



**BITO**  
STORAGE SYSTEMS  
**NORDIC**

# PALLET RACK TUNING

Sturdy. Reliable. Versatile.

EFFICIENT & SAFE  
ITEM PICKING  
FROM  
PALLET RACKING



GREATER  
**PRODUCT DIVERSITY**

IMPROVED  
**PICKING PRODUCTIVITY**

ERGONOMIC  
**WORKING CONDITIONS**





**BITO  
PALLET  
RACKING.**

**ADAPTS  
TO YOUR  
REQUIRE-  
MENTS.**

**IN EVERY  
WAY.**

# WHY BITO?

For more than 60 years, BITO has been one of the market leaders in the material handling sector in Europe. We are proud that our customers value us as a reliable and innovative partner for planning and implementing storage and order picking projects of any size. Our clear focus on market demands has helped us maintain and strengthen this position. BITO innovations are inspired by the requirements of our customers and their need to gain a competitive advantage in their business sector.

Our experience and expertise in the intralogistics field enable us to support our customers in staying ahead of the competition. As one of the few full line suppliers in this field, BITO provides shelving & racking, bins & containers, order picking and in-house transport solutions for every industry.

- ✚ We offer everything you need for realising your goals, from catalogue product to large-scale customized facilities.
- ✚ From shelving & racking, workshop & plant equipment to fully automated warehouses.
- ✚ From small open-fronted storage bins to large volume containers for efficient material handling.

On top of this, we offer our customers a concept-to-completion service for any project size. From stand-alone shelving and racking and integrated facilities combining several storage systems to automated bin and tray storage. BITO – Your single source supplier.

Our specialists take care of all project-related tasks from layout planning over project management to coordinating assembly and installation start-up.

**Your benefit: A personal project coordinator will take you from start to finish.**

# HOW DO MARKET TRENDS AFFECT PRODUCT STORAGE IN PALLET RACKING?

## PALLET RACKING IS THE MOST COMMONLY USED RACKING SOLUTION FOR INDUSTRIAL APPLICATIONS.

It is often overlooked that pallet racking systems are not only suitable for picking complete pallet loads, either for direct dispatch to the customer or for replenishing picking areas. Pallet racking is also suited for picking

smaller unit loads or even individual items. Have a look at our solutions that perfectly combine product buffering and product picking!

### ITEM PICKING AT FLOOR LEVEL HEIGHT

In a pallet rack system, the floor level positions are in high demand, as items are relatively easy to access for order pickers. Unfortunately, the number of pick positions on the floor level is limited. The levels above are inaccessible without auxiliary equipment and are therefore used as a buffer store for replenishing the pick locations on the floor.

This means that a forklift truck is required to relocate the pallets to the floor level, resulting in a "mixed operation" where forklift trucks and warehouse staff share the same aisle. While the trucks are transferring goods to the pick positions, the staff is busy picking new orders. This not only affects workplace safety, but also picking performance.



## MARKET TRENDS

- ✚ Greater product diversity
- ✚ Lower quantities per reference item in stock
- ✚ Shorter product life cycles
- ✚ Stronger need for efficiency

IN ORDER TO REMAIN COMPETITIVE, WAREHOUSE OPERATORS MUST RESPOND TO MARKET TRENDS.

The ever increasing number of product varieties and shorter product life cycles are resulting in an ever increasing number of stock items. At the same time, ever smaller quantities per SKU are being held in stock. The ever-increasing speed of this development also increases the need for more picking efficiency. One requirement for improving picking productivity is to be able to rely on a predictable picking performance.

PREDICTABLE PICK RATES CAN ONLY BE ACHIEVED  
IF ALL STOCK ITEMS ARE IMMEDIATELY ACCESSIBLE AND  
IF THEY ARE AVAILABLE IN SUFFICIENT QUANTITIES.

It is a generally accepted principle that conventional order picking productivity improves when products can be picked at ground level and operators do not have to reach vertically.

On the following pages, we will present some BITO solutions that show how to create pick facings for all SKUs at floor level height.



**GREATER  
PRODUCT DIVERSITY**



**IMPROVED  
PICKING PRODUCTIVITY**

**ERGONOMIC  
WORKING CONDITIONS**



## BITO PALLET RACK TUNING

## ADAPT YOUR WAREHOUSE STEP BY STEP

### The key question is: What is the optimal solution?

On the following pages, we will present very efficient BITO solutions that can be implemented as stand-alone solution or in combination with each other.

If, for example, more pick positions are urgently needed, but reorganising your warehouse would be too disruptive for your operations, we recommend a step-by-step approach. Start to reorganise only one zone of your warehouse. This has the advantage of lower costs, and the additional benefit that you will see whether a measure is successful. This helps to assess whether a roll-out to the entire warehouse is worthwhile. Most BITO solutions can be integrated into any pallet racking system, regardless of brand.

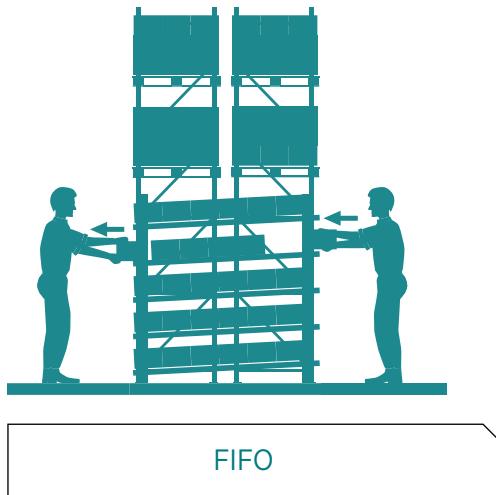


#### KEY POINTS

- BITO provides many solutions to make your warehouse "fit" for growth and for new requirements.
- ROI within a short time.
- We suggest starting to convert a few bays only to test the benefits for your application.
- Contact us - we are happy to help!

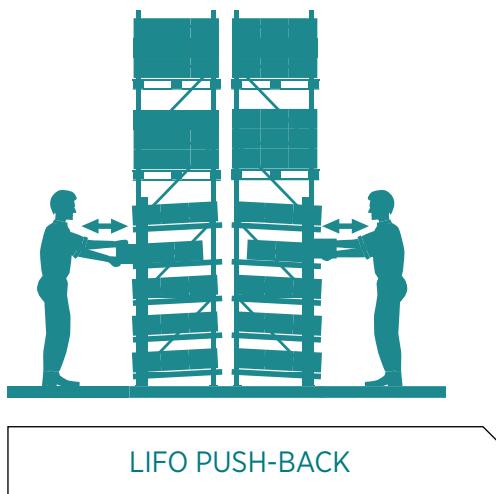


## LIVE STORAGE WITH FLOW SHELVES



### Double deep flow shelves spanning two bays: **Goods are stored and picked in FIFO order**

- Goods that have been fed into a lane first are picked first.
- Easy control of sell-by dates, production batches and product lines.
- Separate loading and picking aisles avoid congestion.



### Flow shelves are inclined in opposite directions: **Goods are stored and picked in LIFO order (push-back loading)**

- This stock management method is recommended for small stock quantities per SKU and a low stock rotation frequency.
- Goods that have been fed into a lane last are picked first.
- Goods are loaded and picked in the same lane.

### FIFO AND LIFO INVENTORY MANAGEMENT

Both methods work according to the “**goods-to-person**” principle. Order pickers save time and energy in the picking process and benefit from ergonomic working conditions. Warehouse operators are able to calculate pick rates.

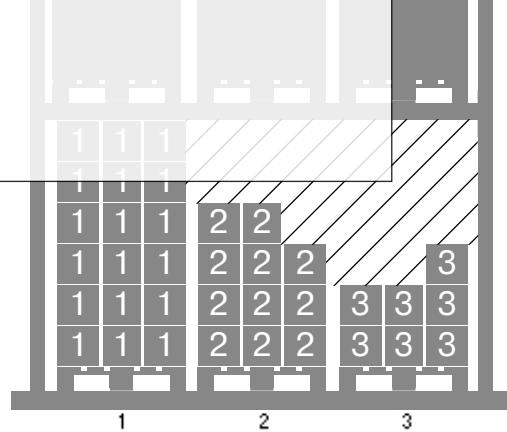
## BITO PALLET RACK TUNING

LIVE STORAGE  
WITH FLOW SHELVES (CONT'D)

## How to create more pick positions with flow shelves

## WITHOUT flow shelves:

Goods are picked from pallets



## Before flow shelf retro-fitting:

## 1 SKU per pallet position

- One bay accommodates 3 SKUs (1 SKU per pallet position).
- Each pallet position remains occupied until the last unit has been retrieved from a pallet.
- The average space utilisation rate is only 50%.
- This translates into long travel distances between the pick positions.
- Picking performance is reduced to 30 - 50 picks per hour.

## WITH flow shelves:

Specific products are assigned to each lane of the flow shelf.

Flow shelves can provide a far higher number of SKU pick positions (slots) at the pick face.



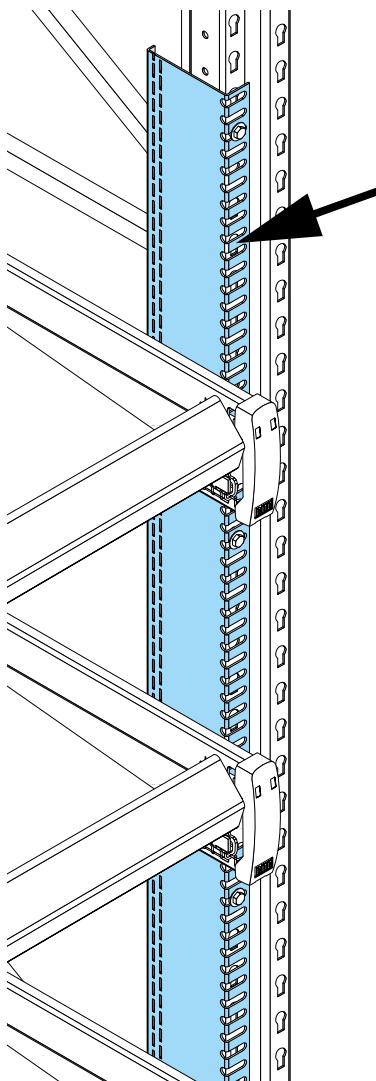
## After flow shelf retro-fitting:

## 8 SKUs per pallet position

- Each pallet position can now accommodate 8 SKUs.
- Any empty pick position can immediately be filled with a new SKU.
- Depending on the minimum stock level per SKU, there are 1, 2... or even 8 slots to fill.
- Picking performance increases to 150 - 250 picks per hour.

## BENEFITS:

- Storage space utilisation rises to up to 90%
- More SKUs in direct access
- Reduced pick times
- Increased picking performance from 30-50 picks to 150-250 picks per hour



Adapter profile (highlighted in blue)

## Retro-fitting BITO flow shelves into existing pallet racking

For this purpose, adapter profiles are directly bolted to the uprights of the existing installation. Support clips safely locate into the profile slots, serving as a seat for the flow shelves. This is an easy way to convert storage-only areas into picking zones, providing our customers with more flexibility.



BITO Flow shelf fitted with upright adapter profiles



## BITO PALLET RACK TUNING

## HANDLING SOLUTIONS FOR MINOR QUALITY LOAD CARRIERS



BITO Roller track and roller conveyor modules are ideal for storing cartons without solid base. The modules are simply placed on the beams of an existing pallet rack. By fitting the rear beam a little higher to a pair of uprights than the front beam, your storage level will have a slight incline that allows loads to travel forward. Adjoining modules will make a roller bed. If requirements change, the modules can be removed and fitted into another bay.



Roller track module

Roller conveyor module

## PICK POSITIONS AT REACH HEIGHT



Flow shelves can be used to create additional pick positions for items with a slow or medium turnover frequency, while the floor level should be used for palletised goods (fast movers).

Cartons with different dimensions that are not suited for a pre-defined lane width are best stored on roller beds.



Roller conveyor module at reach height

## INCREASE PICKING PERFORMANCE BY IMPROVING ERGONOMICS

### PULL-OUT PALLET POSITIONS



Picking goods directly off the pallet seems to be a good solution at first sight. However, in order to access products sitting further behind on a pallet, operators have to bend and stretch into the racking. If, in addition to this, the first beam level is fitted a height that does not allow the order picker to stand upright, order picking is a strain for the back. Poor ergonomics can be avoided with the BITO pull-out pallet position.

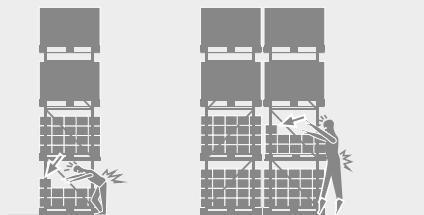
The pull-out unit can be retro-fitted into existing pallet racking without any difficulty.

This solution is particularly useful for handling very heavy or bulky products.



### Racking with BITO pull-out pallet position

- ⊕ **Convenient picking** – Pallets can be pulled forward into the service aisle.
- ⊕ Heavy or bulky goods are within **easy reach** and can be picked from three sides **without straining the back**.
- ⊕ **Very low risk of workplace accidents and injuries** – no head bumping on the beams of the level on top.
- ⊕ **Direct access to all items**
- ⊕ 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.



### Racking without pull-out pallet position:

- **Poor ergonomics:** Operators have to bend and stretch into the racking.
- **Difficult access** to many products
- **Increased risk of work related accidents** – head bumping on the beams of the level on top.

## WAREHOUSE REORGANISATION BASED ON AN ABC ANALYSIS

HIGH STOCK ROTATION FREQUENCY  
MEDIUM STOCK ROTATION FREQUENCY  
LOW STOCK ROTATION FREQUENCY

In every product range, there are products that are in frequent demand and those that are ordered only occasionally. In order to determine the best storage location and plan the space requirement of each product, an ABC analysis helps to define products with high, medium and low turnover rates.



## HIGH STOCK ROTATION FREQUENCY FOR FAST MOVERS



**Roller conveyor lanes.** In most cases, fast movers are picked directly off the pallet. As soon as an empty pallet is retrieved, the next pallet will move to the pick face. Additionally, individual items can be buffered on a carton live flow shelf on top of the pallet lane. Roller conveyor lanes are available as full-width and as two-track variant. The two-track version is particularly appropriate for applications where regular floor cleaning is required.

**BITO bins. BITO Plastic bins & containers** are also suited for picking fast movers. The large **view and pick opening** provides instant product overview and direct access.

## MEDIUM STOCK ROTATION FREQUENCY



Floor pallet positions can be retrofitted with **flow shelves for smaller unit loads** to increase the number of product lines at the pick face while ensuring FIFO stock rotation.

**Bin pick walls** are ideal for storing and picking small parts and components.

**Pull-out pallet units** are particularly suited for ergonomic off-pallet picking of heavy and bulky items.

## LOW STOCK ROTATION FREQUENCY



**Integrated shelving with inclined shelves** provides a better view into the bins. The inclined bin position allows faster and more ergonomic picking.



**Integrated shelving with straight shelves** provides sufficient space for keeping items of any size at hand for convenient order picking at the pick face.

BITO **PALLET RACK TUNING**

## ORDER PICKING FROM SHELVING LEVELS

PALLET RACKING WITH INTEGRATED SHELVING IS IDEAL FOR PROVIDING SMALLER UNIT LOADS.

Depending on the equipment and the position of the shelving units within the pallet rack, the following options can be implemented:



### STATIC WALK-IN SHELVING, SHORT SIDE FACING AISLE

Pick aisles between the shelving units provide convenient access.



### MOBILE SHELVING

This option allows maximum floor space utilisation. However, pulling out and pushing back the shelving units needs more time and will result in a lower pick rate.



### STATIC SHELVING, LONG SIDE FACING AISLE

All items are in direct access for the order picker. Shelf dividers can be added to separate product lines.



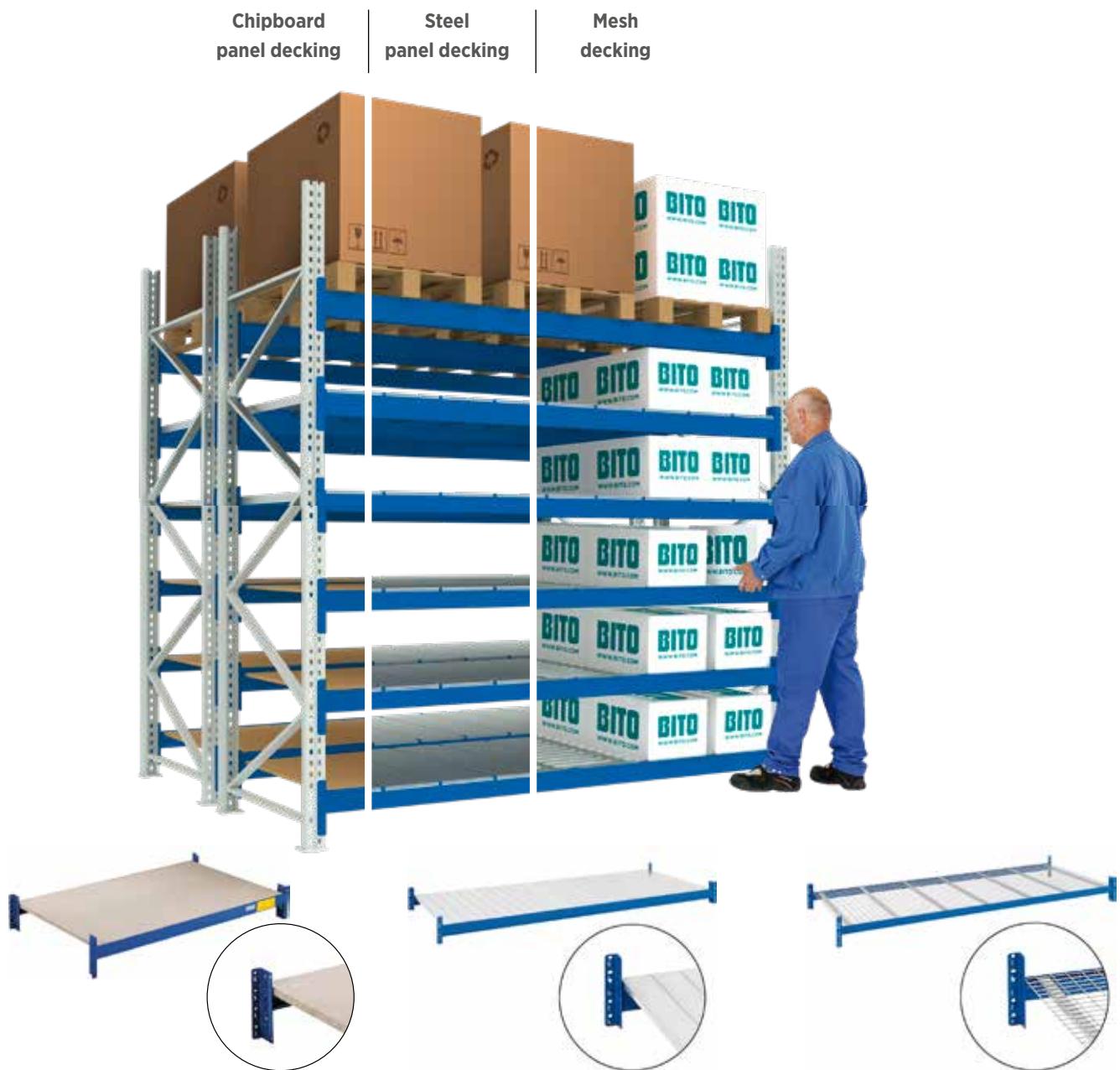
### SHELVING WITH INCLINED SHELVES

The inclined position of bins and cartons allows instant product viewing. In addition, picking is even more convenient.

## ORDER PICKING FROM PALLET RACKING LEVELS

### CONVENTIONAL SOLUTION WITH ADDITIONAL BEAM LEVELS

Depending on load size, BITO pallet racks can be fitted with extra beam levels. Rack decking can be made from wood, chipboard or steel to cater to various needs.



## ORDER PICKING FROM BITO BINS & CONTAINERS

THE COMPREHENSIVE BITO BIN & CONTAINER RANGE IS SUITED FOR A VERY BROAD SPECTRUM OF APPLICATIONS.

As shown on the previous pages, bins can be used to stock items on static shelf levels and on flow levels. Another option is to stack bins and containers with a view and pick opening to create a pick wall. Container pick walls can be realised from stacking containers of any size to suit the dimensions of your stock items.



### CONTAINER PICK WALLS

Stand-alone pick walls can be configured and reconfigured to suit requirements. BITO provides a range of open-fronted containers to fit any product size:

- Storage bins with pick opening SK
- European size stacking containers XL
- European size stacking containers BN



### HEAVY DUTY CONTAINERS SL WITH PICK OPENING FOR LARGE ITEMS

SL containers can be supplied with optional lid and a half-drop door on the short or on the long side.



### BIN DRAWERS FOR SMALL ITEMS

BITO bins come in a wide choice of sizes, colours and with useful accessories such as shelf dividers to optimise product presentation and improve picking accuracy and picking speed.

## PLASTIC BINS & CONTAINERS FOR ANY APPLICATION AND BUSINESS SECTOR

The ideal container is expected to facilitate order picking, protect products during transport and fit seamlessly into organisational processes.

BITO provides a huge range of bins and containers in any size for storage and handling, order picking and distribution. Whether customers opt for our storage bins with pick

opening, stacking containers in European standard sizes, multi-trip containers or bins and trays for automated storage and retrieval – with their robust make, ergonomic design as well as the large number of variants and accessories BITO bins and containers will always meet customer expectations. Of course, BITO has knowledge and the equipment to make customer-specific adaptations.



### Storage and transport bins

BITO storage and transport containers have been designed to fit European standard pallets to make optimal use of available storage and shipping capacities.



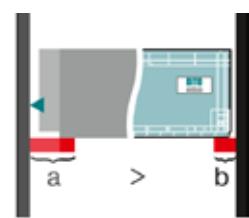
### Small parts handling

Bins and containers for small parts and components and for C-items contribute to a smooth workflow in any operation.



### Nesting containers and folding boxes

Empty bins can be nested or folded, thereby saving up to 75% of their volume as well as valuable space in delivery vehicles and costs on return transports.



### Automated Storage & Retrieval Systems (AS/RS)

BITO containers meet all the requirements of an automated storage environment where loads need to be loaded and retrieved with precision, accuracy and speed.



### Trays

Trays are perfect for use as carrier for storage units that would otherwise not be suited for automated load handling. BITO trays can be handled by stacker cranes of all leading brands.



### Large volume containers

Large volume containers are an excellent alternative to mesh box pallets: at half the size and many times lighter, they are both sturdy and hard-wearing.



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