Full Case Picking Basics

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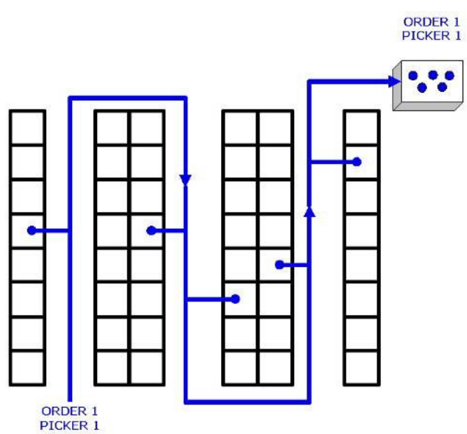
Picking is where the "rubber meets the road" in a distribution center. At the core of all order fulfillment is the actual gathering of the product the customer wants. Picking is usually the most labor intensive process in the distribution center and for this reason, management should always be analyzing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

Full case picking, like loose piece picking, is typically a combination of processes and supporting technologies. All of the strategies discussed below assume that the loose piece quantities are handled separately from the full case quantities. So, if an order requests 23 units of an item and the case quantity is 20, the order would be satisfied with one full 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

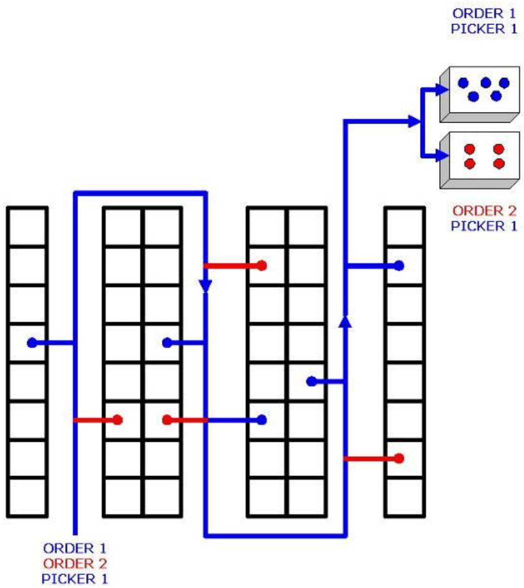
Discrete order picking

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 on a pallet or cart. 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.



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. 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 at the SKU level in that group of orders or wave. 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 for shipping.



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.

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. The appropriate level and mix of technology can be driven by many factors. An increase in the quantity of cases shipped is the most likely cause to drive the use of technology. Other factors that can accelerate the adoption of technology to support case picking are such things as weight of cases, employee turnover, increasing cost of labor, customer specific requirements, ASN, RFID, QC, customer confirmation requirements, serial # capture, accuracy and need for case sequencing on shipping pallets.

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. This type of scanning is also crucial when supporting serialization or lot control requirements.

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. 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 or location number 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 improvements 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.

Gains are made in training, productivity and accuracy. In addition, these systems also allow users to operate hands free, which further enhances productivity and operator safety.

Conveyor

As soon as the number of cases shipped reaches a certain point, conveyor systems become necessary. Conveyor can be the sole support technology or part of a larger application of technology.

Pick to Belt

In its simplest form, a conveyor system simply moves product from a picking area to the shipping dock or sorter. A transport conveyor is run down the middle of the pick locations. A picker grabs a case from the location, manually labels it if required and places it on the conveyor. This type of conveyor is most often used in conjunction with batch picking processes. This technology eliminates the need for transporting product manually.

Shipping Sortation

When using batch picking and /or pick to belt processes many companies utilize shipping sortation to finalize the picking process. A warehouse management system (WMS) or warehouse control system (WCS) knows the final dock destination for the cartons and directs the carton based on that information. For cartons being shipped via small parcel the sorter will divert to a lane that leads directly into a truck or a dock spot for that carrier. For carriers that are loaded onto pallets prior to being loaded onto the trailer the sorter diverts to a lane for that carrier.

Equipment Supported

In specific situations equipment can be used to support picking.

Automated Guided Vehicles (AGVs)

Automated guided vehicles have been used in manufacturing for many years. They have historically been used where paths are very well defined. However, advances in machine vision and software now allow these machines to provide very flexible functionality. The big advantage of these types of systems is the reduction in worker travel time. AGVs fall into two broad categories: picker to product and product to picker.

In the picker to product category, a vehicle or a group of vehicles follow a picker as they are picking full cases. When it is a single vehicle, the picker is placing picked cases on the vehicle. When the vehicle is filled or the picker is done picking, the vehicle can then deliver the pallet of product to either another pick area or a case induction point. When using multiple vehicles, the picker can sort the picked cases to the appropriate vehicle. The individual vehicles represent a shipping pallet for a customer or group of customers. When the vehicle is full or the picker is done, the vehicle can then move to the next pick area or directly to a dock spot. Software can dispatch a replacement vehicle whenever a vehicle is done.

In the product to picker environment, vehicles pick up pallets from a pallet storage area. The vehicle then travels to static picking stations where pickers pull product off the vehicle. The vehicle will then continue on to other pick stations or back to the pallet storage area. The product being picked off vehicles can be either placed onto a conveyor or pallets that can be transported to the next process by either more AGVs or conventional fork trucks.

Automated Storage and Retrieval Systems (AS/RS)

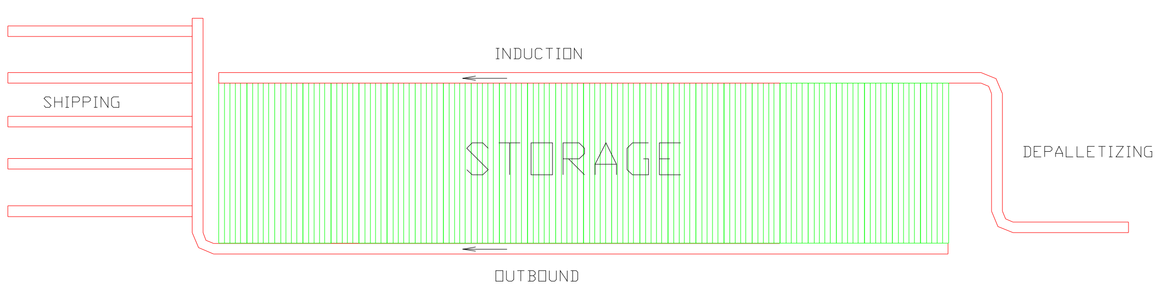
Automated storage and retrieval systems (AS/RS) systems can also be utilized in support of specific batch and put to light picking environments. AS/RS machines are classic product to picker systems where items are stored in dense rack areas. Orders are inducted into workstations. The AS/RS then determines the items required for that batch. A crane retrieves each item for that batch. The product 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 or directly to a conveyor system. The remaining product is then put back into the AS/RS. These systems offer dense storage, product security, improved productivity and high accuracy. However, they tend to be expensive.

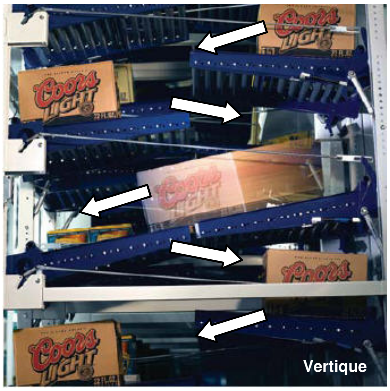
There is also a new breed of AS/RS where the operator is taken to the product in a cage. Given the advances in controls and equipment, the travel time between locations is dramatically reduced with this technology.

Conveyor Based Systems

These systems take standard conveyor components and configure them in a way to support more automated case picking. One variety can be seen as automated case flow rack. In this type of picking, product is brought to a depalletizing station. The cases are then either manually or automatically singulated onto a conveyor. The conveyor then transports the cases to the appropriate lane and the sorts the case into the lane. When customer orders require product, the system releases the appropriate amount of cases from each lane. The outbound conveyor then transports the product to the shipping area where it is sorted to the appropriate outbound pallet. The controls can be set to accommodate the release of cases to support sequencing needs for outbound pallets.

Additional capacity can be added by simply extending the layout or adding an additional module of lanes above the first module. These are costly systems but use proven technology and processes to support high picking volumes.





There are also vertical storage versions of these systems that work very similar to the horizontal system just described. They rely on a top loaded storage area. The storage is a series of "flippers" that cascade product (see picture to left) down to store and ultimately release the case for shipment. The height of these towers can be extended to provide additional storage. The layout may also require a larger footprint to allow fragile product to be cascaded gently enough to prevent product damage. They realize the same kind of benefits as the horizontal systems.

Gantry Systems

This final type of system uses an older technology in a brand new way. Gantry cranes have been used in manufacturing for a long time to transport large and unwieldy product efficiently. This system uses gantry cranes with vacuum heads to handle much smaller product in the distribution environment.

The process begins in a similar fashion to the conveyor based systems. Product is brought to an automated or manual depalletizing station. The product is then stored in a very dense arrangement under a gantry crane. Then, when customer outbound orders are received, the system retrieves the appropriate SKU and quantity of cases from the storage area. The cases are then delivered via the gantry cranes to outbound conveyors. These conveyors transport the product to a shipping area for final placement on a shipping pallet or for direct trailer loading. The system can support case sequencing for outbound shipments.

Systems can start as small as one crane and expand with additional cranes in the future. These systems also offer highly automated picking and small footprints.

The landscape for ways to pick full cases has dramatically changed. One of the biggest factors in determining your success with implementing any of these concepts is to have a complete understanding of what your case picking environment looks like. This includes such obvious things as detailed ABC movement, seasonality and current operational costs. But the analysis should also include hazmat rules, sequencing needs, case dimensions, labor turnover rates, future unionization potential and workers comp costs associated with case picking. Your ideal system can utilize one or a combination of these concepts based on that assessment. Depending on the level of technology employed you may also need to address change management concerns, as some of these options may be very different from current processes. Begin your pursuit of automated case picking soon, as the best in class companies already have.