

Features and advantages

Delivery trailer solves a number of
problems

www.pickdelso.com

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Elimination of waste

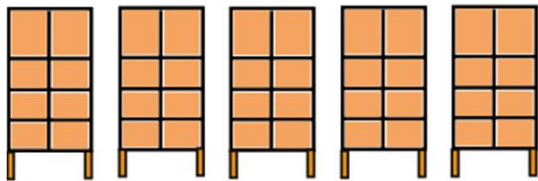
- Thousands of tons of products are delivered daily from picking sites to delivery sites
- Lifting boxes, shopping bags, parcels, or products by hands into lockers is "waste in a process" according to Lean thinking (Lean thinking is based on Toyota Production System)
- By elimination of the waste Delivery trailer enhances the work productivity

Efficient transportation

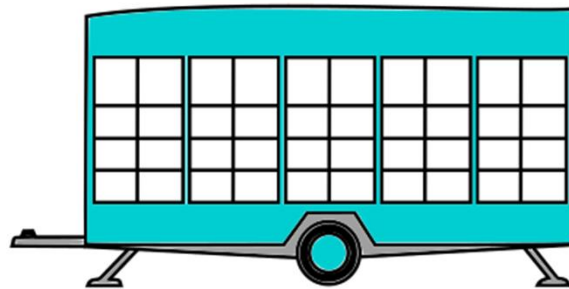
- Pickdelso's motto is: "If you must move, move a lot".
- The motto concerns especially transportation
- If a picking site is located far from a delivery site, the transportation cannot be avoided
- Transportation with Delivery trailer is efficient because a delivery cycle includes only one stop
- Efficient transportation also helps reducing the carbon dioxide emissions

Delivery trailer

- Concept – none is yet manufactured
- Racks + Trailer + Features



- Automated bar code reading
- Fast filling / Loading by AGVs
- One-stop transportation

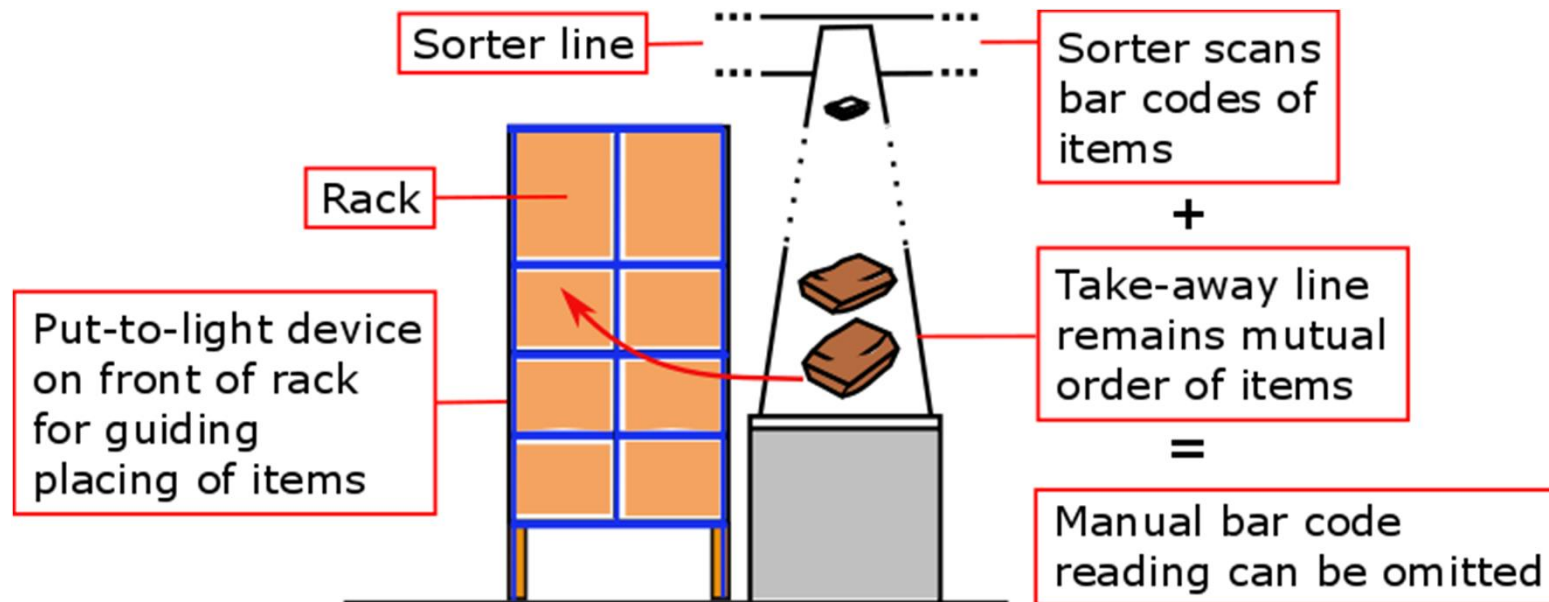


Automated bar code reading

- Assumption 1: take-away line has such feature that it remains the mutual order of parcels
- Assumption 2: sorter stores the data received from:
 - bar code scanning and
 - dimensioning and weight scanning
- Then the bar codes, dimensions, and weights of the parcels on the take-away line are known
- Put-to-light device utilizes said data when it guides an employee in placing of parcels into a rack

Automated bar code reading

- Feature solves the bar code reading problem, i.e. the time-consuming manual reading
- Illustration of the feature:

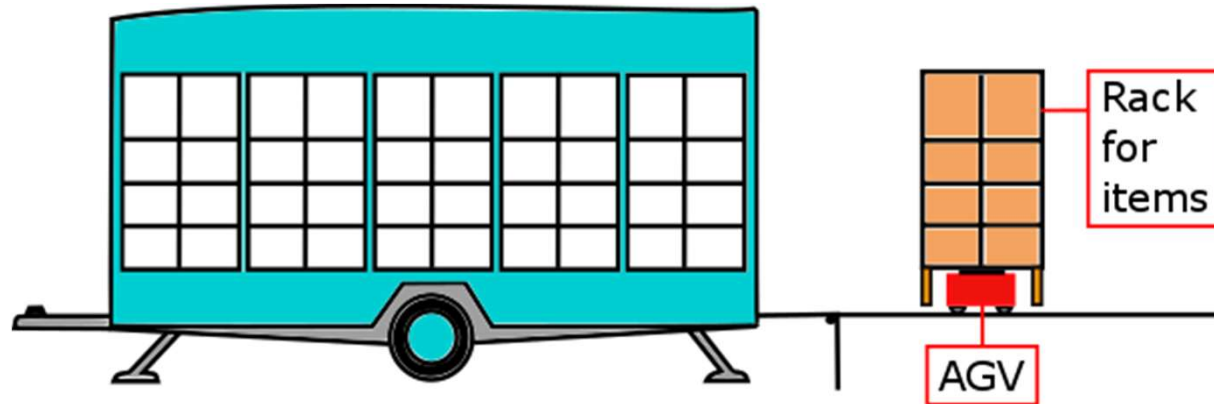


Fast filling / Loading by AGVs

- Locker doors of Delivery trailer are intended customers only, i.e. the locker doors are not used for filling of the lockers
- **Fast filling** feature means that a trailer is filled rack by rack, not locker by locker
- **Loading by AGVs** feature means that automated guided vehicles (AGVs) move racks into a trailer
- The both features solve the filling problem as well as the loading problem

Fast filling / Loading by AGVs

- An employee can move a rack, which includes wheels, into Delivery trailer
- Alternatively, a rack is moved by an AGV (as here), which makes the loading even more efficient

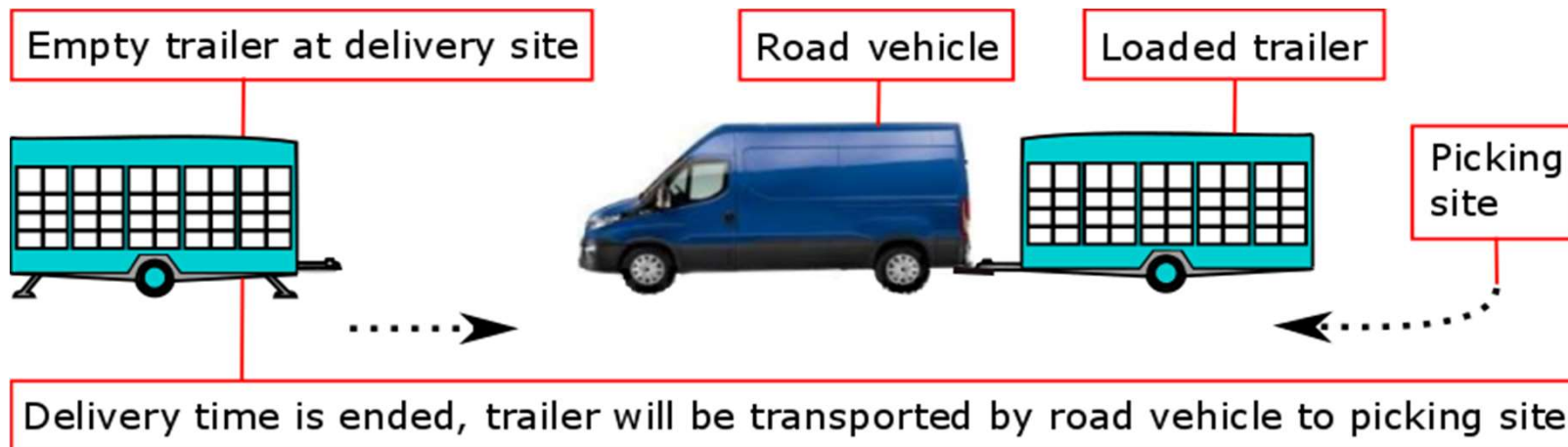


One-stop transportation

- A delivery vehicle arrives with a loaded (Delivery) trailer to a delivery site
- A driver parks the loaded trailer at the delivery site
- Driver decouples the loaded trailer from the delivery vehicle and couples an empty (Delivery) trailer
- Driver transports the empty trailer to the sortation hub to be filled there with new parcels
- The delivery cycle ends when the driver decouples the empty trailer from the delivery vehicle

One-stop transportation

- Feature solves the transportation problem
- **One-stop transportation**: only one stop per delivery cycle, which saves time



Unsolved problems

- If customers don't collect their items from lockers, the items perhaps need to be returned with Delivery trailer back to the picking site
- In spite of locks and security cameras, stealing and vandalism cannot be fully avoided
- Uncollected parcels, stealing, and vandalism are problems that concern a conventional packet automaton as well as Delivery trailer

Advantages

- First advantage, **enhancement of work productivity**, is based on the before-mentioned features
- Delivery trailer is a moveable packet automaton that can be transported from its current location to another location
- Mobility of Delivery trailer is a basis for the following three advantages

Scalability of service

- If a delivery site is very popular, there may be lack of delivery capacity
- Delivery capacity can be increased by increasing the number of Delivery trailers in the same site
- Example: a bird's perspective view of three Delivery trailers parked side by side



Flexibility in demand tests

- Delivery trailer can be parked at an interesting site to test a market demand
- If the market demand is strong enough, the site is appropriate for delivery business
- Otherwise, some other delivery site can be tested by parking Delivery trailer thereat
- In this manner it's possible to find the most popular delivery site for Delivery trailer

Economical transportation

- This advantage is not always available but when it is, the work productivity is increased
- Delivery trailer can be transported to a delivery site by a delivery vehicle that is in anyway visiting the area for some reason or another
- Reason of the visiting is, for example, filling of conventional packet automatons

Delivery vehicle includes parcels to be placed into packet automatons



Economical transportation

- Another example of the economical transportation
- Truck is on the way from a wholesale to the area where also the delivery site of Delivery trailer locates
- Truck leaves Delivery trailer at the delivery site, visits a grocery, returns to the delivery site, and transports the empty Delivery trailer to the wholesale

