyurethane for quiet operation and excellent traction (even at low temperatures)
- Additional steel guide rollers guarantee a straight, precise ride



BITO SERVICES

- Shuttle maintenance
- Racking inspection
- Instruction and training
- Retrofitting of accessories possible
- Additional shuttle vehicles on request



**LEIFHEIT**

Leifheit
Non-electronic
household appliances

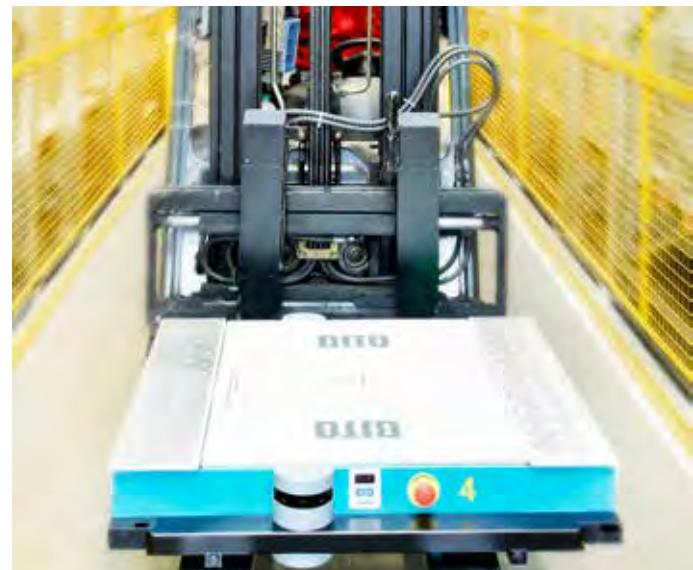
FEATURES

- PROMotion shuttle racking with 10 - 16 m deep lanes instead of floor stacking
- Serviced by 6 PROMotion shuttle vehicles

CUSTOMER REQUIREMENTS

"Designing household products that make people's lives easier" - it was with this claim in mind that Günter Leifheit founded the Leifheit AG, headquartered in Nassau an der Lahn, in 1959. Today, the company is one of the leading suppliers of premium cleaning systems and household essentials that save a lot of time in everyday life. This is appreciated not only by customers in Germany. Today, the company operates 14 sites and branch offices, including five logistics and production facilities in Germany, France and the Czech Republic.

By switching to a different storage system, utilisation of the existing storage space was to be improved and pallet handling as well as material flow were to be made more efficient. Another important requirement for the customer was that the reconstruction work had to be carried out during ongoing operations.



BENEFITS

- Best use of available floor space and building height
- The number of pallet positions increased from 43,000 to 53,000
- The support rails can be selected according to pallet weight to ensure optimum travel characteristics and safe storage
- Technically mature and comprehensive safety concept



Wurzener
Wholesale food trade

FEATURES

- PROmotion shuttle racking (LIFO storage) with 2,000 pallet positions
- 34 bays with 3 levels each
- 16 m deep lanes
- 3 PROmotion shuttle vehicles

CUSTOMER REQUIREMENTS

Wurzener, a producer of milled products and cereal flakes, is one of the most successful food companies in the new German states. Their product range includes more than 50 product lines from cereals, rice, pulses, convenience products to snacks such as flips and potato chips. Insufficient storage capacities in the floor stacking area and the growing range of products were the reasons to look for a new storage solution for the existing warehouse. Since the products cannot be stacked, careful product handling and storage were a must for the customer. So was efficient handling - after all, 250 pallets per day or 3,000 freight trucks per year leave the premises.

BENEFITS

- Optimum utilisation of cubic space
- Safe product storage
- More product lines, as each lane can be dedicated to a different product line, whereas with floor stacking, an entire pallet block holds the same product
- Reduced energy costs - light is only needed at the lane front and rear
- Faster product handling, as truck drivers do not have to enter into the lanes
- Improved workflow in the goods-out department through efficient handling





Cantilever racking for lightweight and heavy goods

Cantilever racks are a versatile solution for storing long loads such as profiles, tubes and pipes, palletised goods such as timber panels and metal sheets as well as bulky components.

The special feature of this racking system is that all components are made to measure. Depending on the size and weight of your storage goods and the available space, your racking system will be designed to meet your specific needs.

- Customers can expect superior quality manufactured in Germany.
- The wide array of upright and cantilever arm profiles is available in various material thickness options and designs for realising economical, customised configurations
- Customised dimensions to fit your products
- Optimum space utilisation
- Roofing for outdoor racking
- Integration into existing storage and logistics concepts

Based on customer specific data such as warehouse space, building foundation type and product data, we work out your individual offer. Our professional and experienced team will be pleased to assist you!

PRODUCT INFORMATION

Frequent application

- Barrier-free storage of long loads, outdoor racking

Service options

- Manual loading and order picking
- Compatible with all common lift truck types
- Automated servicing is possible

Storage options

Long loads, handled both long or short side facing, coils, vertical storage in single and double sided racking

Surface/volume utilisation

Optimal use of storage levels in full-length, as no supporting front posts are required.



STORAGE UNITS

Long loads

Chipboard panels, timber and sheet materials

Steel sheet bundles

Cassettes with long loads, steel sumps/trays

Smaller unit loads such as plastic bins, cardboard boxes or bulk items

Pallets of any type or size, wire-mesh box pallets

Customer specific load carriers, etc.



OPTIONS

Boltless system: height adjustment in 60 mm increments

Bolted system: height adjustment in 50 mm and 100 mm increments

Single sided use

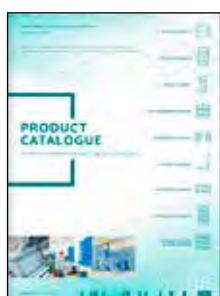
Double sided use

Columns and cantilever arms

- Epoxy-coated or painted for indoor use
- Hot-dip galvanized for outdoor use

BITO PRODUCT CATALOG

To look at our complete product range with comprehensive product information, ask for our PRODUCT CATALOGUE. We will be pleased to send you a free copy. Simply e-mail us at:
info@bito.dk (DK)
info@bito.fi (FI)
info@bito.se (SE)



Product brochures and in-depth information can be downloaded at:
<https://www.bito.com/da-dk/service/vejledninger-og-brochurer/> (DK)
<https://www.bito.com/fi-fi/neuvooja-ja-palvelua/asennusohjeet-ja-esitteet/> (FI)
<https://www.bito.com/sv-se/raadgivning-och-service/monteringsanvisningar-och-broschyer/> (SE)

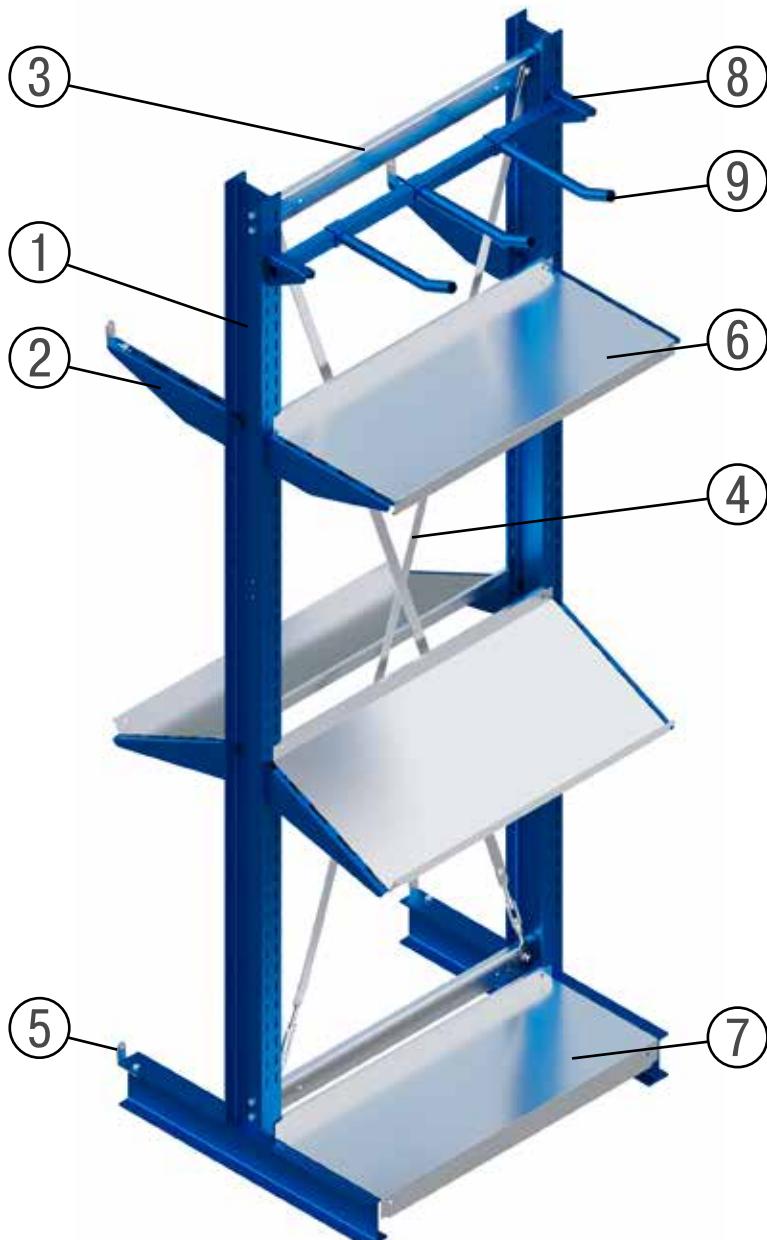
For further assistance please contact our project support at:

Tel. +45 70 21 51 51 (DK) Tel. +358 10 324 6510 (FI) Tel. +46 (0)42 151 910 (SE)

For light-duty and medium-duty applications

There is no limit as to racking length.

Broad range of accessories and safety equipment.



RAL-RG 614/5
Cantilever racking

BOLTLESS SYSTEM

- Cantilever arms and shelf levels can be adjusted in height without bolts
- Height adjustment in 60 mm increments
- Single and double-sided configuration

Columns and column feet are from hot-rolled IPE profiles and are welded together.

The U-shaped cantilever arms are made from quality steel.

- 1 Column, double-sided use
- 2 Cantilever arm with end stop
- 3 Connector beam
- 4 Cross bracing
- 5 End stop for column foot
- 6 Steel shelf
- 7 Base shelf
- 8 Support rail for tubular arms
- 9 Tubular arm

1. COLUMNS

Epoxy-coated

Single and double-sided configuration

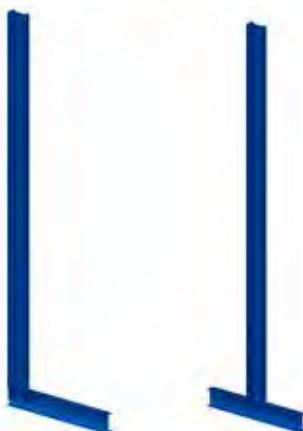
Columns are made from IPE profiles

All shelving and racking components comply with the latest health and safety regulations

Delivery includes floor anchors and shims

Height: from 1,980 mm to 3,700 mm

Useful depth: from 400 to 850 mm



2. CANTILEVER ARMS

Epoxy-coated

Delivery includes safety pin

Height adjustment in 60 mm increments

Useful depth: from 400 to 850 mm



3. CONNECTOR BEAM

Galvanised

1,057 mm or 1,247 mm long



4. CROSS BRACING

Galvanised

Provides extra rigidity to racking ru

Supplied as illustrated



5. END STOP / DIVIDER FOR CANTILEVER ARMS

Galvanised

Delivery includes fixing material

Height options: 60 mm or 150 mm



6. STEEL SHELF

Galvanised

Convenient drop-on fitting on cantilever arms

Useful depth: from 400 to 600 mm



7. BASE SHELF

Galvanised

Drop-on fitting on column feet

Useful depth: from 400 to 600 mm



8. SUPPORT RAIL FOR CANTILEVER ARMS

Epoxy-coated

For tubular arms

Length: 1,057 mm
or 1,247 mm



9. TUBULAR CANTILEVER ARM

Epoxy-coated

Can be positioned anywhere along the support rail

Useful depth: 400 mm



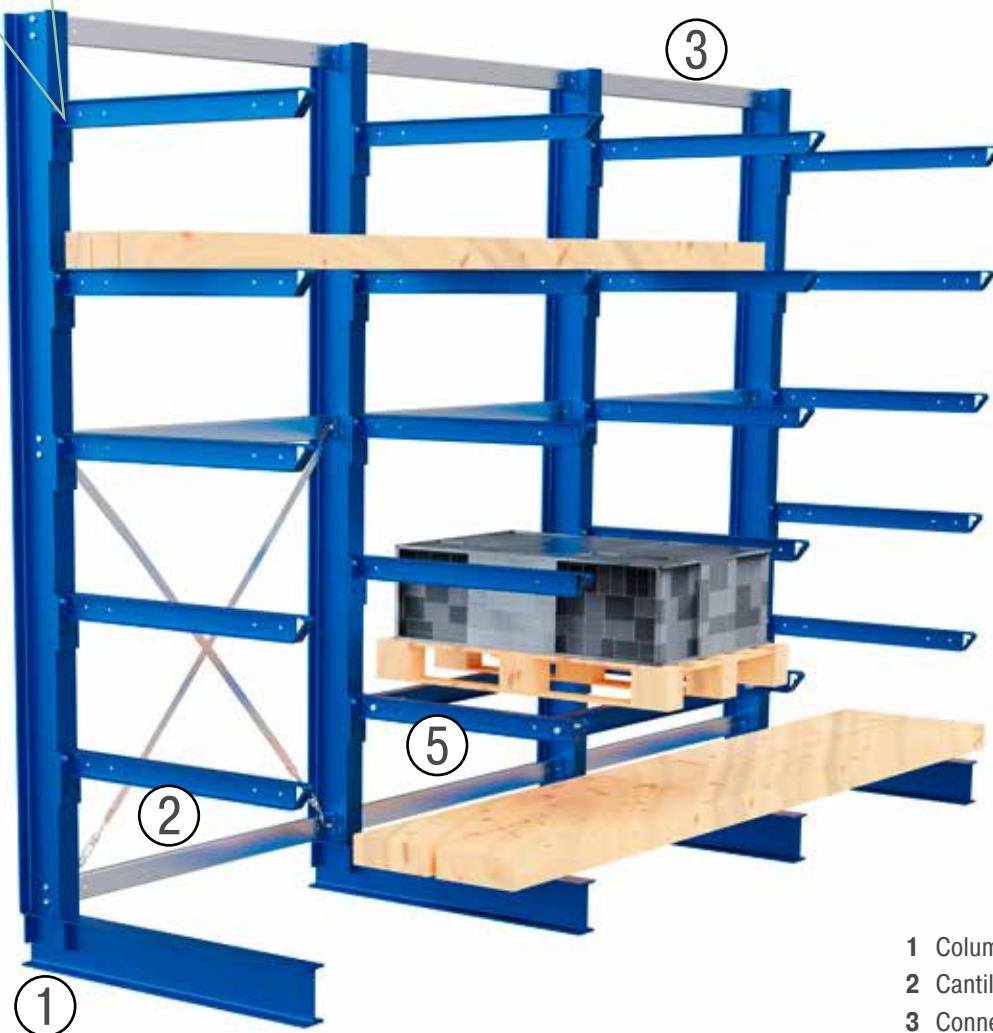
For heavy-duty applications



Bolt-on
cantilever arms

Structural design based on
DIN 18800
RAL-RG 614/5 and
DGUV 108-007

Steel profiles are selected
in compliance with officially
acknowledged structural
design parameters.



- 1 Column
- 2 Cantilever arm
- 3 Connector beam
- 4 Cross bracing
- 5 Cantilever arm bridges

BOLTED SYSTEM

- Cantilever arms and shelf levels are mounted with bolts
- Height adjustment in 100 mm increments
- Single and double-sided configuration

Columns and cantilever arms of the bolted system are made from full-sheet steel profiles.

BITO cantilever racking comes with many accessories.

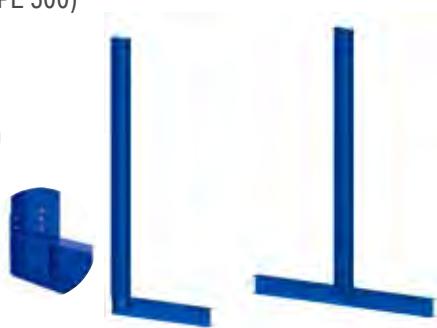
Auditable structural design

BITO also advises on the type of foundation for your racking site

COLUMNS

Single and double-sided configuration
Columns and column feet from hot-rolled
IPE profiles (IPE 120 – IPE 500)

Delivery includes
floor anchors and shims
Height options: 2 - 12 m
Useful depth: 3 m



CONNECTOR BEAM

Connects columns to form a rigid unit.
■ Accommodates diagonal bracing



CANTILEVER ARM BRIDGES

This bolt-on component provides
solid support to pallets and reinforces
chipboard and wire shelves.



END STOP FOR CANTILEVER ARM

Various spacers / end stops can adjusted along the length
or at the end of cantilever arms

Standard version



Cantilever arm divider



Square-tubed push-fit end stop



Welded-on end stop



CANTILEVER ARM

Made from hot-rolled IPE profiles
(IPE 80 – IPE 180)
Useful depth: 3 m



CROSS BRACING

Increases lengthwise racking
rigidity.



WIRE SHELF

Supplied according
to your specifications.



CHIPBOARD DECKING

V20, E1, 38 mm
Delivery includes fixing
material.



Surface finish



FOR INDOOR USE

Columns + arms

- Shot-blasted steel profiles
- Water-based electrostatic single layer coating in compliance with the latest emission guidelines

Cross bracing

- Galvanised flat steel profiles according to EN 10 326

Connector beams

- Bay width \leq 2.25 m, galvanised steel according to EN 10 326
- Bay width $>$ 2.25 m painted steel tube



FOR OUTDOOR USE

Columns + arms

- Hot-dip galvanised steel profiles

Cross bracing

- Galvanised flat steel profiles according to EN 10 326

Connector beams

- Bay width \leq 2.25 m, galvanised steel according to EN 10 326
- Bay width $>$ 2.25 m painted steel tube

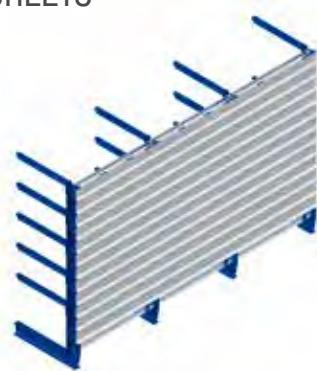
Hall and racking from a single supplier



1. CORRUGATED METAL ROOFING



2. BACK CLADDING FROM CORRUGATED METAL SHEETS



3. SIDE CLADDING





Steelcase

Steelcase
Czech Republic
Manufacturer of
office furniture

FEATURES

- Cantilever racking for packaging units of 3 tonnes each
- Storage of different chipboard types in the same rack

CUSTOMER REQUIREMENTS

Steelcase Czech Republic s.r.o. is a subsidiary of Steelcase Inc., a leading global provider of office furniture, interior design and space furnishing solutions for offices, hospitals and schools. Based on the findings of the latest workplace research results as well as on experience and knowledge from 100 years, the manufacturer supplies high-grade products for a pleasant working environment.

The previous floor stacking system did not allow direct access to the different types of chipboard which made picking cumbersome and time-consuming. There was also a higher risk of accidents at work when transferring the heavy panels.

BENEFITS

- Damage-free and easy-to-view product storage and handling
- Every chipboard type is in direct access
- Increased storage capacity
- Improved safety at work
- Shorter travel routes within the warehouse
- Proper storage of panels that were previously kept in unstable stacks on the floor





TEDOM
Manufacturer of
combined heat and
power plants

FEATURES

- Cantilever racking for very heavy-duty applications
- The various flange types are stored on tubular cantilever arms

CUSTOMER REQUIREMENTS

TEDOM a.s. develops and manufactures cogeneration units with gas combustion engines. The international company with a staff of more than 500 sells its plants across the globe. Cluttered, cumbersome and inefficient storage of flanged joints on pallets forced TEDOM to streamline material flow in their warehouse. The main requirement was to save space, increase convenience, simplify handling and and improve the overview of the items in stock



BENEFITS

- All product types are clearly sorted
- Efficient material handling
- Convenient loading and retrieval
- Significantly shorter provisioning times of components for production
- Easy racking reconfiguration



Ironworks
Podbrezová
Steel production

FEATURES

- Storage of large-sized and bulky products
- Pallet-only racking and combined pallet/cantilever racking with mesh deck levels
- The warehouse is serviced with two narrow aisle forklift trucks

CUSTOMER REQUIREMENTS

Železiarne Podbrezová a.s. is a Slovak manufacturer of steel and seamless steel tubes and one of the largest companies in the country. With an annual production of 160,000 tons of seamless steel pipes, the company is one of the leading steel pipe manufacturers in Europe. The products are used, among others, in mechanical and plant engineering and in the automotive industry.

The spare parts warehouse was previously serviced with an old forklift truck and there was no racking in one area of the warehouse. This area was used for storing oversized material on the floor.



BENEFITS

- Larger storage capacity
- Efficient use of warehouse space
- More handling convenience by moving material from the floor into racking
- Optimal use of the existing hall height
- Special size products are now stored on racking levels
- The number of pallet positions has been maximised



Hörmann KG

Manufacturer of doors and gates

FEATURES

- Intermediate storage of finished products in cantilever racking
- Reach truck servicing

CUSTOMER REQUIREMENTS

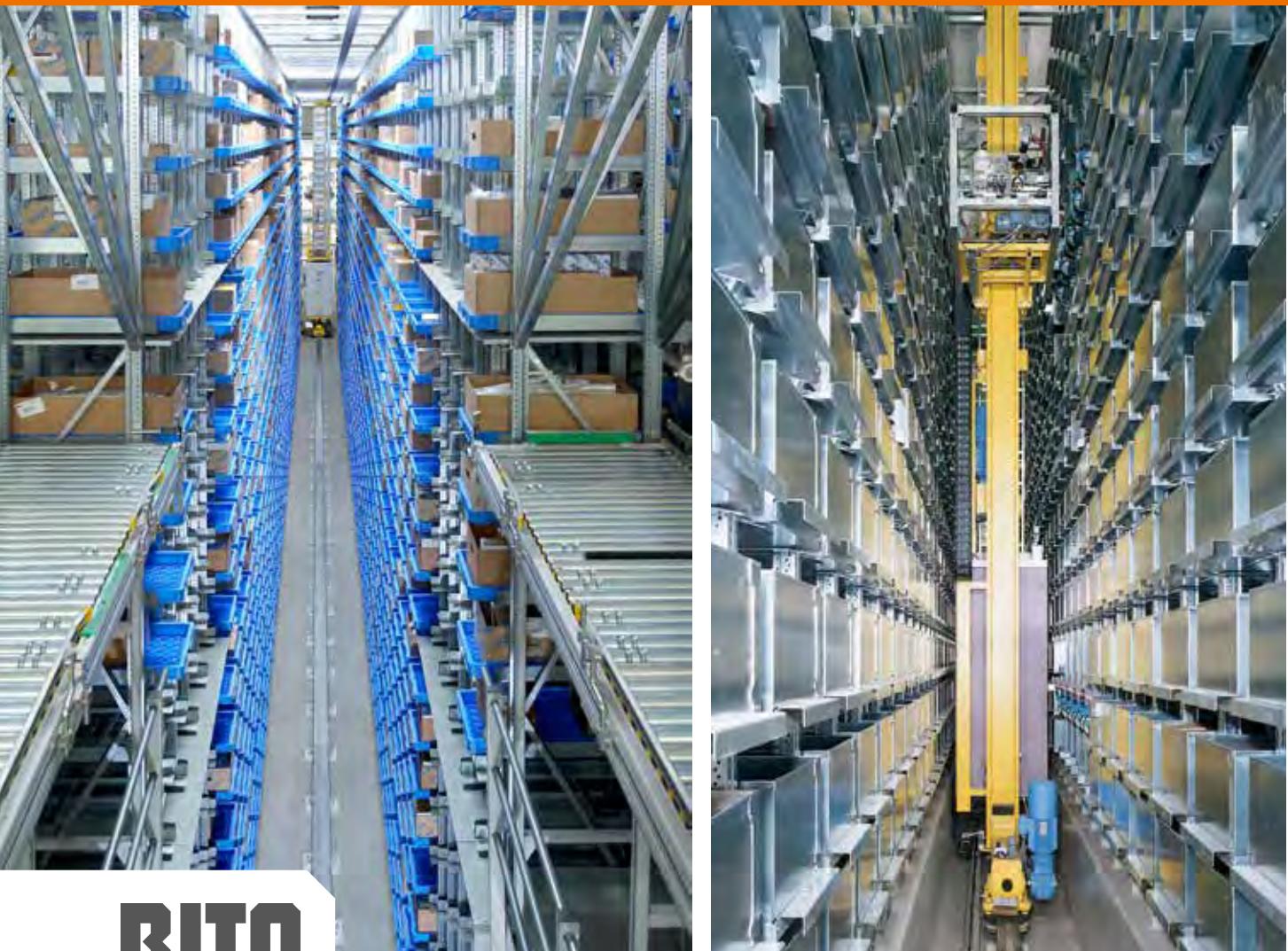
The Hörmann group is one of the leading suppliers of construction elements such as doors, gates, casings and drive systems. The wide range of products offered by the family business is buffered in the dispatch area for delivery. The dispatch area is equipped with single-sided and double-sided rows of cantilever racking either along the walls or in the room. Some of the products stored are very heavy. The racking units are serviced with reach trucks.



BENEFITS

- Easy-to-access intermediate storage of collated orders in the dispatch area
- Optimum space utilisation
- Easy and safe handling of heavy loads



**BITO**

www.bito.com

Automated small parts storage »AKL«

Order picking installations based on the goods-to-operator principle are increasingly common in integrated logistics systems. Automated bin and tray storage systems (BITO type »AKL«) with a single storage position per bay is the most common system. In order to accommodate an even wider product diversity, trays can be loaded with several bins or fitted with dividers.

With their lightweight construction as well as modern control systems and drive units, automated guided vehicles achieve very high pick rates. This guarantees that workstations are continuously supplied with goods and that bins are continuously returned to their storage position after order picking.

Ideally, automated bin and tray storage systems are most frequently used for portfolios with a limited number of product lines with small size items that are stored in huge quantities.

PRODUCT INFORMATION

Frequent application

- Miniload systems, order picking stores, buffer stores, production and supply stores, spare parts and tool storage

Service options

- Fully automated loading and retrieval

Storage options

- Single position storage (1 lane per bay, 1 or 2 load carriers deep)
- Multi-position storage (several lanes per bay)

Surface/volume utilisation

- Very high

STORAGE UNITS

- Plastic bins and containers
- Cardboard boxes
- Plastic trays
- Steel trays



Stock rotation frequency

- Very high (A-items = fast movers) to medium (B-items)

Stock characteristics

- Bulk items are sorted into bins, individual items are placed on trays

You will find compatible plastic bins and containers from page 228.



Single position storage in a double-deep lane (rack servicing from both sides)



Customised solution



Pull-out storage position

OUR SYSTEM PARTNERS

We realise automated small parts systems in close cooperation with strong partners in the field of system integration and logistics planning. Our long-standing experience in this field enables us to offer you a package solution that exactly meets your needs.

BITO PRODUCT CATALOG

To look at our complete product range with comprehensive product information, ask for our PRODUCT CATALOGUE. We will be pleased to send you a free copy. Simply e-mail us at:
info@bito.dk (DK)
info@bito.fi (FI)
info@bito.se (SE)



Product brochures and in-depth information can be downloaded at:
<https://www.bito.com/da-dk/service/vejledninger-og-brochurer/> (DK)
<https://www.bito.com/fi-fi/neuvaja-ja-palvelua/asennusohjeet-ja-esitteet/> (FI)
<https://www.bito.com/sv-se/raadgivning-och-service/monteringsanvisningar-och-broschyer/> (SE)

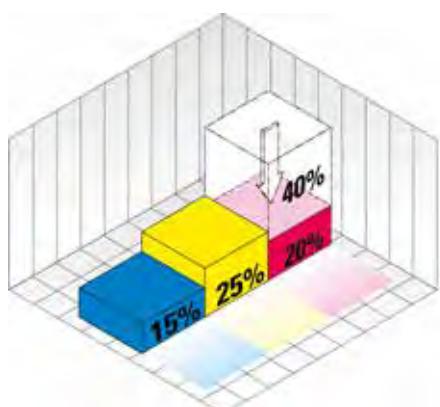
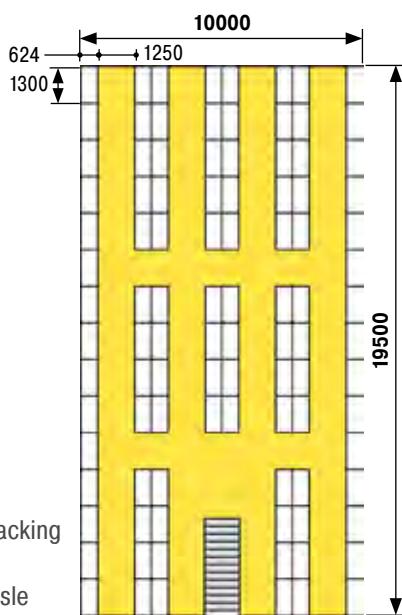
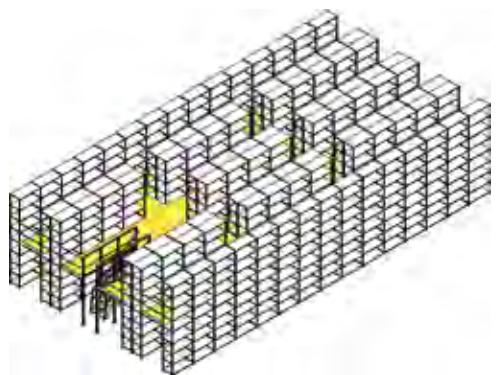
For further assistance please contact our project support at:
Tel. +45 70 21 51 51 (DK) Tel. +358 10 324 6510 (FI) Tel. +46 (0)42 151 910 (SE)



Product outfeeding

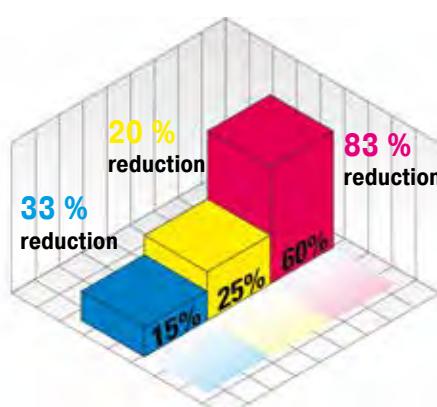
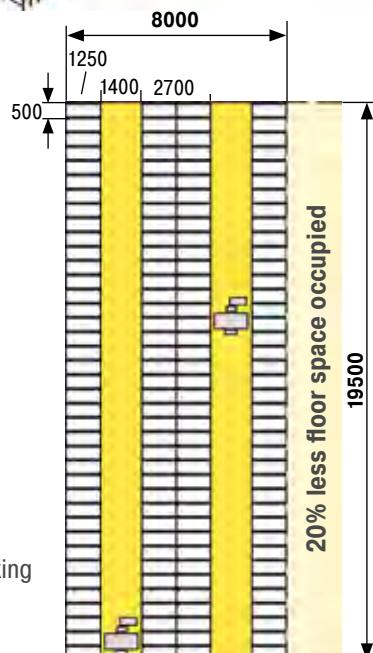
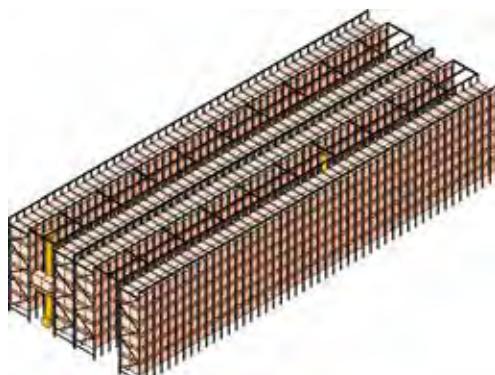
Economic evaluation

CONVENTIONAL RACKING TWO-TIER SHELVING



15 % Info time 25 % Pick time 60 % Travel time

AUTOMATED SMALL PARTS STORAGE FACILITY »AKL«



10 % Info time 20 % Pick time 10 % Travel time

CASE STUDY

For the sake of comparison, both installations are equipped with standard containers sized 600 x 400 x 220 mm.

Both installations have a storage capacity of some 3,700 containers handled long side on. In the automated bin storage facility, containers are stored in 2-position deep lanes.

In our example, the automated bin storage installation occupies 20% less floor space than the shelving installation.

An optimum ergonomic layout of the picking area in front of the automated bin storage installation will cut information and pick times. Almost no walking is required for order pickers which considerably reduces travel times. Almost no walking is required for order pickers which considerably reduces travel times.

Advantages of the system

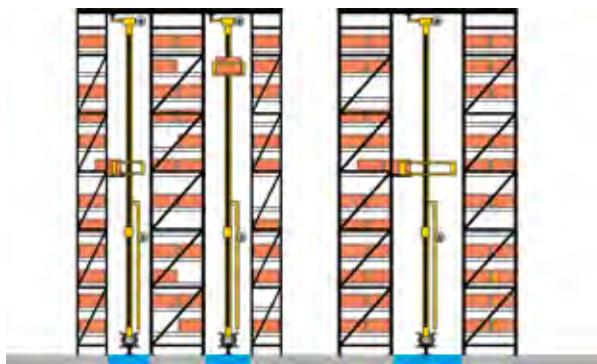
GENERAL ADVANTAGES OF AUTOMATED BIN STORAGE

- Goods-to-operator principle reduces access times; no walking, lifting, setting down etc.
- Optimal use of space through high-bay design; high storage density = high storage capacity in a confined space
- Modern warehouse management systems along with generally applied organisational procedures guarantee a very good availability of all product lines; permanent stock control
- Every reference is in direct access; high picking speeds
- Convenient handling even of heavy-weight storage units
- Closed system prevents unauthorised access to goods

SPECIFIC ADVANTAGES OF BITO AUTOMATED SMALL PARTS STORAGE »AKL«

- Upright profiles are 30, 50, 60 or 80 mm wide to enable optimum adaptation to different bay load requirements and building constraints
- Beams can be adjusted in height in 6.25 mm increments for maximum utilisation of the building height
- Maximum operational safety through strict compliance with production and assembly tolerances
- Combining a BITO automated small parts storage facility with live storage to feed workstations yields maximum pick rates
- BITO is your single source supplier of racking + premium plastic bins & containers + plastic/steel trays from our own plants!
- Short delivery times with professional project management





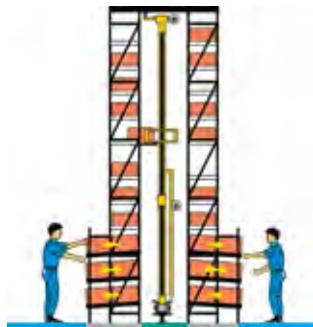
1. SINGLE POSITION STORAGE

- Stacker cranes carry picking bins to near-by workstations
- Automated replenishment and bin return to the miniload facility

Single-position storage is the most common application. Reduced pick times and short travel routes combined with permanent stock control make this solution very attractive.

Your advantages:

- Very good utilisation of the available storage volume
- Uninterrupted workflow



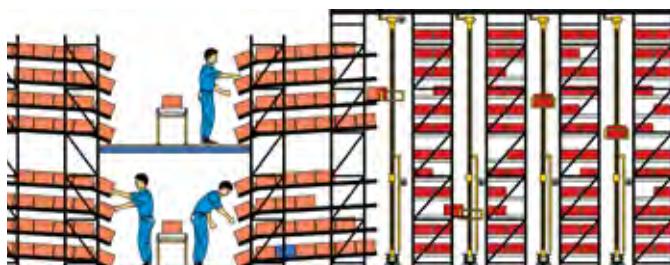
2. INTEGRATED AS/RS FACILITY

- This option integrates live storage lanes at floor level height and stacker crane serviced buffer levels on top into one facility

The carton live storage lanes in reach height are replenished from the bin buffer stock on top. Order pickers are continuously supplied with products in sufficient quantities.

Your advantages:

- Instant availability of replenishment products
- Good utilisation of headroom
- Linkage with data processing systems
- Bins which are not empty are returned to their storage position
- Order picking without paperwork (pick-by-light)



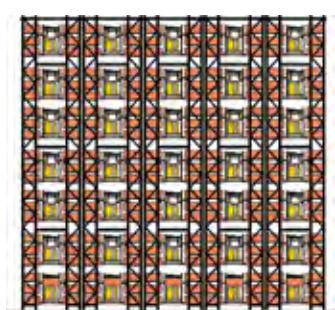
3. BACK-UP AS/RS FACILITY

- A separate automated small parts facility supplies products to a carton live storage system used for manual order picking
- Both installations are serviced by automatic stacker cranes
- Integrated conveyor technology

The automated bin buffer holds sufficient supplies which are automatically fed into carton live storage lanes for order picking.

Your advantages:

- Replenishment is linked to picking quantities in the CLS area
- The picking stations on all tiers are replenished simultaneously



4. STAND-ALONE AS/RS INSTALLATION

- Ideal for order picking, distribution and order consolidation
- Infeeding and outfeeding with several stacker cranes per aisle

Supported by goods elevators and shuttles, this highly dynamic system is ideal for achieving extremely short lead times.

Your advantages:

- High-capacity facility with up to 1,000 box lot movements per hour
- Modular built allows expansion at any time
- Simultaneously operating lifts and shuttles provide substantial gains in picking performance

 Picking aisle

 Loading aisle

 Buffer area

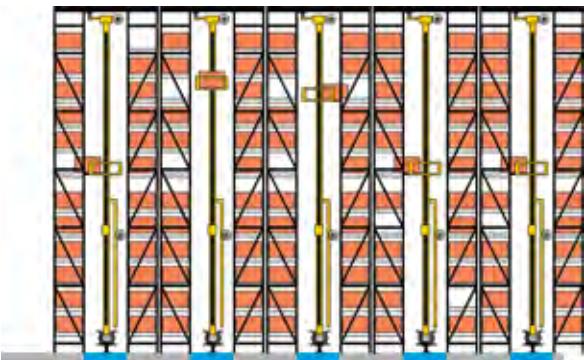
 Pick items

5. SINGLE-POSITION SYSTEM

- One storage position per lane

Your advantages:

- Suited for heavy-weight storage units
- Short access times
- Integration into computer-controlled warehouse management systems
- Good utilisation of headroom

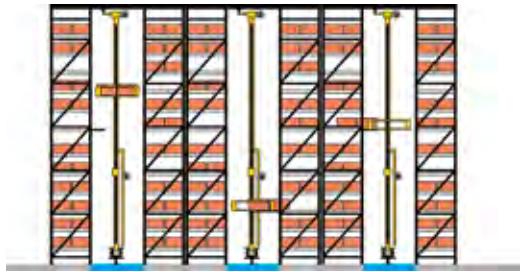


6. SINGLE-POSITION SYSTEM

- Two storage positions per lane

Your advantages:

- Suited for medium to heavy-weight storage units
- Optimal use of the available storage volume
- High efficiency through double-deep storage
- Optimal use of stacker crane capacities

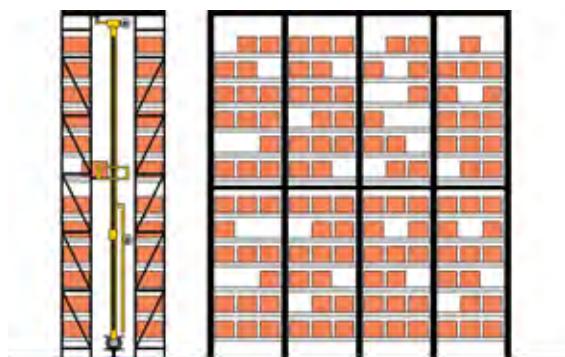


7. MULTI-POSITION STORAGE SYSTEM

- Several boxes sit next to each other in the same bay
- Lanes can be 1 or 2 storage positions deep

Your advantages:

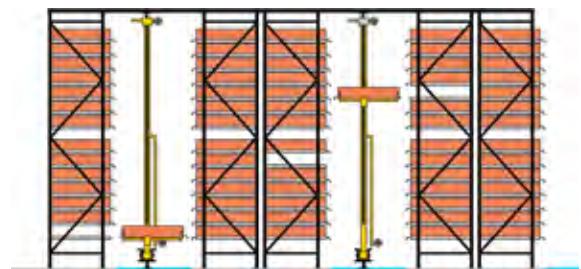
- Suited for medium-weight storage units
- Boxes sit on shelves for full base support



8. TRAY STORAGE SYSTEM

Your advantages:

- Suited for heavy-weight storage units
- Push-and-pull operation
- Several product lines can be stocked in the same storage position
- Ideal for a huge number of stock items

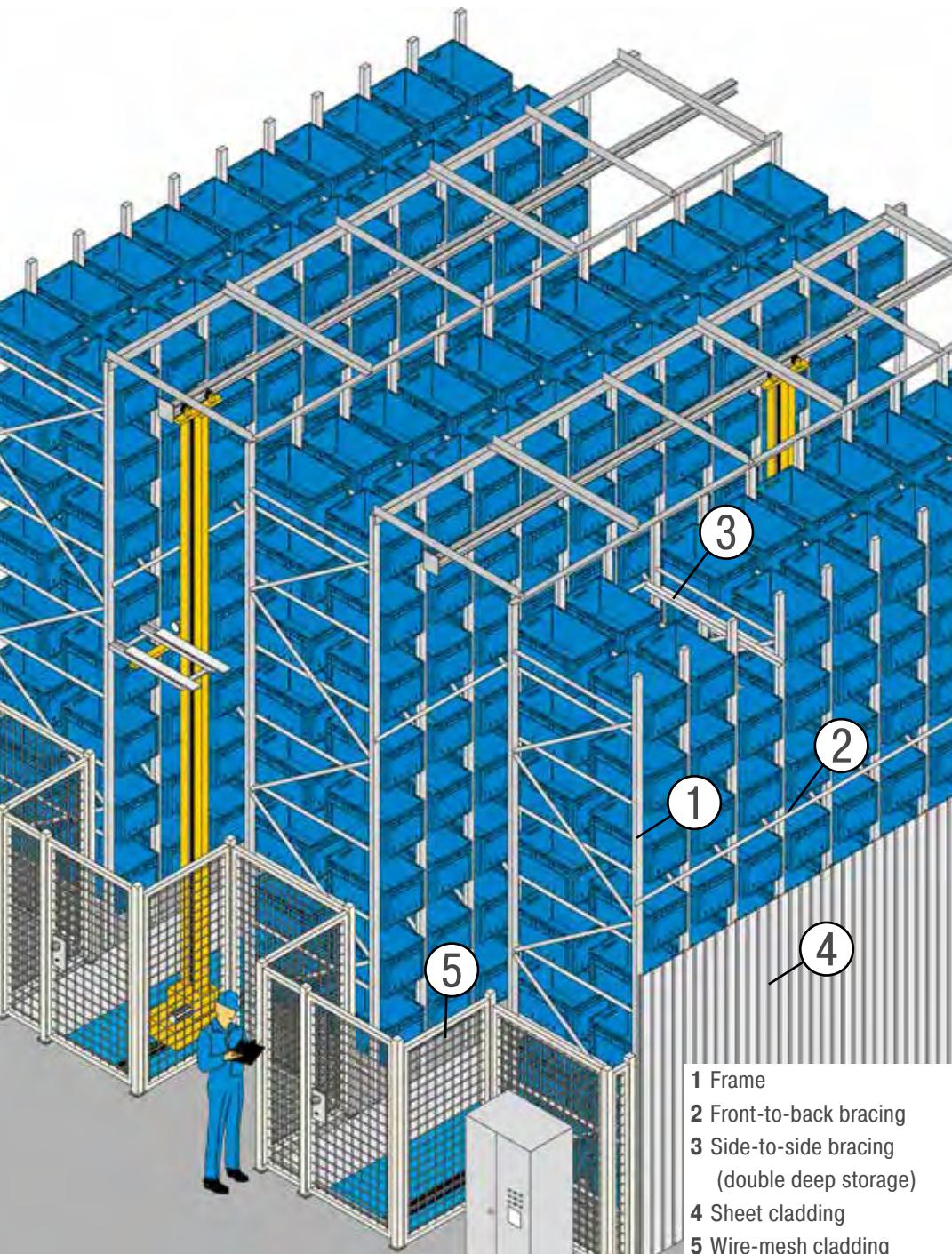


Picking aisle

Loading aisle

Buffer area

Pick items



1 Frame
 2 Front-to-back bracing
 3 Side-to-side bracing (double deep storage)
 4 Sheet cladding
 5 Wire-mesh cladding

ADDITIONAL EQUIPMENT

As a rule, our automated bin storage installations are supplied with

- Upper guide rails for stacker crane guidance
- Protective cladding and access doors to stacker crane aisles
- Wire-mesh, corrugated sheet or plexiglass cladding
- Brackets for sprinkler pipes

LOAD CARRIERS

BITO plastic bins and containers are frequently used as load carriers. Particularly suited are

- Small parts containers »KLT«
- Euro stacking containers »XL«

on account of their design and especially adapted features.

Equally suited are

- Multi-purpose containers »MB«
- Stacking containers »BN«
- Storage bins »SK«

Apart from plastic bins and containers, trays are widely used. BITO plastic trays and steel trays are manufactured in our own plants.

For more information on load carriers refer to chapter PLASTIC BINS & CONTAINERS.



Double sided access



Integrated feeder tracks



Protective cladding

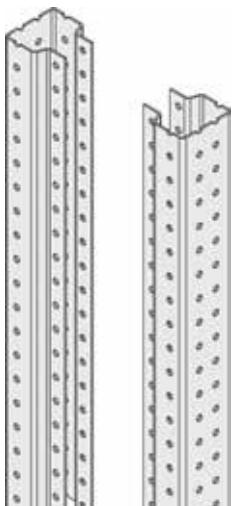


Storage & retrieval machine (SRM)

1. FRAMES

The system allows for frame heights of up to 25 metres. All frame components are riveted. Upright profiles are 30, 50, 60 or 80 mm wide to adapt to load requirements and enable optimum use of space.

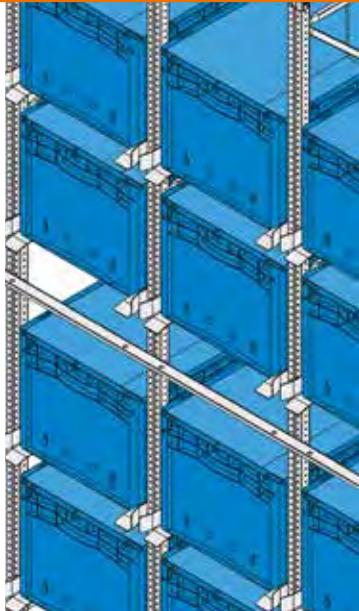
- Firm footing



2. BRACING

For compliance with strict tolerance limits the rack structure of a miniload system must be adequately braced horizontally and vertically with flat steel bars and other profile types. BITO bracing is supplied with a galvanised finish.

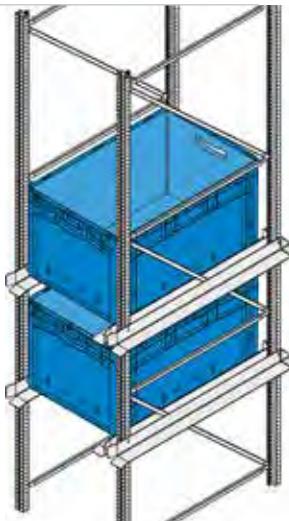
- High racking rigidity



SEAT PROFILES

Bin or tray seat profiles are 70 mm wide and can be fitted in 6.25 mm increments. They are supplied with an integrated end stop. Material thickness depends on the required load capacity. If required, the profiles are supplied with flared infeed guide plates.

- Safe seating for bins and trays
- Lane depth: 1 storage position
- Lane depth: 2 storage positions

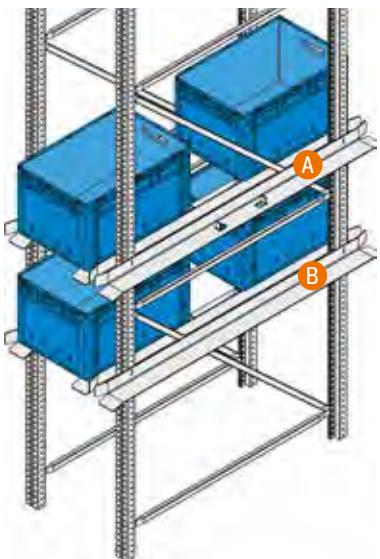


3. SEAT PROFILES FOR DOUBLE DEEP STORAGE AND ACCESS FROM BOTH SIDES

Depending on load requirements, back-to-back racking can be built with one frame only and seat profiles extending over the entire lane depth.

- Safe seating for bins and trays

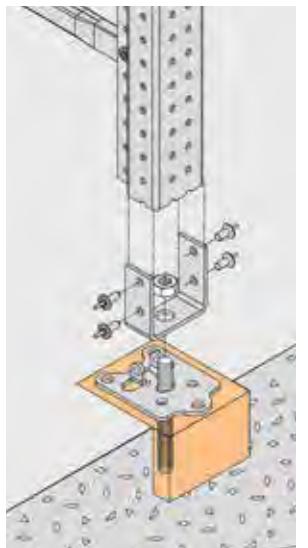
- A - Seat profile with a central limit stop for double sided access
- B - Seat profile without limit stop for double deep storage



BASE PLATES

Base plates in combination with chemical floor anchors have proven to be ideal for leveling the entire AS/RS. After leveling, they are underpoured with shrinkage-free composite mortar.

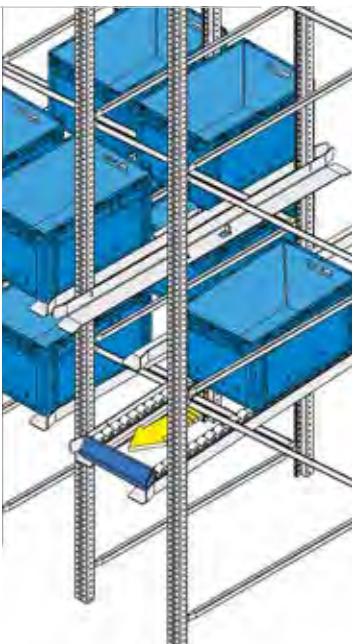
- Easy leveling
- Chemical floor anchors provide solid footing and structural stability



FEEDER TRACKS

An AS/RS facility can be extended with additional feeder lanes to optimise pick paths, if goods are to be picked directly from the miniload system without an intermediate CLS installation. For this purpose, the angled seat profiles can be fitted with roller tracks in the required length.

- After order picking, bins and trays are returned into the AS/RS facility





BITO
www.BITO.COM

Automated carton live storage racking

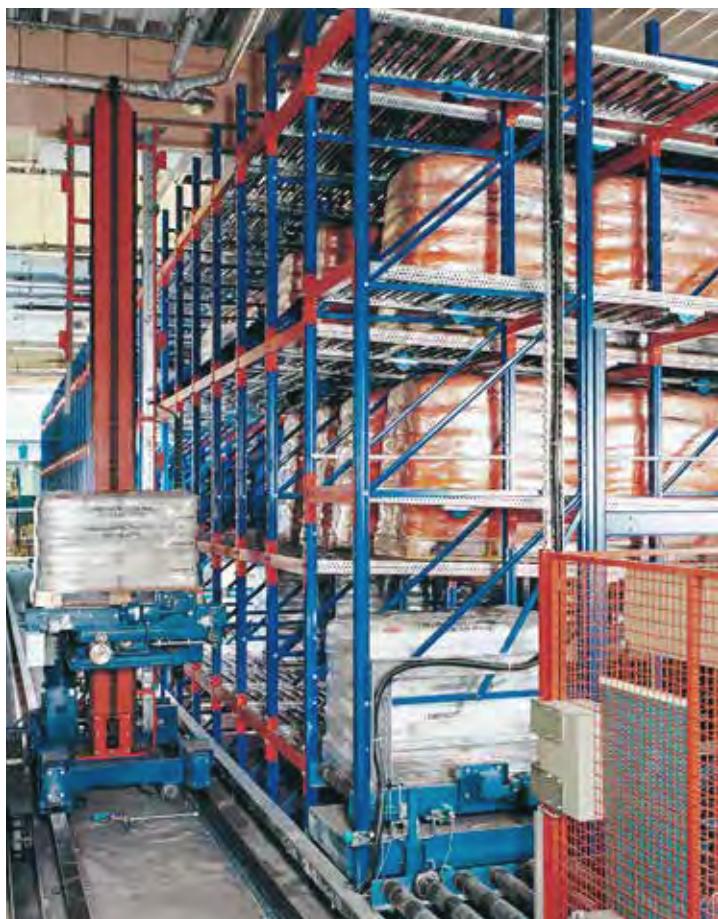
In logistics concepts, fully or partially automated systems represent a good alternative to manual solutions if, without impairing flexibility, they lead to an improvement of working conditions, reduced order throughput times, a lower error rate, to uninterrupted product availability and to gains in floor space and cubic space. Computer-monitored servicing is an additional benefit and enables permanent stock control.

The economic benefit through time savings is particularly obvious with carton and pallet live storage and conventional pallet racking.

AS/RS facilities are closed systems that prevent unauthorized access.

BITO closely cooperates with renowned SRM manufacturers and software developers to ensure perfect racking/SRM synchronization.

Automated pallet live storage racking



**BITO**

www.bito.com

Automated pallet racking

In logistics concepts, fully or partially automated systems represent a good alternative to manual solutions. Computer-monitored servicing is an additional benefit and enables permanent stock control. The economic benefit through time savings is particularly obvious with carton and pallet live storage and conventional pallet racking.

AS/RS facilities are closed systems that prevent unauthorized access.

Benefits:

- Shorter order throughput times
- Lower error rate
- Constant availability of goods
- Gains in floor space and storage volume

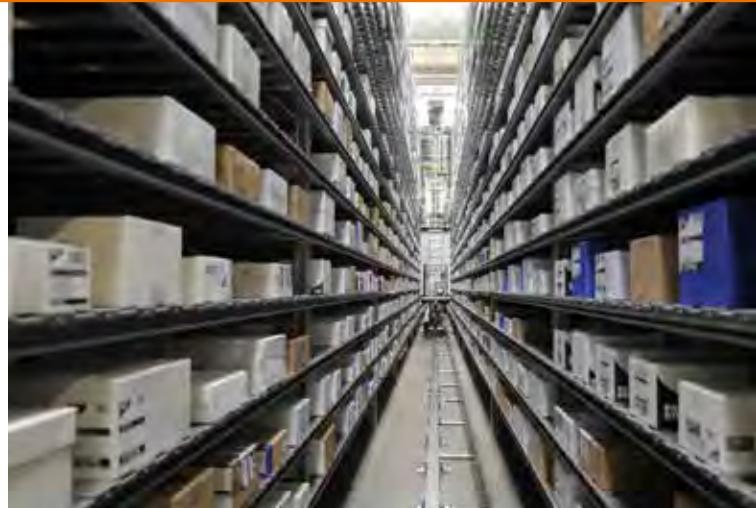
BITO closely cooperates with renowned SRM manufacturers and software developers to ensure perfect racking/SRM synchronization.

Pallet racking

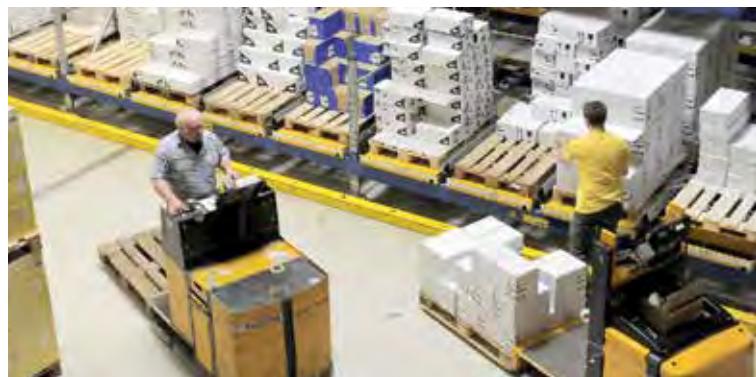
Automated pallet racking is usually used for product buffering. Pallet transfer positions at the short ends of a racking row accommodate fully loaded pallets for intermediate storage until a truck operator moves them on to a production line, order picking area or to the goods-out department.



Aisle-independent stacker crane



Papstar, product storage on steel-paneled racking levels



Papstar, order picking area



Stacker crane serviced high-bay construction



Papstar, static pallet storage on the upper levels, while pallets that are fed into the live storage floor level move down the lanes to the picking face.



Thermote & Vanhalst
Spare parts specialist
for lift trucks

SYSTEM PARTNER



VanDerLande Industries



Beewen (SRMs)

FEATURES

- Used as buffer store in the goods-out area
- Multi-position storage facility
- Integrated carton live storage installation
- Order-related sorting memory

CUSTOMER REQUIREMENTS

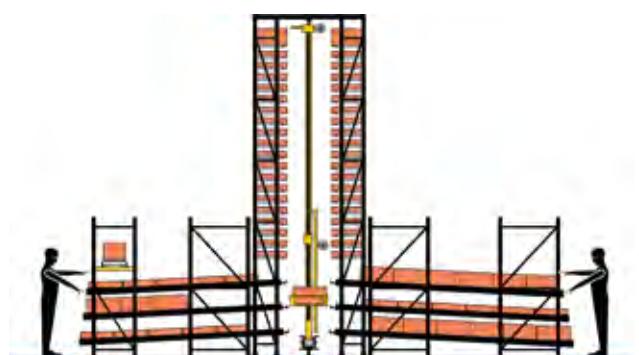
The system serves as supply and pick racking for spare parts orders. All references pertaining to a customer order are picked automatically from the upper static part and are fed out into customer dedicated live storage lanes at floor level height.

After an order is complete, the goods are retrieved from the lanes, packed and prepared for dispatch.



BENEFITS

- Extremely short lead times are achieved with an order memory system
- This solution does not require expensive conveyor and sorter technology





L + L Lieferservice
und Logistik GmbH

SYSTEM PARTNER
KHT GmbH, Gelsenkirchen

FEATURES

- Multi-position storage facility
- Supply store with integrated conveyor technology which is also used for order picking

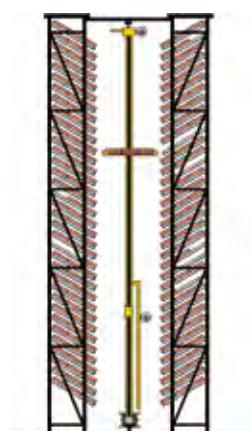
CUSTOMER REQUIREMENTS

The 35,600 lanes are serviced in LIFO order. A special stacker crane is able to service lanes accommodating 3 cartons in depth which move gravity-driven into the picking position following the lane incline.



BENEFITS

- The fully automated installation replaces several conventional order picking areas
- Increased storage capacity
- Improved picking performance



**Berker GmbH & Co. KG**

Manufacturer of electronic switches and systems

SYSTEM PARTNER

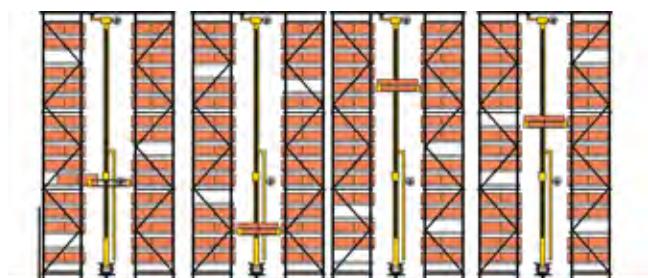
TGW GmbH, Wels

**FEATURES**

- Central warehouse which is connected to the pick stations by conveyor technology
- Double deep storage
- BITO Small parts containers »KLT«
- BITO steel trays

CUSTOMER REQUIREMENTS

In order to adapt to the change in their customers' ordering pattern and to accommodate an expanded product range, an AS/RS was purchased to handle the growing order volume. Each stacker crane is able to handle 4 orders simultaneously. With every stacker crane run, two containers or two trays are transported to the picking locations. Each of the four aisles are serviced with a stacker crane; they achieve a total handling capacity of 530 double picks per hour which means that more orders can be processed within a shorter time span.

**BENEFITS**

- Fast on-time delivery to all customers
- More orders from a widened product range can now be handled



Schrauben Jäger

Wholesaler of screws, bolts and accessories

SYSTEM PARTNER



psb GmbH, Pirmasens

FEATURES

- Tray storage facility
- Used as supply and pick store
- Conveyors on the short side of the racking rows connect the storage facility with the pick stations

CUSTOMER REQUIREMENTS

Schrauben-Jäger is one of the most important suppliers of fastening technology for industry and trade in southwestern Germany. A special asset is the fact that more than 55,000 articles are delivered directly to customers without intermediate retailers. In order to be able to ensure delivery quality and service in the future as market volume and customer requirements grow, the company decided to make stock-keeping more efficient and to invest in a tray storage system. The system stores screws and fasteners in cartons which are loaded and retrieved with a storage and retrieval machine.



BENEFITS

- High-capacity storage in a very limited space
- Immediate product availability
- Substantially increased picking performance
- Short order throughput times, paperless order picking
- Computer-controlled batch monitoring



La Provençale
Food wholesaler

FEATURES

- Automated small parts storage installation »AKL« with 3 aisles
- Double deep storage to save space
- Product buffering in conventional pallet racking
- PROflow pallet live storage lanes on top the order picking area
- Carton live storage racking with step-up rail for piece picking directly from the »AKL« store

CUSTOMER REQUIREMENTS

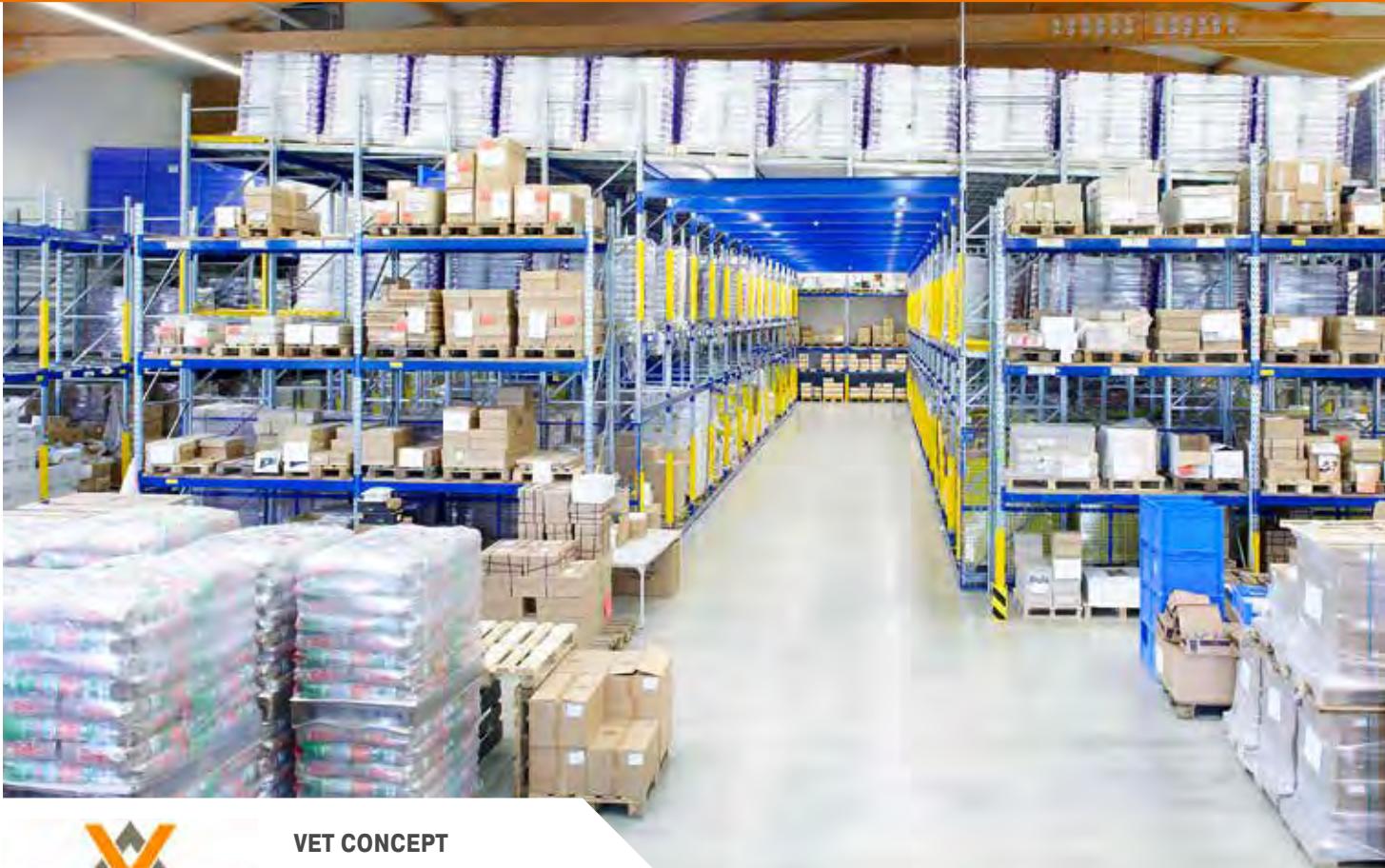
La Provençale in Luxembourg is the largest food wholesaler and distributor in the region. The company supplies restaurants, bakeries, large-scale catering establishments and canteens with top-quality gourmet products. Over 35,000 items are delivered both within Luxembourg and to the neighbouring regions of Germany, Belgium and France.

As real estate in Luxembourg is scarce and expensive, it was decided to build a new 14-meter-high cold store for frozen products as well as another two-storey warehouse. Since a constant temperature of minus 22 degrees involves enormous energy costs, the products have to be stored within a confined space. In addition, short-term orders and the constant change of the product range required a flexible storage solution.



BENEFITS

- High storage density, optimum use of storage volume helps to save energy costs
- Fast replenishment of goods through stacker cranes and conveyor lanes
- Short lead times, especially important for fresh products
- Integrated lighting ensures a lower error rate during order picking



VET CONCEPT
GmbH & Co. KG
Pet nutrition and accessories

FEATURES

- Pallet buffering in conventional pallet racking and in pallet live storage racking
- Order picking from carton live storage lanes and an automated small parts facility
- KLT and XL plastic containers in various sizes are used for storing and picking products
- Pick-by-light order picking
- Roller conveyors at an ergonomic height connect the work stations with the shipping area

CUSTOMER REQUIREMENTS

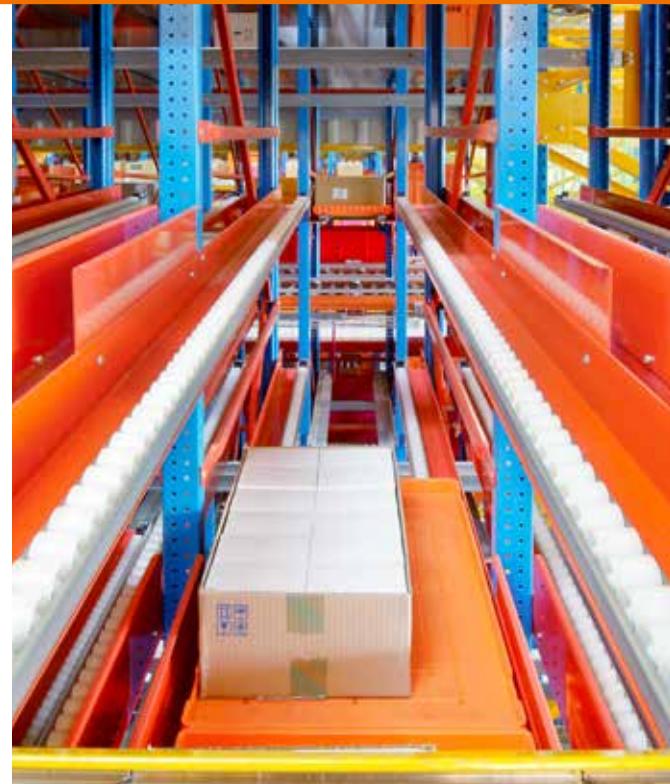
Founded in 1999, the company produces and sells healthy quality pet food as well as a wide range of accessories. From the beginning, BITO has accompanied the company's growth with its entire product portfolio, which includes shelving, carton live storage racking, pallet racking and a high-bay facility. In 2020, the company added another hall of 8,000 sqm to the logistics area along with an automated system for small parts storage and picking.

With a well-designed warehouse layout, all processes in the 14,000 sqm warehouse were to be standardised, in order to be able to efficiently supply the order picking area with 1,200 product lines and to speed up order throughput times. Compliance with strict hygiene standards and best-before dates was equally important.



BENEFITS

- High storage density, optimum use of storage volume
- Near-100% availability of all items
- Fast replenishment of goods on conveyor lines
- Short throughput times

**DM**

Drugstore chain

System partner: Swisslog

**FEATURES**

- Stacker crane serviced automated product supply from a buffer store into live storage lanes
- Order picking directly from the automated facility
- Order picking on two tiers
- Automated replenishment
- Manual product picking
- Pick-by-Light system
- Integrated conveyor lanes

CUSTOMER REQUIREMENTS

With more than 2,400 retailer markets in eleven countries, the drugstore chain is one of Europe's leading suppliers in this sector. The huge array of product lines is stored in plastic bins and on plastic trays in 36 racking aisles that are serviced by fully automated storage and retrieval machines which feed products into the storage locations and replenish the live storage lanes. Orders are picked into order related bins from live storage lanes along the long sides of the automated facility. A conveyor system has been integrated into the rack structure to transport the bins to the next picking station.

**BENEFITS**

- Shorter order processing times
- Increased picking performance
- Ergonomic workplace layout
- Fully automated facility
- The facility occupies up to 30% less floor space



FEATURES

- Complete pallet loads are fed into the racking with the help of a chain conveyor
- Off-pallet unit picking
- Picked storage units are transported with picking carts

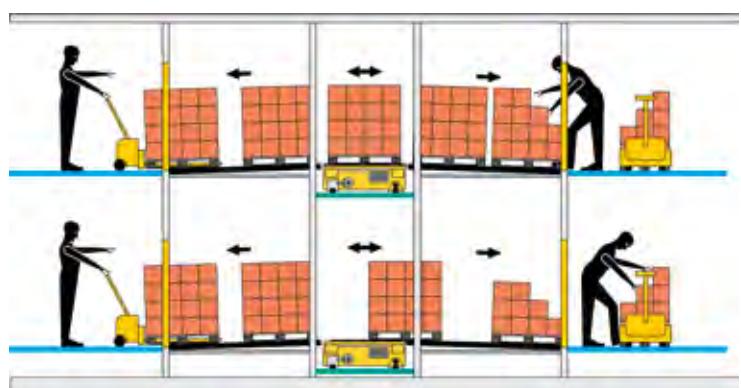
CUSTOMER REQUIREMENTS

At the Swabian headquarters of the large-scale dairy producer, around 140 million kilograms of milk are processed into quality dairy products such as buttermilk, kefir, yogurt, rice pudding and flavoured milk drinks. The company ranks among the leaders in this segment. In order to ensure sufficient replenishment and meet increasing demand, warehouse processes were to be made more efficient

by having pallets moved into the lanes on a chain conveyor. This ensures that order pickers always have a second pallet waiting behind the picking pallet. As soon as a reserve pallet has moved to the picking face, the buffer storage position is replenished. In areas in which full pallet loads are to be picked, the picking position is equipped with triple track rollers with ride-on steel panels between the tracks for hand pallet truck retrieval.

BENEFITS

- Continuous order picking of complete pallet loads as well as of individual storage units



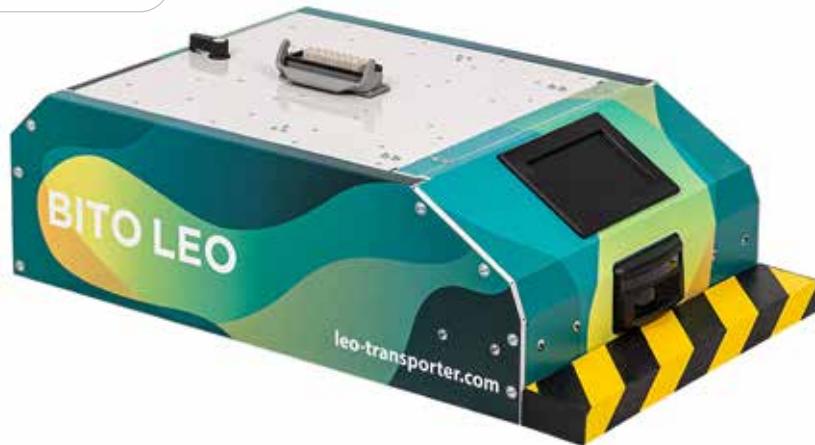
LEO TRANSPORTER

THE BITO AUTONOMOUS TRANSPORT SYSTEM KEEPS AUTOMATION SIMPLE

LEO custom

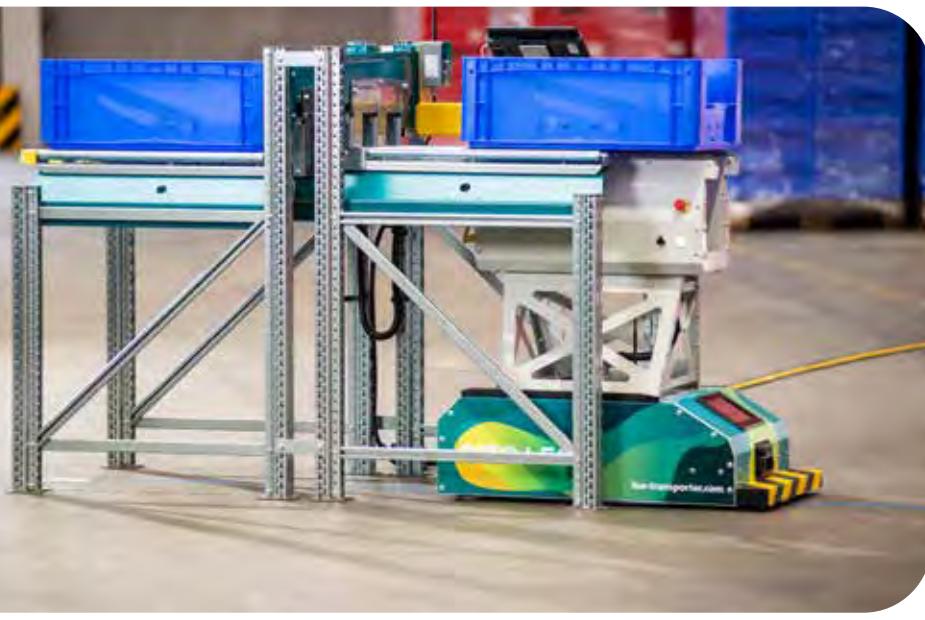
LEO custom APPLICATIONS

- LEO custom is the basic system used for all LEO variants
- With its punched mounting plate, LEO custom is perfectly suited for adding application specific on-top constructions
- Load capacity 55 kg



WHAT ARE THE MAIN FEATURES OF A LEO TRANSPORTER?

- LEO transporters follow a track taped on the floor and recognise different track colours
- LEO reads navigation commands programmed into floor markers (QR coding)
- Driving speed 0.7 m/min.
- Battery run time 12 to 16 h



YOUR BENEFITS

- LEO routes are defined by the customer and can be modified at any time
- LEO operates without WLAN or a host computer
- LEO transporters shorten walking distances and eliminate physically demanding lifting and carrying tasks that would otherwise have to be performed by your staff

LEO locative

LEO locative APPLICATIONS

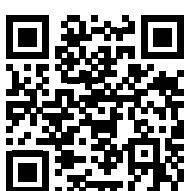
- LEO Locative is an automated guided vehicle (AGV)
- Designed for carrying bins and cartons
- LEO links workstations and performs in-house transport tasks in all areas where goods must be moved, thus saving miles of walking distance
- No complicated installation and or set-up required
- Indicator lights and sensors enable safe and reliable operation
- Load capacity 35 kg



LEO flow

LEO flow APPLICATIONS

- LEO flow is a space-saving solution for in-house transport without onboard driver
- Powered rollers enable lateral drop-off and pick-up of cardboard boxes and bins
- Ideal for complementing and connecting existing conveyor systems
- The roller platform for load carriers can be automatically adjusted in height to form a flush level with other conveyor systems
- Seamless communication between your conveyor system and LEO
- Load capacity 35 kg



www.leo-transporter.com

**MAGNA Exteriors**

Plant in Liberec,
Czech Republic
Automotive supplier

FEATURES

- 200 LEO custom transporters are in operation
- Customised on-top frames safely transport bulky plastic car parts
- LEO was supplied in company colours and with an even more powerful battery

CUSTOMER REQUIREMENTS

Magna Exteriors, one of the largest automotive suppliers, is globally operating in all segments of vehicle exteriors. Magna is not only an automotive supplier and developer. They also build vehicles, though not under their own brand, but for other manufacturers such as Audi, BMW, Jaguar, MAN, Mercedes, Škoda, Volkswagen, etc. The Liberec plant is the first manufacturing plant for plastic bumpers in the Czech Republic.

The customer needed an efficient and economically viable solution for automated parts handling in in-plant transport. Another challenge was that the parts to be transported are large and unwieldy.

BENEFITS

- Cost-effective solution for automated operations
- Optimal adaptation to customer requirements
- Efficient, automated transport of parts
- No space restrictions for movement as would be the case with overhead conveyors
- Safety technology prevents accidents involving pedestrians





SKF

Manufacturer of lubricants
and lubrication systems

FEATURES

- 2 LEO transporters and LEO stations
- LEO helped to implement lean manufacturing
- 300 m circuit serviced at 6-minute intervals, 40 km/day
- Automation of internal transport from goods receipt to assembly stations and between assembly/storage area to the goods-out department



CUSTOMER REQUIREMENTS

SKF Lubrications Systems GmbH in Berlin manufactures customer-specific centralised lubrication systems. Some 70,000 items are needed for production, 19,000 of which are in stock. Lacking material had to be moved to the production workstations after re-ordering. Transporting full pallet loads of material was inflexible and tedious and operators had to cover long distances with hand pallet trucks.

An ideal solution was sought to quickly and easily supply the assembly area for pump units with components weighing up to 30 kg.

The aim was to reduce transport distances, ensure a smooth flow of materials and work with optimised inventories in the context of lean manufacturing.



BENEFITS

- Easy handling and fast implementation
- Low acquisition costs
- Intuitive route guidance with practical transfer stations
- Reliable transport
- Very significant time savings



Carl Christensen A/S
Car spare parts dealer,
Denmark

FEATURES

- LEO locative transporter
- Two LEO double stations with buffer lanes

CUSTOMER REQUIREMENTS

CARL CHRISTENSEN is a trading and industrial company with a strong position on the Danish market for automotive spare parts of many international brands. At its headquarters in Aarhus/Brabrand and a division in Glostrup, the company employs approximately 650 people. CAC is known for its wide product range and excellent delivery ability. Almost 80,000 different products are in their warehouse, online customers even have access to more than 450,000 reference lines.

At CAC, products are stored in an AutoStore system and need to be transported to the shipping area. The internal transport system was to be streamlined to ensure a continuous flow of goods.

BENEFITS

- Optimisation of logistic processes
- Easy set-up and operation of LEO transporters
- Direct connection from the AutoStore system to the shipping area without loss of space
- Instead of using expensive conveyor technology, Christensen has LEO moving bins around their workshop





Versandmanufaktur
E-commerce fulfilment
service provider

FEATURES

- System consisting of 5 LEO locative transporters and 6 LEO locative stations
- Bluetooth technology ensures communication between tablet and smartbox at the destination
- On its way to the destination, LEO simply follows the commands encoded in the floor markers

CUSTOMER REQUIREMENTS

The company provides picking, packing, storage and shipping services, returns management, quality management, packaging concepts, webshop and content management as well as order management for e-commerce companies. More than 70,000 products from the fashion, food, interior/home design and cosmetics sectors are stored on 5,500 sqm. Depending on the season, between 2,000 and 6,000 orders have to be processed per day.

The LEO transporters were to receive the boxed products in front of the shelving rows and transport them to the assembly or shipping stations. At the same time, Versandmanufaktur wanted to optimise travel routes and reduce error rates.

BENEFITS

- Immediate installation without external help
- Destination control by tablet, no computer needed
- Optical tracks can be quickly adjusted to new requirements
- Substantial travel route savings
- Automated material flow
- Flexible and scalable system





Plastic bins & containers

BITO provides a huge range of bins and containers in any size and for any application. Discover our bins for storage, handling and order picking, our stacking containers in European standard sizes and our successful distribution container series. In addition, we offer bins and trays for automated small parts storage and plastic pallet boxes.

In working out the optimum solution, our R&D engineers and designers focus on user requirements. Our long-standing experience and our technical equipment enables us to realise special requests in all phases of development, from the initial steps to the three-dimensional digital model, from the prototype to the final product ready to be manufactured in series.

Our vast range of series and variations, the robust make, ergonomic design, easy handling and a 5-year warranty on quality and functionality are just some of the benefits of BITO bins and containers. Take a look at our multi-purpose container series MB which help to reduce packaging waste and save on storage and freight costs during empty handling!

BUILD YOUR BIN WITH THE BITO BIN & CONTAINER CONFIGURATOR

- View your bin in 3D! Real time visualization of all bins and container variations with accessories
- Select the position of your company logo, generate a link to your customised configuration and prepare a data sheet with dimensioned views
- Export images and detail views



Bin & container
configurator



Bins & Containers

AREAS OF APPLICATION

- Automated and manually serviced warehouses
- Order picking
- In-house material flow and product shipping



Manual order picking



Automated order picking



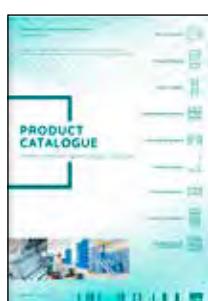
On conveyor lanes



Assembly

BITO PRODUCT CATALOG

To look at our complete product range with comprehensive product information, ask for our PRODUCT CATALOGUE. We will be pleased to send you a free copy. Simply e-mail us at:
info@bito.dk (DK)
info@bito.fi (FI)
info@bito.se (SE)



Product brochures and in-depth information can be downloaded at:
<https://www.bito.com/da-dk/service/vejledninger-og-brochurer/> (DK)
<https://www.bito.com/fi-fi/neuvoja-ja-palvelua/asennusohjeet-ja-esitteet/> (FI)
<https://www.bito.com/sv-se/raadgivning-och-service/monteringsanvisningar-och-broschyer/> (SE)

For further assistance please contact our project support at:
Tel. +45 70 21 51 51 (DK) Tel. +358 10 324 6510 (FI) Tel. +46 (0)42 151 910 (SE)



Product shipping

Our bins & containers at a glance

XL with double base



Small parts container KLT

XLmotion container



European size stacking containers XL

European size stacking containers BN



Stack and nest container U-Turn

Multi-purpose container MB



Folding box EQ

1. BINS FOR AUTOMATED WAREHOUSES

- Several base variations:
standard base, double base, ribbed base
- Push-and-pull ribbing for automated handling
- Excellent stability
- Ideally suited for automated bin storage
- Accessories: security tags, lid, bin dolly

2. EUROPEAN SIZE CONTAINERS

- All sizes conform to European standard sizes
- Large volume
- Several base variations
- The XL series includes containers sized 800 x 600 mm
- XL with view and pick opening (lockable window from indestructible polycarbonate)
- Ergonomic through-grips
- Dimensions adapted to the size of Europallets
- Accessories: label cover, drop-on lid, bin dolly, etc.

3. TRAYS

- Suited for all stacker crane types
- Low-noise handling thanks to the flat outer base
- Reinforcing ribs provide high structural rigidity
- Special designs for every requirement
- “Adapter” for loads not suited for automated handling
- Stacking compatibility with series BN, XL, KLT
- Optional: Load holders

4. NESTING AND FOLDING CONTAINERS

- They save up to 75% on volume during empty handling
- Long service life
- Less packaging waste
- No repackaging necessary
- 1 box, 3 applications: in-house transport/shipping, storage, order picking
- The MB series includes containers sized 800 x 600 mm
- Accessories: security tags, lid, stacking rails, bin dolly, label cover, connector clips for double height units

Our bins & containers at a glance

5. CONTAINERS SIZED 800 X 600 MM

- XL, MB and SL containers are available in this half-pallet format
- XL and MB containers with double base and runners have a load capacity of 200 kg
- SL containers with runners can carry 500 kg
- Variations with runners are suited for hand pallet truck and forklift handling
- Suited for automated storage
- Hinged lid (optional)
- Large choice of accessories

Multi-purpose container MB



European size stacking container XL



Heavy-duty container SL



6. BINS FOR SMALL PARTS STORAGE

- Perfectly compatible with BITO shelving
- Large volume
- Excellent stability
- Safe stacking
- Vast choice of accessories: handle bar, dust cover, side-to-side dividers, front-to-back dividers

Modular stacking container EMB



C-item bin CTB

Storage and handling bin RK

7. STORAGE BINS SK

- The textured base and rounded edges provide optimum travel characteristics on conveyors
- Captive viewing window, can also be opened in stacks
- Positive locators on the stacking edge enable safe stacking
- Hand cups for safe handling
- Supplied with label card
- 9 variations in 5 base dimensions



PLASTIC BINS FOR AUTOMATED SYSTEMS

BITOBOX XLmotion

BENEFITS:

- New base design with diagonal support ribbing provides excellent structural rigidity and quiet running on conveyors
- High capacity container with a volume of 53 litres
- A wider base than in standard stacking containers (389 mm instead of 363 mm) reduces steel costs of AS/RS facilities
- Suited for all ASRS/shuttle systems
- No base deflection, not even when fully loaded

XLmotion boxes can be subdivided from front to back and from side to side. Our example shows a box with 4 compartments.



OPTIONS:

- Optional drainage holes in the base and/or sides
- The ribbing pattern can be adapted to AS/RS and conveyor requirements
- Through-grips or grip cups on the short sides
- Side-to-side + front-to-back dividers create between 2 and 16 compartments



Video: XLmotion

ACCESSORIES:

- Drop-on lid: The lid does not add to the overall height and stays in place.
- Side-to-side dividers
- Front-to-back dividers



Reduced-width seat profiles



Seat profiles can be reduced in width, f. ex. 57 mm instead of 70 mm

European size container sitting on full-width seat profiles



Very quiet operation on conveyors, high structural rigidity through diagonal ribbing

Technical data	
External dimensions	600 x 400 x 120 mm
	600 x 400 x 170 mm
	600 x 400 x 220 mm
	600 x 400 x 270 mm
	600 x 400 x 320 mm
	600 x 400 x 420 mm
	650 x 450 x 270 mm
	650 x 450 x 320 mm
	650 x 450 x 400 mm
Load capacity (AS/RS)	50 kg
Stacking load	250 kg

European size stacking containers XL

ALSO AVAILABLE WITH DOUBLE BASE FOR USE IN AS/RS FACILITIES



VOLUME

Straight sides and smooth internal surfaces offer a particularly large storage capacity.

- Cleverly designed large capacity containers



EURO-FOOTPRINT

The stacking containers are sized to fit a Europallet. Goods do not need to be repacked for further shipping.

Stacking load:

400 x 300 mm = 250 kg
600 x 400 mm = 300 kg

- Suited for Europallets
- No repacking necessary before shipping



YOUR BENEFITS

- Many variations and size options
- Wide range of accessories
- Subdivision into compartments with insert bins and dividers
- Barcode spaces on the short sides
- Reinforcing ribs provide high structural rigidity
- Tamper-evident security tags



RIBBED BASE

Ribbed base containers can carry 50 kg. Even at full content load, the base deflection will not exceed 5 mm.

- Sturdy make
- Maximum load capacity 50 kg
- Maximum base deflection 5 mm



DOUBLE BASE

Ribbed base containers can carry 50 kg. Even at full content load, the base deflection will not exceed 2 mm. The flat base provides very good travel characteristics on conveyors.

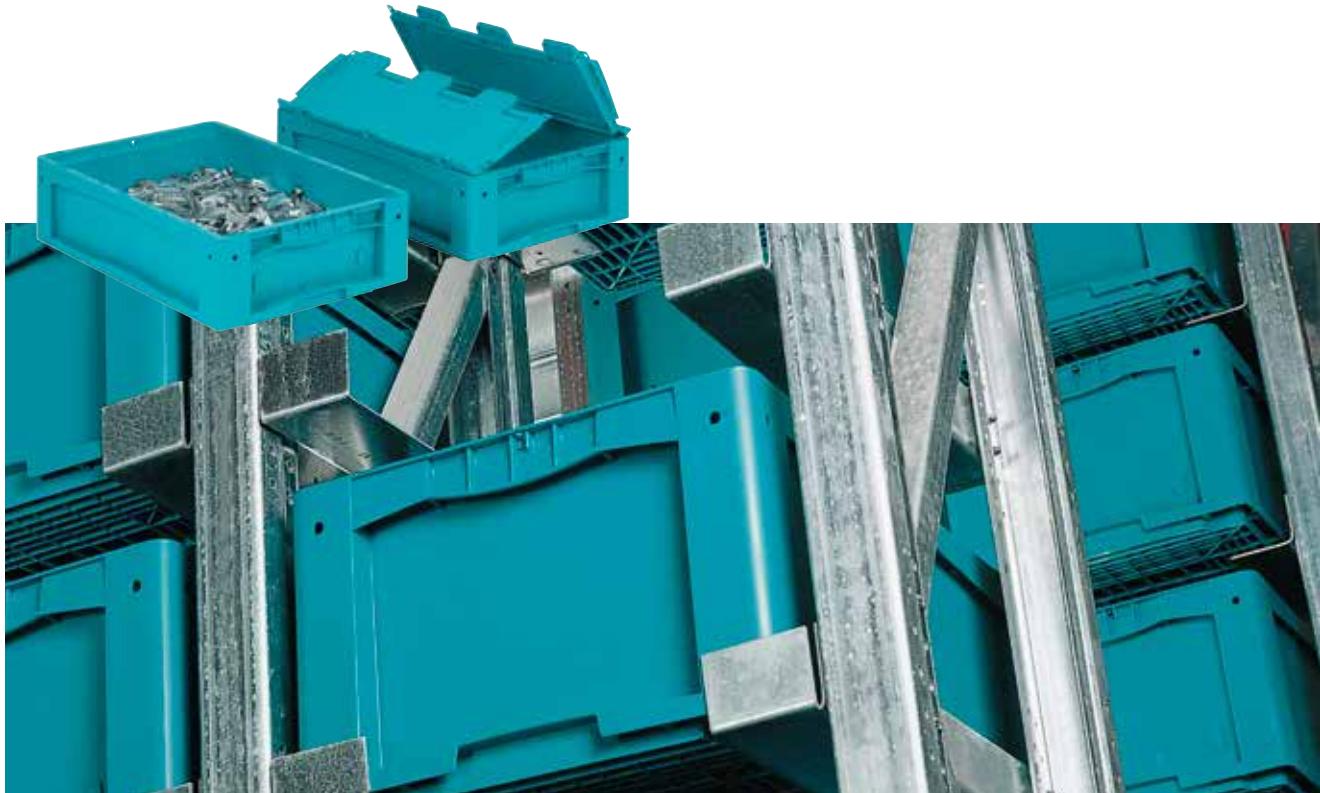
- Sturdy make
- Maximum load capacity 50 kg
- Maximum base deflection 2 mm



* uniform load distribution, long-side on handling, ambient temperature of 23° C

PLASTIC BINS FOR AUTOMATED SYSTEMS

Small parts containers KLT



YOUR BENEFITS

- Many size options
- Wide range of accessories
- Subdivision into compartments with insert bins and dividers
- Tamper-evident security seals
- Company logos can be applied by screen printing, pad printing, hot stamping or injection molding



BASE OPTIONS



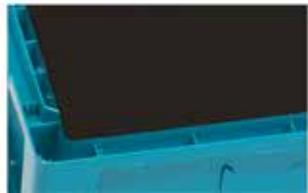
Standard base

Maximum base deflection 3% (measured along diagonal line) for loads of 30 to 50 kg (depending on container size).^{*} *All values assume uniformly distributed loads, an ambient temperature of 23 °C and long-side on handling in automated storage facilities!



Ribbed base

Maximum base deflection ≤ 1 mm for a load capacity of 50 kg.*
*All values assume uniformly distributed loads, an ambient temperature of 23 °C and long-side on handling in automated storage facilities!



Double base

Maximum base deflection ≤ 1 mm for loads of up to 75 kg.*
*All values assume uniformly distributed loads, an ambient temperature of 23 °C and long-side on handling in automated storage facilities!

STACKING SAFETY



Stacking safety

All KLT containers interstack with commonly available stacking containers and VDA*-containers. Excellent stacking safety with lid and without lid.
(*German Association of the Automotive Industry)

CONSTRUCTION DETAILS

- 1 Opening for clip-on hinges
- 2 Drainage holes
- 3 Opening for security seals or cable ties
- 4 Slots for lifting devices
- 5 Hinged lid
- 6 Ergonomically designed hand cups
- 7 Integral groove for automated pulling
- 8 Optional: Place for transponders
- 9 Location for position control devices
- 10 Fixtures for labels and documents
- 11 Centering holes
- 12 Flat surface for belt conveying
- 13 Marking surfaces for pad printing, hot stamping or injection molding



SUITED FOR ...

USE ON CONVEYORS

Smooth operation on all conveyor types. Excellent travel characteristics on roller tracks, full-width roller lanes, belt and chain conveyors, transfer lanes etc.

- Excellent travel characteristics
- Quiet running



STORAGE/ORDER PICKING

KLT containers ideally meet the requirements of a modern storage environment. The sturdy corner construction and three different base designs allow for high load capacities.

- Closed sides without grip opening allow to use 100% of the volume
- Available with a one-piece lid or an interlocking lid
- Particularly suited for use with carton live storage racking



IN-HOUSE TRANSPORT

KLT containers have been designed to match common pallet sizes for optimum space utilisation. They allow very safe stacking up to 500 kg – with and without lid.

- Secure stacking
- High stacking loads
- Sizes are submultiples of an 800 x 1,200 mm Europallet



MANUAL HANDLING

The ergonomic design of the handles makes for comfortable lifting and carrying – even at full load.



- Handling convenience
- Fixtures for card labels and document pockets

PLASTIC BINS & CONTAINERS – TRAYS

Plastic trays



Trays are a proven aid in automated small parts storage to accommodate products or storage units such as totes or cartons that would not be suitable for automated loading and picking without a tray.

BITO trays are manufactured in our own plant.

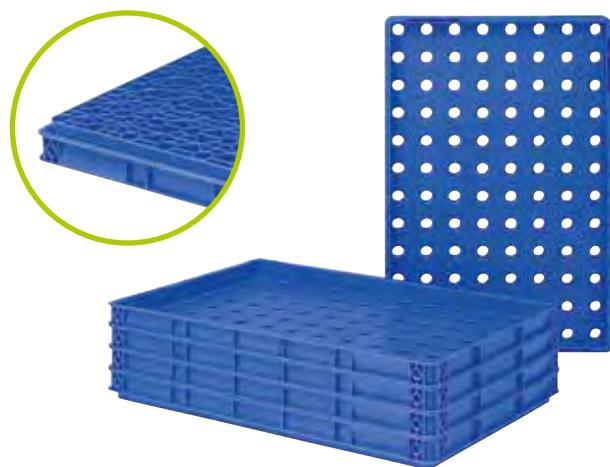


YOUR BENEFITS

- Trays serve as an „adapter“ for products and packaging units. Our trays are sized 670 x 410 mm, 640 x 426 mm, 600 x 400 mm and 400 x 300 mm.
- Convenient handling of cartons, even of damaged cartons
- Safe storage of bins not designed for automated handling
- Suited for all stacker crane types
- The flat outer base and ribbed edges ensure quiet running on conveyors
- Containers with double base (sandwich base) on request

SUBDIVIDE YOUR TRAYS WITH EURO-SIZED INSERT BINS

Application example for tray size 640 x 426 mm



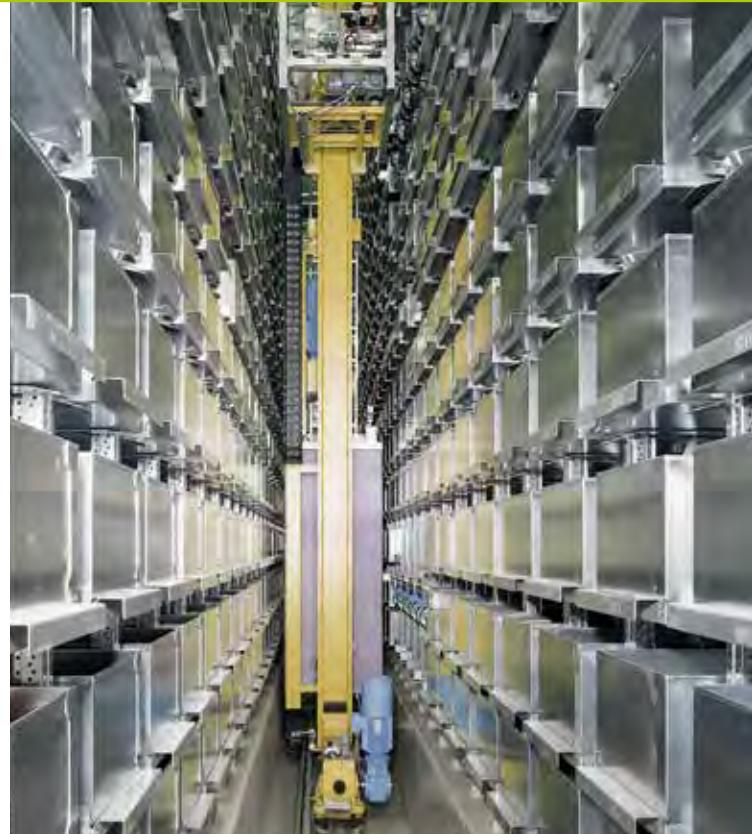
Steel trays with clip-on frames

Steel trays are used for heavy loads.

With folded edges, recessed spaces on the long sides for barcode labelling and side cut-outs for inserting clip-on frames, this all-rounder tray is easy to handle and suited for use in any automated environment.

Useful accessories such as insertable bins and clip-on frames widen the range of products suited for automated material storage.

BITO steel trays and matching accessories are manufactured in our own plant.



YOUR BENEFITS

- Trays serve as an „adapter“ for products and packaging units.
- Convenient handling of cartons, even of damaged cartons
- Safe storage of bins not designed for automated handling
- Suited for all stacker crane types
- Subdivision into compartments with insert bins and dividers
- Clip-on frames increase the standard tray height from 38 mm to 400 mm
- Very low base deflection
- Load capacities from 50 to 300 kg
- Pressure-joined corners

STACKING COMPATIBILITY WITH BN, XL AND KLT CONTAINERS

Insert bins and dividers provide further options for subdivision.



PLASTIC BINS & CONTAINERS – OUR VOLUME-SAVERS

Multi-purpose containers MB

- Nesting saves up to 75% on volume
- Designed for a long service life
- Sizes are submultiples of an 800 x 1,200 mm Europallet
- Less packaging waste
- No repacking
- Stacking loads of up to 800 kg



Swivel-mounted stacking rails

- MB containers can also be stacked without interlocking lid



5-year
BITO quality
promise

ESD
Electrically con-
ductive version on
request

300 x 200 mm
400 x 300 mm
600 x 400 mm
800 x 400 mm
800 x 600 mm



with standard base



with ribbed base



with double base

TIME-SAVING

Our 3-in-1 multi-func-
tion MB containers
are ideal for storing,
picking and shipping prod-
ucts – a perfect logistics
chain in itself. This avoids
repacking and saves
money.



SPACE-SAVING

Empty container nesting on
return trips saves up to 75% of
freight and storage costs. Empty
containers – with or without
stacking rails and lid – can be
nested to save space; open lid
halves do not build up on the
sides.



EURO FOOPRINT

MB containers come in standard Euro dimensions to suit Europallets sized 800 x 1,200 mm.

Container sizes:

300 x 200 mm
600 x 400 mm
800 x 400 mm
800 x 600 mm



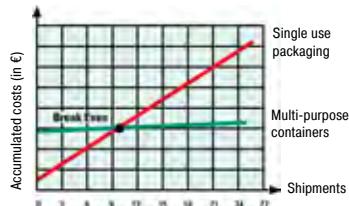
All dimensions are available in several height options.



MONEY-SAVING

BITO MB distribution containers are eco-friendly and economical. Save yourself unnecessary repacking and recurring ordering of packaging material! From product storage through to shipping - our easy-to-handle containers help to reduce order throughput times!

By switching from disposable cartons to reusable MB distribution containers, our customer Mazda reached the break-even point after only 10 shipments.



5-YEAR BITO QUALITY PROMISE

BITO MB containers are extremely rugged, strong, temperature resistant from -20°C to +80°C, food-safe and recyclable. This is reflected by our 5-year quality promise.



SAFETY

Lidded containers can be secured with single use security seals. The tear-off lip deters unauthorised access, since the contents cannot be accessed without showing evidence of tampering. MB multi-purpose containers with security seals have been approved by insurance companies for use in parcel and freight shipping. Upon request, MB containers can also be supplied in company colours and with a customised message.



Food & Delivery

LAST MILE LOGISTICS: SAFETY IN FRESH AND FROZEN FOODS TRANSPORTATION



- The MB Food & Delivery series is a set solution for shipping a wide variety of food products in a space-saving way.
- Ice packs that fit the size of our MB containers divide the volume into product specific temperature zones to preserve food quality during transportation and delivery. Empty containers can be nested to save space on return transports.

SMART WAY TO KEEP FOODS FRESH

- Dimensioned to match the volume of commonly asked product assortments and bottles.
- Empty containers can be nested to save space.
- The set includes dividers to prevent goods from slipping, tipping over, leaking, and bottles are kept safely in an upright position.
- By subdividing containers into several temperature zones, the number of containers per customer can be reduced.
- Modular insulating inserts from EPP create different temperature zones for fresh produce, dairy products and frozen foods.
- Optionally with hanging fixture for bags
- Also available with vented sides to ensure optimal cooling of goods in temperature-controlled environments
- Lids and seals increase shipping safety

Product data

Dimensions (WxLxH)	600 × 400 × 373 mm
Volume	67 l
Load capacity	25 kg
Stacking load	140 kg
Colour	
Sides	Vented or closed
Equipment options	Bag holders, stacking rails, interlocking lid



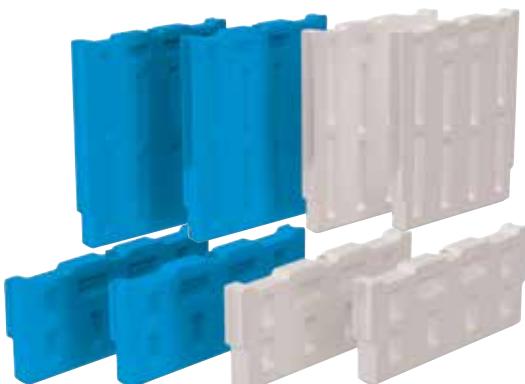
INSULATING INSERTS



INSULATING INSERTS

Format	1x full volume	2x half volume	Vented dividers
Dimensions (WxLxH)	528 × 358 × 352 mm	263 × 358 × 352 mm	298 × 25 × 294 mm
Material	EPP	EPP	EPP

ICE PACKS



Ice packs

Format	full height	half height
Dimensions (W×D×H)	296 × 25 × 294 mm	292 × 25 × 117 mm
Weight	1,800 g	700 g
Temperature zones	0° to -21°C	0° to -21°C
Suited for	<ul style="list-style-type: none"> ■ chilled products ■ frozen products 	<ul style="list-style-type: none"> ■ chilled products ■ frozen products

ACCESSORIES



Security seals



Barcoded security seals



Transport dolly



Drop-on lid



Empty containers can be nested to save space.

Thermo-insulation set



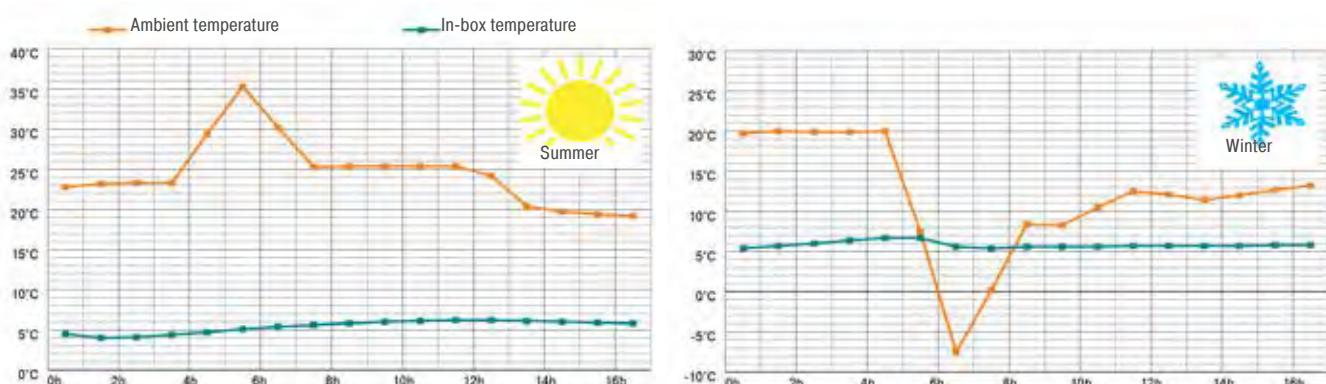
2° - 8°C
FOR AT LEAST
12 HOURS

- Keeps 2° - 8°C for at least 12 hours
- Sized to fit into BITOBOXES MB
- Easy to handle



Product information

IN-BOX TEMPERATURE RANGE



Ideal for shipping temperature-sensitive products such as pharmaceuticals, vaccines, etc.

Designed to minimise transport damage or product spoilage

Keeps temperatures between 2° and 8°C for at least 12 hours

Safety approved by independent institutes

Equipment instructions for adaptation to summer and winter temperatures on www.bito.com



5-LITRE THERMO-INSULATION SET 4327

- 5-litre capacity
- Inside dimensions L x W x H:
170 x 170 x 170 mm
- 3 ice packs
(white, Icecatch Solid Isolated)
- Insert box from PS
(white, set can also be supplied without PS box)
- Insulating box from Neopor® (grey)
- Fits MBD 43271
- Outside dimensions L x W x H:
410 x 300 x 290 mm



17-LITRE THERMO-INSULATION SET 6427

- 17-litre capacity
- Inside dimensions L x W x H:
360 x 260 x 160 mm
- 3 ice packs
(white, Icecatch Solid Isolated)
- Insert box from PS
(white, set can also be supplied without PS box)
- Insulating box from Neopor® (grey)
- Fits MBD64271
- Outside dimensions L x W x H:
610 x 400 x 290 mm

Pharmabox

BITO HIGH-PERFORMANCE PACKAGING SOLUTION FOR PHARMACEUTICALS



AREAS OF APPLICATION

Safe storage and temperature-controlled shipping throughout the medical and pharmaceutical supply chain is vital to the success of treatments. This is why great care must be taken when it comes to replenishing the stocks of hospitals, physicians and pharmacies with healthcare products and medicines.

OUR SOLUTION: MULTI-PURPOSE CONTAINERS MB WITH THERMAL INSULATION

- MB distribution containers are sturdy, very temperature-resistant and have a high load carrying capacity
- Excellent travel characteristics and quiet running on conveyor lanes
- Sustainable multi-trip logistics - MB containers are made of food-safe, recyclable plastic and have a long service life



ENHANCE THE FUNCTIONALITY OF YOUR MB BOXES WITH SMART EQUIPMENT

- Plug and Play configuration
Devices connect to each other and read information automatically, without operator intervention.
Can be used for various applications and is not bound to one location.
- Real-time data monitoring
Enables early detection of hazards and risks and timely intervention.
- In combination with the alarm function, customers are warned at an early stage as soon as critical values are reached.
- Customisable run times in specified temperature ranges for shipments between 37 and 80 hours
- Digital seal for access monitoring
Each access, i.e. every time the container is opened and closed, is documented in the cloud and can be tracked in real time
- Transparent supply chains
- GDP-compliant shipments



<https://www.bito.com/de-de/pharmabox-hochleistungsverpackung/>

PHARMABOX

Digital. Smart. Safe.

CUSTOMISE YOUR SMART SOLUTION!

ALL YOU NEED IS:

MB CONTAINERS

BITO MB Pharmaboxes are sized 400 x 300 & 600 x 400 mm and come in various height options, so you are sure to find a bin size that fits your application.



ICE PACKS

The clever interior design prevents that shipping goods are in direct contact with the cool packs. This preserves the quality of the goods and prevents freeze damage.



MODULAR INSERT BOXES

Modular thermal insert boxes help to create various temperature zones to enable safe transport of medicines and health products. The ice packs and insulating insert boxes can be cleaned after use and reused multiple times.



DIGITAL EXPANSION MODULES

SMARTHUB

The SmartHub is a real-time monitoring system that can be integrated into any logistics process and ensures full supply chain visibility. It reads all beacons within its range and sends the recorded data to the cloud using WLAN or mobile communications.



TEMPBEACON/CRYOBEACON



TempBeacons and CryoBeacons are intelligent temperature and humidity data loggers. Each Beacon has a unique ID which is printed on the label and stored in a barcode. The recorded data can be easily transferred to the cloud using the app to scan. Data transmission is made through Bluetooth Low Energy (BLE). Beacons are suited for multiple use.

CLOUD/APP

The cloud monitors and controls products such as SmartHubs and SmartBeacons.



The cloud can be accessed without software infrastructure with a computer and any web browser. Download and save shipment logs and integrate smart devices from logistics partners into your system!

SMART LOCK

The SmartHub with lock function can be easily integrated as a digital seal on a BITO MB container. It provides optimal protection of the goods inside. Every access is documented in the cloud and can be tracked in real time. Get information about when the container was opened and where the container had been at the time it was opened!



PLASTIC BINS & CONTAINERS – OUR VOLUME-SAVING ALLROUNDERS

Folding boxes EQ

- Fold flat when not in use
- Empty container nesting has a volume saving ratio of 1:4
- Simple and ergonomically designed folding mechanism
- Also suited for use in automated storage & retrieval systems
- Developed for heavy-duty applications
- Optional security seals



Optional INTERLOCKING LID

and drill holes for security sealing



BASE OPTIONS

- Standard base
- Ribbed base
- Double base



Video: Folding boxes EQ



TILT-LOCK PROFILE

- Sides lock open with a simple push on the box shoulder
- Easy-to-operate tilt mechanism prevents injury
- Developed in cooperation with leading ergonomists

FOLD-UP GRIP

- Optional accessory
- Convenient handling also with closed container sides
- Safe lifting and carrying



LABEL HOLDER, FITTED INSIDE

- Optional accessory
- Prevents loss of documents
- Keeps container sides clean
 - no plastering with sticky labels, no glue residue
- Reduces cleaning costs

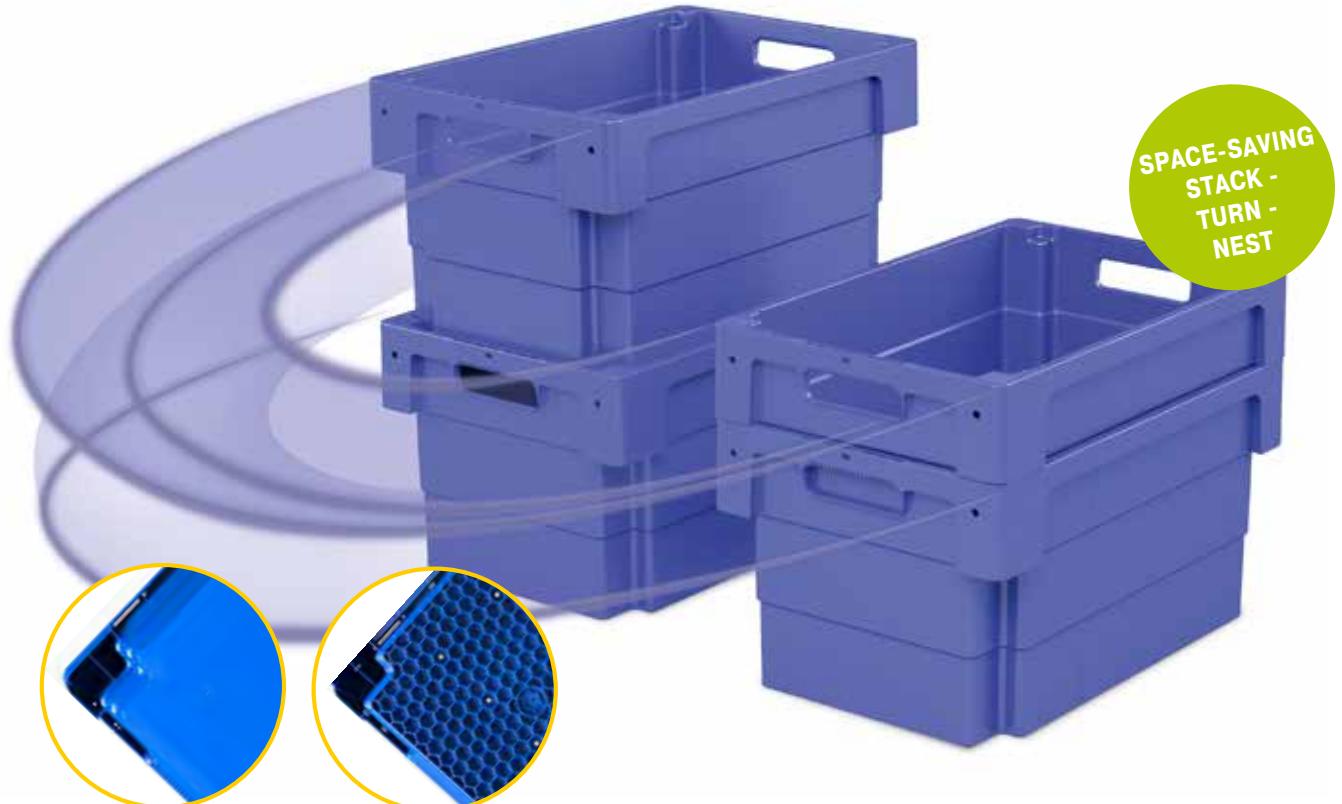
Folding box EQ	EQ 64281	EQ 64321
Dimensions	600 x 400 x 285 mm	600 x 400 x 320 mm
Load capacity	20 kg / 50 kg (double base)	20 kg / 50 kg (double base)
Stacking load	180 kg	180 kg
Material	Polypropylene copolymer (PPC)	Polypropylene copolymer (PPC)
Components and accessories	<ul style="list-style-type: none"> • Drop-on lid (stacks with folded boxes) • Security seals • Container dolly 	

Stack and nest containers U-Turn

- Huge storage capacity – some 20% more than provided by stack and nest containers with conical sides
- Nesting saves more 64% on volume
- Lightweight yet sturdy
- Also suited for use in automated storage & retrieval systems



Video: Stack and nest containers U-Turn



BASE OPTIONS

- Standard base
- Ribbed base
- Double base



STACK AND NEST CONTAINERS U-TURN

The BITO stack and nest container convinces with versatility and can be used for storing, picking and transportation. Compared to other similar size stack and nest containers on the market, the BITO U-Turn container provides 20% more storage capacity. With vertical sides, this container occupies 60% less space when nested. This saves valuable space in your warehouse or in delivery vehicles on empty return transports.

Stack and nest containers U-Turn	
Dimensions L x W x H	600 x 400 x 320
Volume (litres)	62
Load capacity (kg)	35
Temperature resistant from	-20°C to +80°C

PLASTIC CONTAINERS SIZED 800 X 600 MM

XL 800 x 600 mm

- Optionally available with runners for hand pallet truck and forklift handling
- Label holders on all sides
- Large handles with rounded handrest
- Duct for lifting devices
- Centering holes on all sides
- Stacking load of up to 800 kg



5-year
BITO quality
promise

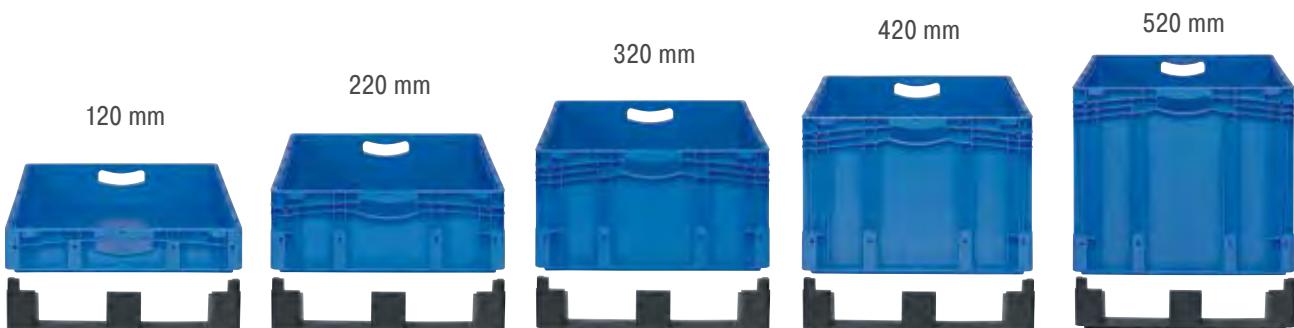
ESD
Electrically
conductive version
available



Double base containers can be retro-fitted
with runners. Easy bolt-on fitting
Recycled polypropylene (PP-RE)



5 HEIGHT OPTIONS



BASE OPTIONS

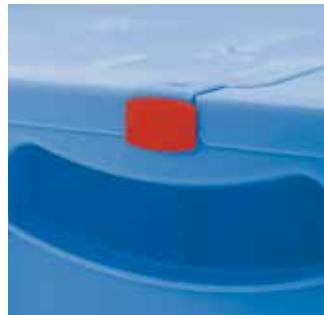
Standard base containers have a load capacity of 60 kg, double base containers can carry 200 kg.



HINGED LID

Safe stacking is also ensured for containers with a hinged interlocking lid.

The lid can be sealed at various points and is permanently fastened to the container.



GRIP OPTIONS

The ergonomic through-handles enable easy manual handling and can be ordered on the short and on the long sides.

Closed sides with hand cups protect goods from dust and unauthorised access.



VIEW AND PICK OPENING

The wide view and pick opening enables convenient picking, also from container stacks. An optional viewing window protects the contents.



PLASTIC CONTAINERS SIZED 800 X 600 MM

Heavy duty containers SL 800 x 600 mm

- 2 height options: 520 mm and 720 mm
- Half-drop door can be supplied on the short sides or on the long sides
- Convenient handling with hand pallet truck or forklift truck
- Safe stacking
- Easy relocation, also suited for life storage racking
- Runners can be exchanged
- 2 lid options (hinged interlocking lid or drop-on lid)
- Snag-free internal sides for easy cleaning
- Optional: base variation for use in automated storage & retrieval systems

- EXCELLENT RIGIDITY,
LONG SERVICE LIFE
- LIGHTWEIGHT ALTERNATIVE TO
SAME SIZE METAL CONTAINERS

Material:

Standard version:
Polypropylene copolymer (PPC)

Optionally:

Regenerate PP
in black or dark grey

ESD:

Electrically conductive version
in black

ESD

Electrically con-
ductive version on
request



Stacking load 1,500 kg



Load capacity

500 kg

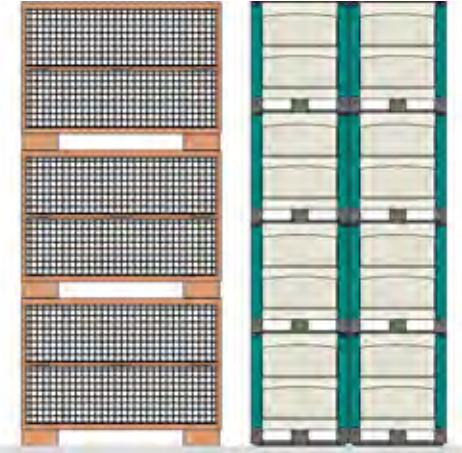
Features

OPTIMAL CONTAINER SIZE

... for use in Lean Production environments

Especially in a lean production setting, the advantages of this new series are evident.

This new container measures 800 x 600 mm at the base and is the logical response to the trend that batch sizes in production and assembly are becoming ever smaller. Often enough, existing large load carriers and mesh box pallets are only part-filled. This in turn means that space is wasted due to unused capacity while warehouse floor space occupation remains the same. Empty SL containers can be moved around manually which is why they are suited for production environments without forklift trucks.



SECURE AND CLEAN

... for compliance with modern storage & handling principles

The snag-free inside surfaces are easy to clean. The closed design keeps dust and dirt away, and leaking liquids or oils cannot escape.



DUAL COLOUR DESIGN

... for a neat and organised environment

The corner profiles of the container can be manufactured in a different colour.

This is a simple and effective way to attribute containers to different uses or adapt containers to your company's colour scheme.

Ask for minimum order quantities



**Make a difference with
COLOUR CODING!**



PLASTIC CONTAINERS SIZED 800 X 600 MM

Features



LID OPTIONS

- Interlocking two-part lid: mounted on hinges, can be strap-sealed and security-tagged
- Drop-on lid: easy to fit and to remove, protects contents from dust and dirt



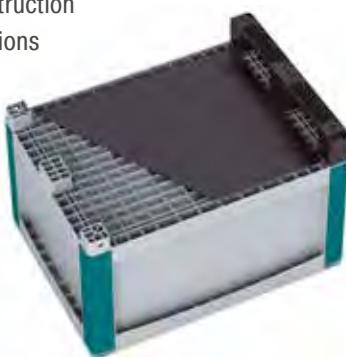
RUNNERS

- Convenient handling with forklift truck or hand pallet truck
- Easy to mount and to remove



DOUBLE BASE

- Welded sandwich construction for heavy-duty applications
- Containers for automated storage (flat base, no runners) can be supplied upon request



HINGED HALF-DROP DOOR

- Optionally available on the long or on the short side
- Synchronised hinges ensure jam-free operation
- Can be opened and closed with only one hand



Accessories

- Container dolly
- Hand pallet truck, fork length 600 mm
- Intermediate drop-in-layers
- Slot-in dividers
- Non-slip matting (rubber)
- Label holders
- Document pockets



Case studies

... IN PREMISES WITH FORKLIFT TRUCK OPERATION

BITO SL86 containers are supplied with runners for easy handling with a forklift truck and flexible use in your premises. Even in stacks of three and fully loaded, our large volume SL containers can be handled with a forklift truck.

- Dynamic flexibility by moving the SL86 wherever required



... IN PREMISES WITHOUT FORKLIFT TRUCK OPERATION

Modern production settings are increasingly planned without relying on forklift truck handling. To ensure easy handling of a heavy-duty container in this environment, special hand pallet trucks with a fork length of 600 mm or pallet dollies are used.

- The low net weight enables easy handling, even without a forklift truck
- Easy to move with a hand pallet truck or a pallet dolly



... AS PRODUCTION/ASSEMBLY SUPPLY CONTAINER

SL heavy-duty containers can be easily moved with a pallet dolly which allows handling of very heavy loads. SL containers are ideal for supplying parts and components to production and assembly workstations.

- Convenient relocation with a transport dolly
- Easy access to the contents, whether containers are used as stand-alone solution or in stacks



PLASTIC BINS & CONTAINERS FOR SMALL PARTS STORAGE

Modular stacking containers EMB

DESIGNED TO SUPPORT THE KANBAN PRINCIPLE IN MANUFACTURING AND ASSEMBLY ENVIRONMENTS

- Excellent stacking rigidity – safe mixed-size stacking
- EMB containers are perfect for use in shelving with inclined shelves and in carton live storage installations
- Ergonomic handles for easy handling
- The integrated pocket handles on the short sides provide 100% volume utilisation
- Smooth inside surfaces allow easy cleaning
- BITO EMB stacking containers make efficient use of the Europallet footprint



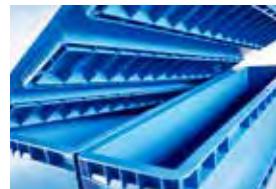
Same height principle

Container heights are coordinated so that a stack of two low-height containers has the same height as the largest container.



Modular stacking base

Allows mixed-size stacking. It is also possible to stack larger containers on top of smaller containers.



C-item bins CTB

PERFECT FOR C-ITEM LOGISTICS

- Supplied with slide-down window as standard feature for picking smaller quantities; the integral handle serves as a carrying handle and pulling aid.
- The product feeder panel prevents items from spilling out when the bin is in an inclined position.
- The base is conveniently radiused for easy retrieval even of very small items
- Optimally adapted to common shelving dimensions
- Convenient front picking without having to pull the bin forward
- Easy top picking of larger quantities by pulling the bin forward
- The safety/carrying handle allows bins to be tilted forward and prevents them from being pulled out of the shelving by accident.



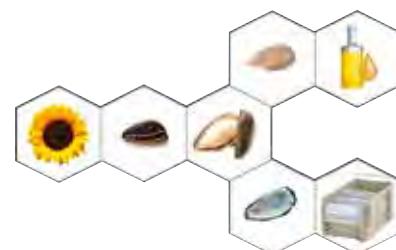
Front picking



Top picking

BITO SPECIAL: THE RESOURCE-SAVING OPTION

Our grey CTBs are made from Sunflower compound (SFC), an ecological alternative to PP which reduces the carbon footprint of the products and saves energy during production.



Storage and handling bins RK

NEAT SMALL ITEM STORAGE IN A MINIMUM OF SPACE

- Perfectly adapted to BITO shelving systems
- Hand cups for safe handling
- Excellent volume utilisation
- Safe stacking - suited for high load capacities
- Supplied with 1 label card per bin

Optional accessories:

- Practical subdivision with side-to-side and front-to-back dividers
- Dust cover from transparent plexiglass
- Label covers from transparent material protect large-size labels from dirt and damage
- Pre-perforated, ready-to-print white label sheets, suited for laser and inkjet printers



Storage bins with pick opening SK

EASY-TO-VIEW-N'-PICK SOLUTION FOR SMALL PARTS

- 9 variations in 5 base dimensions
- Straight sides and 90° corners enable good volume utilisation
- Hand cups for safe handling
- The textured base and rounded edges ensure optimum travel characteristics on conveyors and in live storage systems
- Positive locators for added stacking safety
- Sturdy corner design provides additional rigidity
- Supplied with 1 label card per bin



In addition to the use as a stand-alone box and in shelving, there are many other practical applications:



On workbench panels



On louvred panels



Bin towers



Mobile/stationary racks

**CLAAS Saulgau GmbH**

Agricultural Engineering

FEATURES

- BITO Heavy-duty SL containers sized 800 x 600 mm with runners and half-drop door
- SLs are used as distribution container in the supplier/production plant cycle, in the buffer store and along assembly lines
- Space-saving storage in a narrow-aisle high-bay warehouse with beam heights adapted to the SL86

CUSTOMER REQUIREMENTS

The Claas Group is a leading global manufacturer of agricultural engineering equipment. Machines are developed, tested and manufactured at the Claas Saulgau GmbH.

As the product portfolio and parts variety have grown continuously over the years, room for parts stockkeeping has become increasingly scarce. The huge variety of reference lines and the heavy weight of a lot of components, which are to be provided directly at the assembly lines in a space-saving way, also had to be taken into account. In addition, partially assembled modules from upstream suppliers must also be available at the assembly line.



BENEFITS

- Safe transportation between the suppliers' locations and Claas Saulgau GmbH without complicated load securing measures
- Ergonomic picking through the wide half-drop door
- Load capacity of 500 kg per container
- Flexible forklift handling or manual handling on container dollies
- The snag-free and closed container sides prevent damage to components and are easy to clean



Franz Binder GmbH & Co.
Electrical construction components

FEATURES

- EQ containers for use throughout the entire operating process from goods receipt to order picking
- Container buffering in the automated shuttle warehouse
- Roller conveyors connect the work areas with the automated warehouse

CUSTOMER REQUIREMENTS

Binder GmbH is an owner-managed company headquartered in Neckarsulm, Germany. The market leader in the field of circular connectors employs more than 1,800 people at 18 locations worldwide. The connectors are mainly used in the fields of sensor technology, medical technology and automation.

Instead of manually serviced shelving and pallet racking, the customer decided to have a new automated high-bay warehouse built for storing finished goods. For this purpose, an ergonomic container was needed that is suitable for automated storage and has a high load capacity while saving space and providing an option for proper bin labelling.

BENEFITS

- Important gains in space when folded flat
- The EQ variant with ribbed base is suited for automated storage
- Easy and ergonomic container handling without risk of injury, especially during manual folding
- High load capacity and smooth traveling on conveyor systems





logit.syncreon
Third Party Logistics

FEATURES

- logit.syncreon uses BITO MB multi-purpose containers for distributing goods throughout Germany
- Transportation of high-quality IT products
- BITO MB containers are shipped with security-sealed lid

CUSTOMER REQUIREMENTS

logit.syncreon is a globally operating third-party logistics provider (3PL). The company designs and operates supply chain solutions for customers from almost any business sector. Services include among others fulfillment, ecommerce solutions, warehousing, manufacturing support and assembly services, transportation and returns management.

Until now, high-tech equipment was transported in (often too large) disposable cardboard boxes or without packaging in wire mesh boxes. The customer wanted to store and transport their products in a safe way without risk of damage while at the same time avoiding or reducing packaging waste for economic and ecological reasons. In addition, the containers had to match the size of a Europallet.



BENEFITS

- Optimal protection and a high level of safety for packaged products
- The risk of product damage or loss has been minimised
- Significant reduction of packaging material
- Empty BITOBOXES MB save 75% of storage space/freight volume when nested
- Hard-wearing for a long service life



Erima
Sporting goods manufacturer

FEATURES

- Fully automated AutoStore warehouse serviced by 51 robots Current capacity of 150,000 containers, which can be increased to 180,000 containers
- BITO folding boxes EQ with ribbed base are used in internal material flow processes and for order picking
- Grey containers serve as distribution containers and orange containers contain goods sorted out for quality inspection
- High-bay pallet racking with a capacity of 3,800 pallet positions for bulky goods

CUSTOMER REQUIREMENTS

With over 115 years of experience, Erima is the oldest German sporting goods company with customers in all market segments from amateur athletes to professional teams. Their product range now includes products for almost all sports. With over one million sold per year, ERIMA is almost undisputedly at the top of the German jersey suppliers.

In answer to the increasing order volume and limited storage capacity, a new logistics centre was built in Kirchentellinsfurt near Tübingen in 2019. Many stock lines, large inventories and the need for processing 2,000 orders per day required a well designed concept for managing the company's logistical processes.



BENEFITS

- EQ containers have excellent, low-noise conveying properties on conveyor lanes
- Ergonomic working environment for the employees
- Folded boxes require only a quarter of the unfolded space during storage and transport
- Damage-free transport of the goods from the conveyor system to the packing stations



Voigt GmbH & Co. KG
Warehouse logistics, transport
logistics, logistics consulting

FEATURES

- 60,000 XLmotion plastic containers
- Dimensions 600 x 400 x 320 mm, capacity 53 litres
- Containers have a sandwich base with diagonal reinforcing ribbing and a flat base surface
- Load capacity 50 kg, stacking load 250 kg
- Sturdy front-to-back and side-to-side dividers
- Made from 100% regranulate

CUSTOMER REQUIREMENTS

Focussing on customer requirements, Hammer Group support their customers in the field of classic freight forwarding and flexible solutions for contract logistics. In 2015, the logistics service provider built a new multi-user logistics centre of 103,000 sqm in Bedburg near Cologne, which also houses a shuttle-serviced facility for small parts.

For their automated warehouse, Hammer required approximately 60,000 rugged containers suited for automated systems, which were to run as quietly as possible on the system, have a large internal volume, and can be subdivided to make best use of the bin volume.



BENEFITS

- Significantly lower noise levels
- More pleasant work environment, fewer stress-related absences, lower error rate
- Sturdy make allows operation with extremely heavy loads
- Thanks to the large internal volume and the good volume utilisation, fewer containers have to be moved to handle the same quantity of goods.
- Substantial savings in steel costs when building the plant, because the wider container base sits on much narrower support profiles. Construction and material costs could therefore be saved.



Klinik-Apotheke
Pharmacy of the University Hospital Dresden

FEATURES

- BITOBOX MB multi-purpose nesting containers in various base and height dimensions
- MBs were supplied with thermo-insulation boxes, ice packs, drop-on lid and single use security seals MBP1

CUSTOMER REQUIREMENTS

The Clinic Pharmacy of the University Hospital Dresden supplies 21 clinics including their wards, 3 institutes and 8 interdisciplinary centres of the University Hospital of the Technical University Dresden as well as approx. 15 institutes of the Medical Faculty (MF). There are also supply contracts for the provision of medicines to surrounding hospitals and rehabilitation clinics. In addition, medicines are picked for individual patients and delivered to the ward.

The hospital pharmacy required robust containers, as high circulation rates are achieved on a daily basis. The sensitive and expensive products were to be protected from unauthorised access, and the cold chain was not to be interrupted for items requiring refrigeration. As space was limited, the customer asked for volume-saving (nestable) containers, which also had to have good traveling properties on conveyor belts.

BENEFITS

- Orders are picked directly into the containers
- Medicines are protected by single use security seals
- Empty container nesting saves a lot of space
- Compliance with the guidelines on Good Distribution Practice
- Good container printability allows immediate content identification



Carbon neutral since 2021

What does it mean to be carbon neutral certified?

Achieving carbon neutrality means reducing greenhouse gas emissions as much as possible and offsetting the remaining emissions so they are equal to or less than the emissions that are removed by the planet's natural absorption.

BITO has been certified to comply with Greenhouse Gas Protocol (GHG) standards, the most important and most widely used framework for measuring and reporting greenhouse gas emissions in companies. Depending on the source to which emissions can be attributed, the GHG Protocol distinguishes between three scopes:



Scope 1

Direct emissions from company-owned or controlled sources. Scope 1 emissions are a result of energy consumption such as for heating, cooling and steam generation. Company vehicle emissions are also included in this category.



Scope 2

Indirect emissions result from the consumption of purchased energy. If, for example, electricity is generated in whole or in part from renewable energy sources, fewer emissions are charged to a company's emission account.



Scope 3

All other indirect emissions in the supply chain that are a consequence of the business activity but originate from independent external sources. These emissions occur along the upstream and downstream value chain, i.e. from the procurement of raw materials, operating supplies and materials, from transport services for the distribution of products, from waste treatment, from business travel, etc.

The GHG Protocol only requires participants to record Scope 1 and 2 emissions. Although it is not mandatory to report any Scope 3 emissions, BITO is committed to effectively reducing greenhouse gases in all three scopes.

CERTIFICATE

Certificate ID: C01-2022-09-21252602

Certificate for: Carbon Neutral Company

Certificate holder: BITO-Lagertechnik Bittmann GmbH
Obertor 29
55590 Meisenheim
Germany



Accounting period: Calendar year 2021

Certificate valid until: 30 September 2023

Test specification: GHG Protocol:2004

Review report: CF-2022-05-21252602

Corporate Carbon Footprint: 2.843 t CO₂ e / 2021 (Scope 1 & 2)

Carbon offset projects / Registry: 100.5 MW Wind Power Project in Madhya Pradesh
India / GS

Retired certificates / Project IDs: GS1-1-IN-GS3969-12-2020-20916-109170-112012

The BITO Group has been verified as a carbon neutral company. It is confirmed that the certificate holder has compensated its verified CO₂ emissions by the above mentioned activities in climate protection. Specifications and accounting boundaries can be gathered from the review report. The validity can be checked using the certificate ID on www.certipedia.com.

Cologne, 14 September 2022

Norbert Heidelman
TÜV Rheinland Group
Carbon Services

Susanne Jorre
TÜV Rheinland Group
Carbon Services



www.tuv.com

TÜVRheinland®
Precisely Right.

10/2011 10.17 E A4 © TÜV, TUEV and TUV are registered trademarks. Utilisation and application requires prior approval.



RENEWABLE ENERGY CERTIFICATE

Certificate No. 2019-3190-0001



We hereby confirm
BITO-Lagertechnik Bittmann GmbH
Obertor 29
in 55590 Meisenheim

In cooperation with:



the purchase of 100% green electricity from renewable energy plants with statutory environmental standards.

The guarantees of origin are issued towards renewable energy plants which comply with statutory environmental standards whilst being connected to the European grid. Furthermore, they fulfil the criteria for KlimaInvest ÖKOSTROM by KlimaInvest Green Concepts GmbH.

BITO-Lagertechnik Bittmann GmbH achieves climate neutrality with the continuous cancellation of the green electricity proof of origin and with the offset of upstream emissions which arise, *inter alia*, during the construction of the plants. In the period from 1st of January 2020 to 31st of December 2021 an amount of up to 26.549 MWh of electricity is neutralized by 100% ecological and climate-neutral electricity from renewable energy.

Compared to an electricity generation through energy sources constituting the German energy mix at the time of issuing this certificate, up to 8.302 tons of CO₂ emissions will be saved through purchasing and using renewable energy. This amount also includes the offset of upstream emissions.

The cancellation in accordance with § 30 Guarantees of Origin Implementing Ordinance (HkRNDV) is carried out and confirmed by the registry of the German Environment Agency.

Version 2 from 13.09.2022


Jobst Jenckel
KlimaInvest
Green Concepts GmbH



FOR FURTHER INFORMATION VISIT: KlimaInvest Green Concepts GmbH · www.klima-invest.de · Hohe Bleichen 10 · 20354 Hamburg

Green Electricity Supply Certificate

MVV Energie hereby certifies



the supply of the contractually agreed volume
of green electricity 11.668 MWh "Easy Green"
for the period from
01.01.2022 to 31.12.2024.

The supply of green electricity meets the following criteria:

- The green electricity is 100% generated by renewable energies plants.
- The procurement and supply of green electricity is performed on the basis of green electricity certificates (Guarantees of Origin) conforming to the EU Directive on the use of energy from renewable sources in its currently valid version and managed via the Guarantees of Origin Register at the Federal Environment Agency (UBA).
- Multiple marketing of the Guarantees of Origin is excluded throughout all stages of the value chain.
- Pursuant to electricity disclosure requirements, a total of 0 g CO₂ per kWh is emitted upon the generation of renewable energies traded via Guarantees of Origin.

The green electricity solutions offered by MVV Energie are managed and supervised by means of a "Green-book Management" system that has been certified in line with TÜV SÜD Standard CMS 93. This provides customers with a guarantee for the reliable and trackable procurement, accounting and supply of the green electricity they have purchased.

A blue ink signature of Dr. Joachim Hofmann.

Dr. Joachim Hofmann, MVV Enamic GmbH
(An MVV Energie AG company)





C E R T I F I C A T E

Q U A L I T Y M A N A G E M E N T

The company

BITO-Lagertechnik Bittmann GmbH
Obertor 29
55590 Meisenheim

-with the locations listed in the annex-

has introduced and implemented a

Quality Management System

for the scope:

**Development, production and sales of shelving and racking systems,
plant equipment and order picking systems and plastic bins**

Proof has been furnished that the requirements according to

DIN EN ISO 9001 : 2015

are fulfilled.

Compliance with the above standard was ascertained by a quality audit.
This certificate is valid from February, 6th 2021 until February, 5th 2024.

ESC Cert GmbH

Kassel, February, 3rd 2021

Certificate-No.: 55590/01-21_a

A blue ink signature of Dr. Ralf Rieken.

Dr. Ralf Rieken

Head of the Certification Office

ESC Cert GmbH, Teichstraße 14, D-34130 Kassel



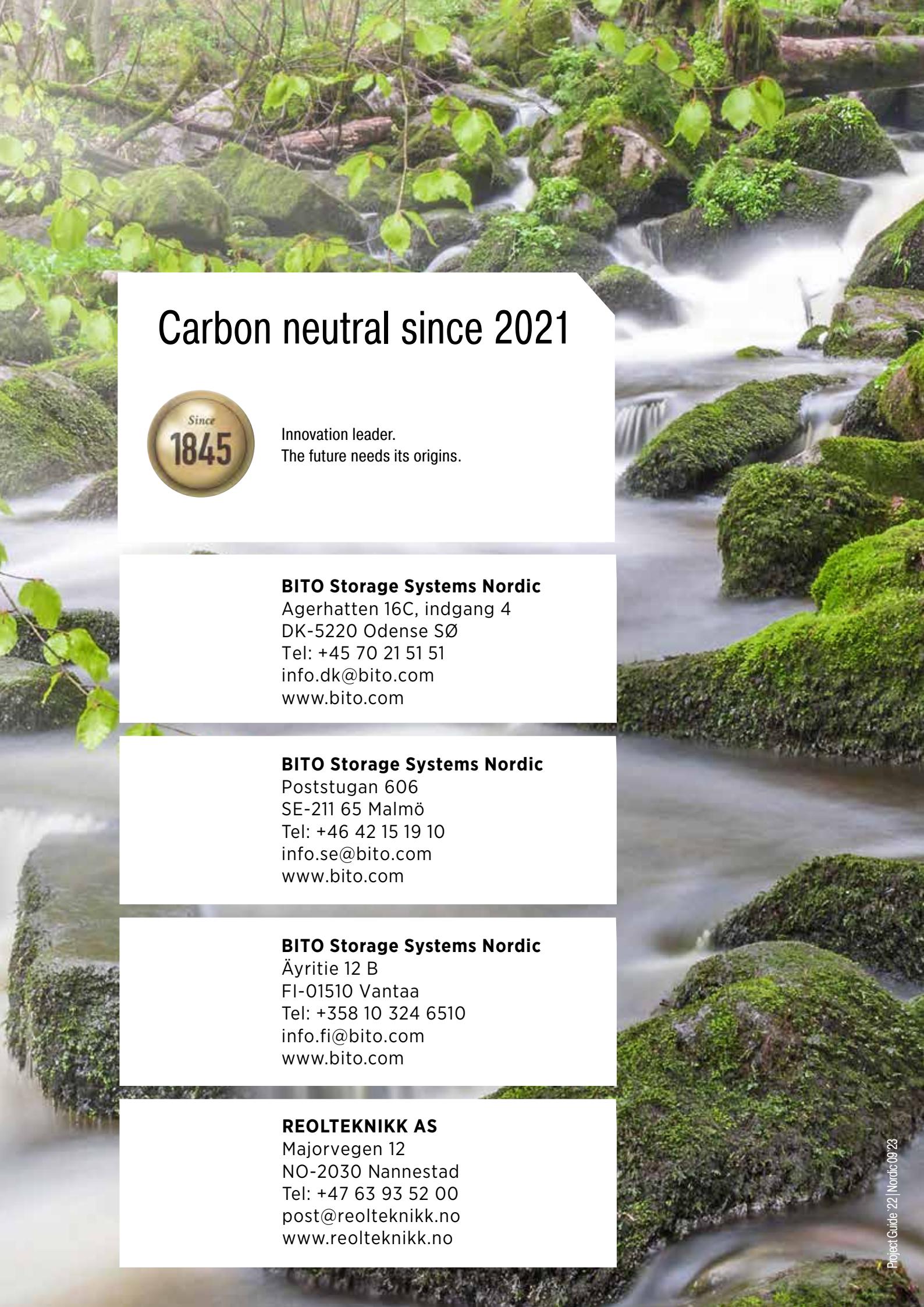


C E R T I F I C A T E

Q U A L I T Y M A N A G E M E N T

Annex

Company	Scope
BITO-Lagertechnik Bittmann GmbH Obertor 29 55590 Meisenheim	Development, production and sales of shelving and racking systems, plant equipment and order picking systems and plastic bins
BITO- Lagertechnik Bittmann GmbH Saarbrücker Str. 75 67742 Lauterecken	Development and production of plastic bins
BITO Technika Magazynowa SP. z. o. o. Ul Europejska 12 47-143 Zimna Wodka (PL)	Production of shelving and racking systems, plant equipment and order picking systems



Carbon neutral since 2021



Innovation leader.
The future needs its origins.

BITO Storage Systems Nordic

Agerhatten 16C, indgang 4
DK-5220 Odense SØ
Tel: +45 70 21 51 51
info.dk@bito.com
www.bito.com

BITO Storage Systems Nordic

Poststugan 606
SE-211 65 Malmö
Tel: +46 42 15 19 10
info.se@bito.com
www.bito.com

BITO Storage Systems Nordic

Äyritie 12 B
FI-01510 Vantaa
Tel: +358 10 324 6510
info.fi@bito.com
www.bito.com

REOLTEKNIKK AS

Majorvegen 12
NO-2030 Nannestad
Tel: +47 63 93 52 00
post@reolteknikk.no
www.reolteknikk.no