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How Delivery trailer differs from a conventional packet automaton?

One objective in Lean thinking is to eliminate waste in a process (Lean thinking is based on Toyota Production System). Pickdelso's motto obeys Lean thinking in logistics. The motto is "If you must move, move a lot". In logistics moving of items should be avoided and when finally moving them, it is reasonable to move a lot of items in one bunch. The known problem, which logistics companies try to solve, is the last mile problem.

Delivery trailer provides a solution to the last mile problem in e-commerce, in more detail, in click & collect services. In a click & collect service a customer clicks an order button in an e-commerce application and later the customer collects the order from a packet automaton.

A conventional packet automaton includes lockers which are filled with items locker by locker. An employee of the logistics company uses the same locker doors as customers. The employee opens a locker door, reads by a bar code reader a bar code from a parcel, places the parcel into the locker, and closes the locker door. These manual tasks are only a part of the logistics problem. In some parcel delivery services the customers have one week time window for collecting their parcels. One week time window results in that a packet automaton empties slowly. It is possible that an employee need to daily visit the packet automaton and occasionally for a single parcel.

Each visit at the packet automaton means a stop in transportation and performing the following tasks. The employee takes at least one parcel from the delivery vehicle, walks to the packet automaton, fills the packet automaton, and takes parcels (if any) from the packet automaton. The conventional packet automatons are operated in such manner that transportation includes a number of stops, and each stop lengthens the transportation time.

Delivery trailer includes **Fast filling** feature. Delivery trailer is filled rack by rack. When a rack includes a lot of items it is obvious that the filling of Delivery trailer requires less time than the filling of a conventional packet automaton (which is filled locker by locker).

One grocery order may include, for example, five shopping bags of products. When using a conventional packet automaton each shopping bag must be lifted into a locker. The filling of conventional packet automaton is a burdensome task and there is a risk that some shopping bag unintentionally ends into a wrong locker. In a laundry service one order may include two or more boxes of laundry. Lifting of laundry is also quite burdensome task.

Fast filling feature is useful, especially in a grocery service and a laundry service. It makes the work less burdensome and reduces the risk that the customer orders are mixed.

When making an order a customer checks his or hers calendar to find out an appropriate day or days for collecting the order. Usually, 48 hours is a long enough time period for the collecting. Then Delivery trailer empties fast compared to the conventional packet automaton that has the one week time window. Delivery trailer is transported by a road vehicle from a picking site to a delivery site and parked thereat. The transportation includes only one stop and this time-saving feature of Delivery trailer is termed **One stop transportation**.

Where Delivery trailer should be parked? A delivery site should be selected such that approximately at least half of the Delivery trailer capacity is in use. A city block or one large-sized residential building may have enough potential customers to utilize the Delivery trailer capacity.

Indoor logistics is automatized at many picking sites. Conveyor belts, other types of conveyors, and AGVs (automated guided vehicles) are common tools in indoor logistics. Parcels, grocery products, and laundry are examples of items to be delivered to customers. Parcels are transported from a (postal) sortation hub to delivery sites. The sortation hub is an example of a picking site where bar codes are usually automatically read.

In Delivery trailer concept **Automated bar code reading** feature is utilized by placing racks besides conveyor lines. Then an employee of the sortation hub doesn't need to read the bar codes of parcels because the sorter system has already read them. The employee just picks a parcel from a conveyor line and places the parcel into the rack repository which the sorter system indicates by a light.

For example, trolleys are used in parcel delivery such that the trolleys are manually moved into the trunk of a delivery vehicle. A rack of Delivery trailer has a storing capacity that is about as big as in a trolley. **Loading by AGVs** feature accelerates loading and unloading of Delivery trailer.

Outdoor logistics refers here logistics operations to be performed outside of the picking site. When a delivery vehicle leaves the picking site traffic jams, parking problems and other outdoor logistics challenges begins. If the delivery vehicle includes tens of items addressed to the same packet automaton, more than one trolley is needed for moving the items from the delivery vehicle to the packet automaton. This means more time-consuming walking at the delivery site.

When using Delivery trailer there is much less walking at the delivery site. There is no need to touch the items to be delivered, or unload racks from a trunk. A driver of the delivery vehicle parks Delivery trailer, couples the delivery vehicle to other Delivery trailer whose time window is ended, and transports the other Delivery trailer to the picking site to be filled thereat with new items.

The main difference between Delivery trailer and a conventional packet automaton is that Delivery trailer has Fast filling feature. The feature includes fast unloading, i.e. the (empty) racks are removed from Delivery trailer trunk. Delivery trailer is loaded and unloaded at a picking site and a loading platform or a loading dock is usable the picking site.

When using conventional packet automatons the loading platforms and loading docks are usually missing at the delivery sites and thus the unloading and the other necessary logistics operations cannot be performed in an efficient manner.

Delivery trailer enhances the work productivity compared to a conventional packet automaton.