

Shuttle-serviced pallet racking  
**BITO Pallet shuttle system**



# BITO Shuttle-serviced pallet racking is the automated alternative to conventional drive-in racking

Fast, efficient and safe pallet loading and retrieval

**BITO Pallet shuttle racking** is a semi-automated deep lane storage and retrieval system. Shuttle systems combine very high throughput rates with excellent storage density. Each shuttle cart has a rechargeable battery and is monitored by the fork lift driver using a remote control.

The shuttle carts run on rails in the storage lanes, loading and unloading pallets without human intervention. Depending on the inventory management system the carts are transported to their home position at the front or the back of a lane by a standard forklift truck. Pallets can be stored in FIFO as well as in LIFO order and can be used for deep-freeze environments with temperatures as low as -30°C.



## Product advantages:

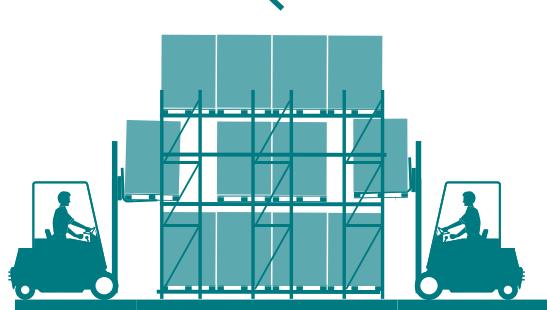
- ✓ Compact high-density storage allows maximum use of cubic space.
- ✓ Since no forklift truck entry aisles are required, storage capacity increases by up to 60% compared to conventional pallet racking.
- ✓ Gentle storage of damage-prone products: Shuttle carts enable precise and collision-free pallet positioning.
- ✓ Considering the higher potential for damage in conventional drive-in racking, shuttle-serviced pallet handling reduces downtimes and associated costs and improves operator safety.
- ✓ Safety first: Laser scanners in the storage lanes as well as in the truck trafficways identify persons and obstacles. Combined with the BITO safety equipment for racking structures, shuttle systems ensure utmost safety at work.

# Shuttle systems provide more storage capacity than block stacking

Shuttle-serviced pallet racking is suited for both FIFO and LIFO inventory management

## FIFO storage

Product storage in FIFO order (first-in, first-out) means that products which have been fed into a lane first are picked first. Pallets are placed into the racking at the rear side, where they are picked up by a shuttle cart and moved to the opposite racking face for retrieval.



## LIFO Storage

Product storage in LIFO order (last-in, first-out) means that pallets which have been loaded into a lane most recently are picked first. LIFO pallet racking uses only one side of the racking for loading and unloading pallets. The shuttle cart moves pallets from the loading/picking face to the next unoccupied position in the back of the lane and moves them back to the front again when required.



### Handling features of shuttle-serviced racking:

- Warehouse operations are sped up since forklift operators do not have to enter racking aisles.
- It is possible to handle any pallet weight from 0 to 1,500 kg.
- One lane can be serviced by several shuttles.
- Automatic inventory control by using sensors to count the number of pallets in stock.

### Solution:

- Gentle storage through sensors that detect pallet spacing and overhanging loads – also suitable for pressure-sensitive goods.
- Lanes can accommodate different pallet types.
- The racking configuration can be adapted to customer requirements.

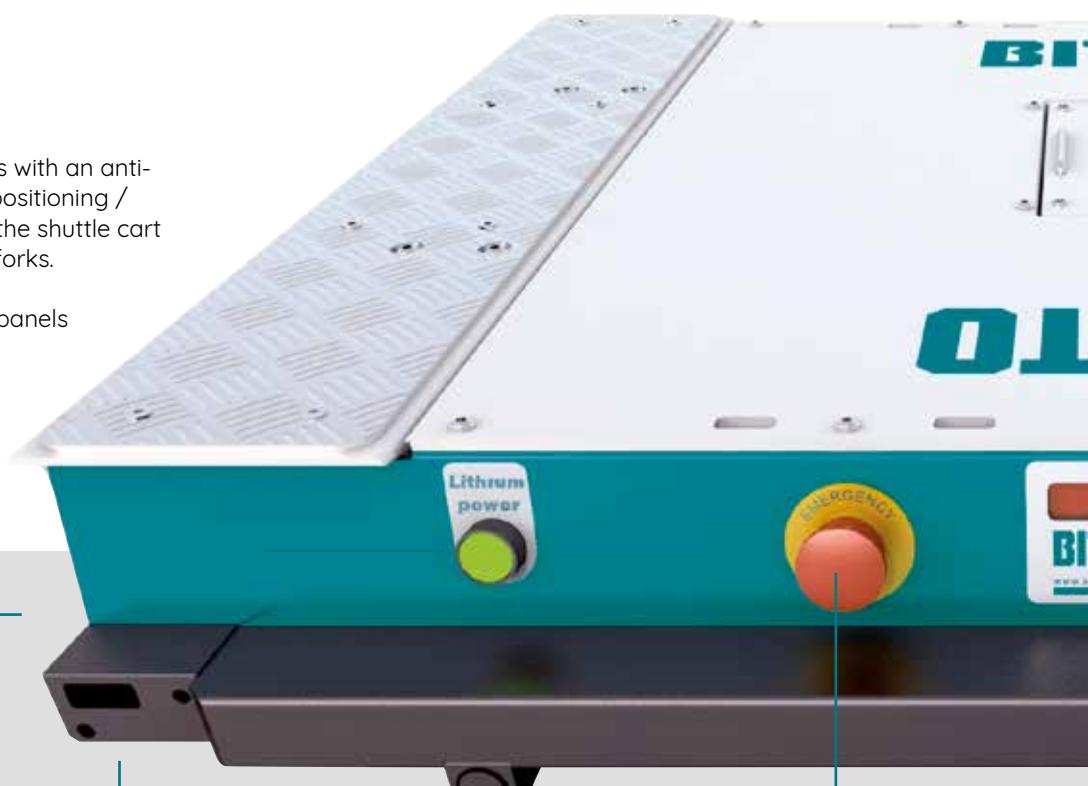
# Technical shuttle cart features



## Perfect load support

The loading surface comes with an anti-slip coating for safe load positioning / lateral guide rails prevent the shuttle cart from slipping off lift truck forks.

Optional magnetic safety panels for added safety.



## Location sensor

Prevents pallet damage by detecting overhanging loads, the end of a lane as well as the pallet position with a lane.



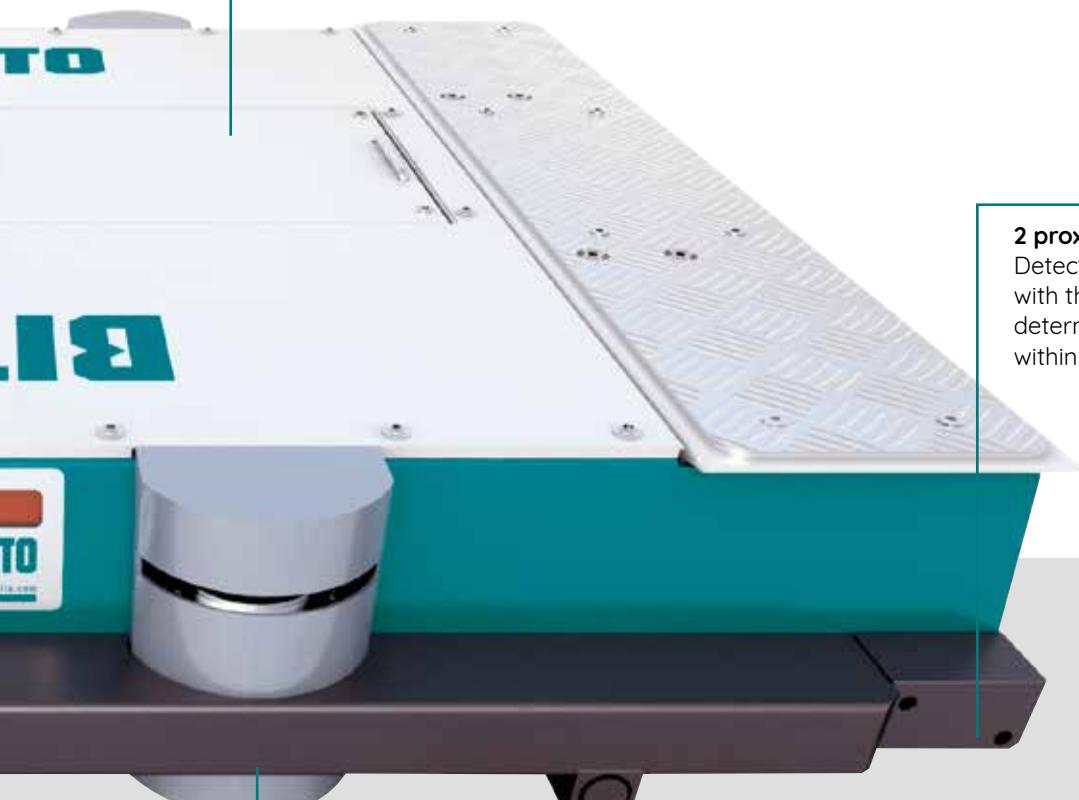
## Emergency stop button

Located at the short sides of a shuttle cart.



#### Lithium ion battery

Battery run time between 6 and 10 hours.



#### 2 proximity sensors

Detect the end of a lane / communicate with the safety laser scanners to determine the position of the shuttle cart within a lane.



#### 2 safety laser scanners

Detect persons and objects in the lane, in front of as well as behind the shuttle / compliant with the safety requirements of the German employers' liability insurance association.

# Combined application of pallet live storage and shuttle pallet racking

## About the customer:

With a total of around 4,500 stores, the Rossmann Group is one of the largest drugstore chains in Europe, of which around 2,250 are in Germany. To this day, Dirk Rossmann GmbH is an owner-managed family business headquartered near Hanover.

## Customer requirements:

In the Rossmann warehouse, goods are to be picked manually directly from the pallet. The picking area is to be supplied from pallet flow lanes. The shuttle operates in the buffer lanes above to constantly replenish the picking lanes at floor level height. Due to the enormous variety of products different pallet weights from 80 kg to 1,500 kg must be handled.





## THE BITO SOLUTION

- Pallet live storage lanes at floor level height provide supplies for the picking area.
- The shuttle-serviced buffer lanes on top stock sufficient product quantities to ensure continuous replenishment of the picking lanes on the floor level.
- High-density storage in 10-metre deep lanes.
- 5 shuttles to meet throughput requirements.

## Customer benefits

- Constant product availability at the picking side for manual order picking at floor level height.
- The combination of pallet live storage and pallet shuttle storage makes full use of the building height.
- Compliance with health and safety at work regulations.
- Service, maintenance and racking inspections by BITO.



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TO GIVE ADVICE.

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**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



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