Order Picking Basics

We provide expert guidance.
You achieve peak results.

EXCEED CONSULTING

614-794-9400
www.exceed-consulting.com

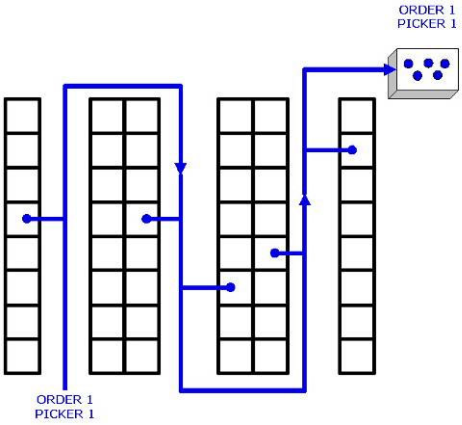
Picking is where the "rubber meets the road" in a distribution center. At the core of all order fulfillment is the actual placing of the product the customer wants into cartons or totes. Picking is usually the most labor intensive process in the distribution center and for this reason, management should always be analyzing the most efficient and accurate means to pick product for customer's orders.

Order picking typically is a combination of processes and supporting technologies. Almost all strategies discussed below assume that the full case quantities are handled separately from the remainder quantities. So, if an order requests 23 units of an item and the case quantity is 20, the order would be satisfied with one case of 20 and 3 individual units. Although there are many different ways to pick product and there are advantages to each, a company must select the method(s) to match their specific order profiles, business goals, equipment needs and efficiency standards.

Processes

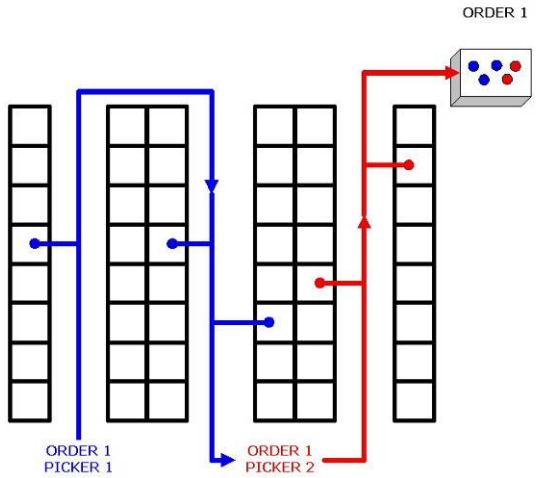
Discrete order picking

This is the most basic form of picking. One picker starts one order and completes the entire order. The picker goes to each location required for the order. They pick the product required and place it into a tote or shipping carton. In some environments, this may mean a picker will visit both full case pick locations and loose pick locations. The picker must be able to pick from any type of location including ones that require vehicle access. This type of picking is primarily used in low order volume distribution centers. With only one picker being responsible for each order, discrete order picking allows for order accuracy to easily be tracked back to the picker. However, this type of picking dictates that a picker may travel the entire warehouse to pick an order. This type of picking becomes less viable as the order volume increases since travel time begins to affect overall productivity.



Pick and pass order picking

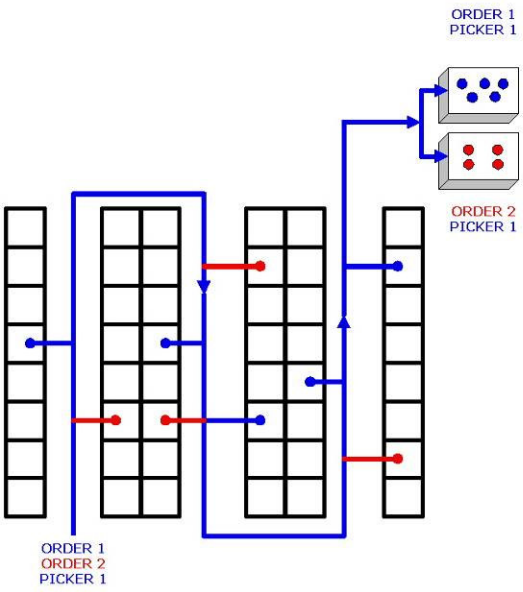
As the operational volume increases, pick and pass picking is generally the next type of picking used. In this process, pick locations are grouped. Generally full case locations are grouped separately from loose pick locations. If the size of facility and / or order volume is large enough, these areas are further grouped into different pick zones. This concept is employed to balance the workload between areas. When a picker is finished with all picks for the order or tote in their area, they pass it to the picker in the next area. This allows the total travel distance any one picker needs to walk to be minimized. This process also allows the picker to become more familiar with the products located in their group of locations. This familiarity can allow for greater productivity as the picker's time to search for a product becomes less of the total pick time. When properly managed, it can also balance the workload across all pickers. As with discrete order picking, pick errors can still be easily tracked back to a specific picker.



An advanced form of this pick process utilizes "soft" grouping of locations. This type of picking is also called wave picking or bucket brigade picking. Conventional pick and pass uses groups of locations that are fixed and predetermined. Soft grouping allows the order to be passed at any point. The first picker will begin to pick their order. When they are complete with their order they will go back and get an order from the picker behind them. That picker will in turn do the same thing but never jump the first picker. Each picker will continue to pick in this manner. This process tends to automatically level the workload and allows management to address peaks throughout the day by simply redirecting pickers to certain hard hit areas. It also allows each picker to pick at their own maximum rate as they do not have to wait for work to get into their fixed group of locations; they just go get a carton from the person in front of them. This pick method loses some of the product familiarity benefits of conventional pick and pass. It also makes tracking pick errors back to a specific picker more difficult.

Batch picking

Batch picking is fulfilling multiple orders at one time. This concept is very beneficial when there is commonality of SKUs on orders or groups of orders. The simplest form of batch picking is utilized in the full case area. When a group of orders is released for picking the full case requirements are determined for each SKU on each order. The full case requirements are then consolidated for each SKU in that group of orders. Then, when the pick work is released to the floor, the picker goes to the location for a SKU and picks all the cases for that group of orders. The cases for each SKU are then sorted after picking to their respective orders via a variety of potential methods.



For loose piece picking, there are two methods of batch picking. The primary difference between the two is when the product sort to the appropriate order occurs. The first method is similar to full case batch picking. Each item in the group of orders being batched together is picked and placed in a container. At the end of the picking process, the individual items are then sorted to their respective orders. This is often used in extremely high, loose pick volume environments that have very large packing areas to accommodate the volume of cartons.

The second method of loose piece batch picking is where the sort takes place during picking. A picker goes to the first location for the group of orders they are picking. They pick the entire quantity (for all orders) but then immediately sort the product to their respective tote or shipping carton.

Batch picking improves productivity due to reducing travel time. Since a picker makes one trip through a pick area to pick a number of orders; the overall travel distance a picker makes to pick that group of orders is reduced when compared to discrete order picking.

Pick to Carton

This concept can be used in conjunction with any of the previous processes. This process eliminates the need to pack product into the shipping carton at the end of the pick process. There needs to be some method to determine the appropriate carton. In environments where there are experienced pickers who are very familiar with the product, they can often determine the appropriate carton by examining the pick list. However, in most cases there needs to be a system to calculate the appropriate carton. The system needs to have accurate product dimensional information to be effective. The cartonization process also needs to consider such product characteristics as hazardous material, nesting factor and weight. This process also can reduce product damage due to less handling of the product. In high volume operations, the cartons should be pre-erected to keep the pick process efficient.

Technology

All of these processes can be accomplished via good old fashioned paper pick (and sort) lists. The use of technology can augment these processes to further improve accuracy and productivity. As the volume of a facility increases, the use of technology becomes more necessary.

RF and Barcode Scanning

Scanning the barcode at a location during picking is used to confirm that the picker is at the correct location. When the RF scanner is connected to a WMS, the picker can be directed to the next location and inventory can be decremented in real time. This also allows for very specific picker accuracy and productivity tracking.

Conveyor

As soon as the volume reaches a certain point, conveyor systems become necessary. In its simplest form, a conveyor system moves product from a picking area to the shipping dock. Complex systems route cartons and totes from pick zone to pick zone, allow for accumulation prior to work areas, and provide real time information and adjustments. An advanced use of conveyor systems is the ability to handle short picks automatically. Conveyor control systems can be updated real time to identify an alternate pick location for a short pick in a carton. The conveyor can then reroute the carton to satisfy the shortage from the alternate location.

Light Directed Picking

There are two forms of light directed picking assistance. Pick to light is the most familiar. When using pick to light technology in its most basic form, a picker begins an order in an area. Then, for that order, a lighted display at each location presents the quantity to pick. The picker presses a button on the display to confirm the pick. There is also an option to adjust the quantity being physically picked if the required quantity is not present.

The second form is put to light. This process is primarily used to support batch picking. After the items are batch picked, they are brought to a put to light area. Each location represents an order. When an item is scanned, a lighted display at each location presents the quantity to put in the location.

Light assisted picking offers ease of training, productivity and accuracy gains. It is straightforward to train a person to scan the order and then follow the instructions on the displays. The decrease in search time for a pick location with the use of lighted

displays is where productivity gains are made. The displays also increase the likelihood that the picker will pull the correct quantity from the correct location.

Voice Directed Picking

This form of picking has made great strides in the past five years. Many more facilities are now using this technology to support picking processes. The picker is directed to the next location. The picker verifies the location by reading a check digit at the location. The picker is then told the quantity to pick from the location and again verifies that they have pulled that quantity. The strides have been made in the system's ability in speech recognition accuracy and the ability to use voice in noisy warehouse environments. These systems also support multiple languages.

Similar to light assisted picking, gains are made in training, productivity and accuracy. Voice picking can also be implemented in areas where light assisted picking is cost prohibitive such as shelving and case picking areas. In addition, these systems also allow users to operate hands free, which further enhances productivity and operator safety.

Equipment Supported

In specific situations equipment can be used to support picking.

Carousels

Carousels have been used for many years. They are most effectively used in support of batch and put to light loose piece picking. Usually a group of carousels are used to process a batch of orders. The first carousel brings the product to the picker. The picker then is prompted to pull a specific quantity from a location in the carousel and then distribute that quantity to the batch of orders being processed. The next carousel meanwhile is bringing the next item to be picked to the picker. When setup properly, the picker goes to the next carousel after completing the pick from the first carousel without waiting. This round robin process continues until all the items are retrieved for the orders in the batch.

Carousels must be very closely managed in terms of cartons, pieces and lines throughput required. Since there are a limited number of pickers that can be used at a given

moment, the Achilles heel of carousels is getting too much work in a given group of carousels.

A-frames

A-frames are automated loose piece picking machines. The machine has two rows of vertical slots that form an A-shape over a belt conveyor running down the middle of the tunnel formed by these two rows. As orders are filled, one at a time, items are automatically dispensed from the bottom of selected slots onto the belt conveyor. They are then transported to the end of the tunnel where they fall into a tote. A-frames have limitations on the size and shape of product that can be dispensed from the slots. A-frames are also used in high velocity environments. They are very popular in the pharmaceutical and CD / DVD distribution industries. They offer high accuracy and pick rates.

Order Storage and Retrieval Systems (OSR)

Order storage and retrieval (OSR) systems can also be utilized in support of specific batch and put to light loose piece picking environments. OSRs are classic product to picker systems where items are stored in a dense rack area in totes. Orders are inducted into workstations. The OSR then determines the items required for that batch. A crane retrieves the tote(s) containing each item for that batch. The tote is brought to the picker. The picker is then instructed to retrieve the appropriate quantity and distribute that quantity via put to light displays to the specific orders in the batch. The tote is then put back into the OSR. These systems offer dense storage, product security and high accuracy and pick rates. However, they tend to be quite expensive.