Cluster Picking in a Pick-To-Light Environment

Increase Productivity & Add Efficiency to a Picking Operation

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Introduction & Overview

As long as pick-to-light systems have been in the market place, there have been incremental changes in pick-to-light hardware. Advancements in technology have improved the hardware infrastructure and data distribution devices (serial, ribbon cable, bus bars, & wireless), allowing for more speed, capacity, and stability. This has been done by incorporating newer technologies and chipsets to compliment the hardware displays that are exposed to the picker. But in the end, a pick-to-light system is a visual electronic display designed to get the pickers attention quickly for increased picking speed. The hardware does not have to change drastically since each application is driven by software. The software will address the needs for each specific picking, putting, or sorting application. Software is the glue that allows companies to accomplish their specific goals and needs within their distribution center.

The process of distribution is essentially the same for all vendors in that the goal is to find the most efficient and cost effective methods to move their product. However, each vendor faces certain requirements that may be determined by their customer base or their product type (or both) which in turn, determines additional requirements and steps to meet their process needs. Software solutions almost always fill this last gap.

This paper will illustrate one such example where a software solution improved the process and allowed for greater density of picks, reduced walking, and increased productivity.

Cluster Picking

This paper is about a software change to a current low-volume pick-to-light operation where the picker can scan multiple cartons to illuminate more picks in lieu of picks for a single carton. In traditional pick-to-light the cartons/orders are processed one at a time from beginning to end in each bay. The picker would walk to each illuminated light, pick the required items for a single carton and place the items in the carton before moving on to the next carton. This would result in walking to the same zone multiple times, covering the same ground over and over, to get the pick task accomplished. This brought about the idea of Cluster Picking to help increase density and productivity by picking multiple cartons, effectively at the same time. Imagine you needed to buy two gallons of milk – one for you and one for your neighbor. Would you buy one gallon, bring it home, and then return to the store to buy the gallon for your neighbor? In

effect, Cluster Picking combines trips to the store, and through complex, yet easy-to-use software, ensures the right items get delivered to the right location.

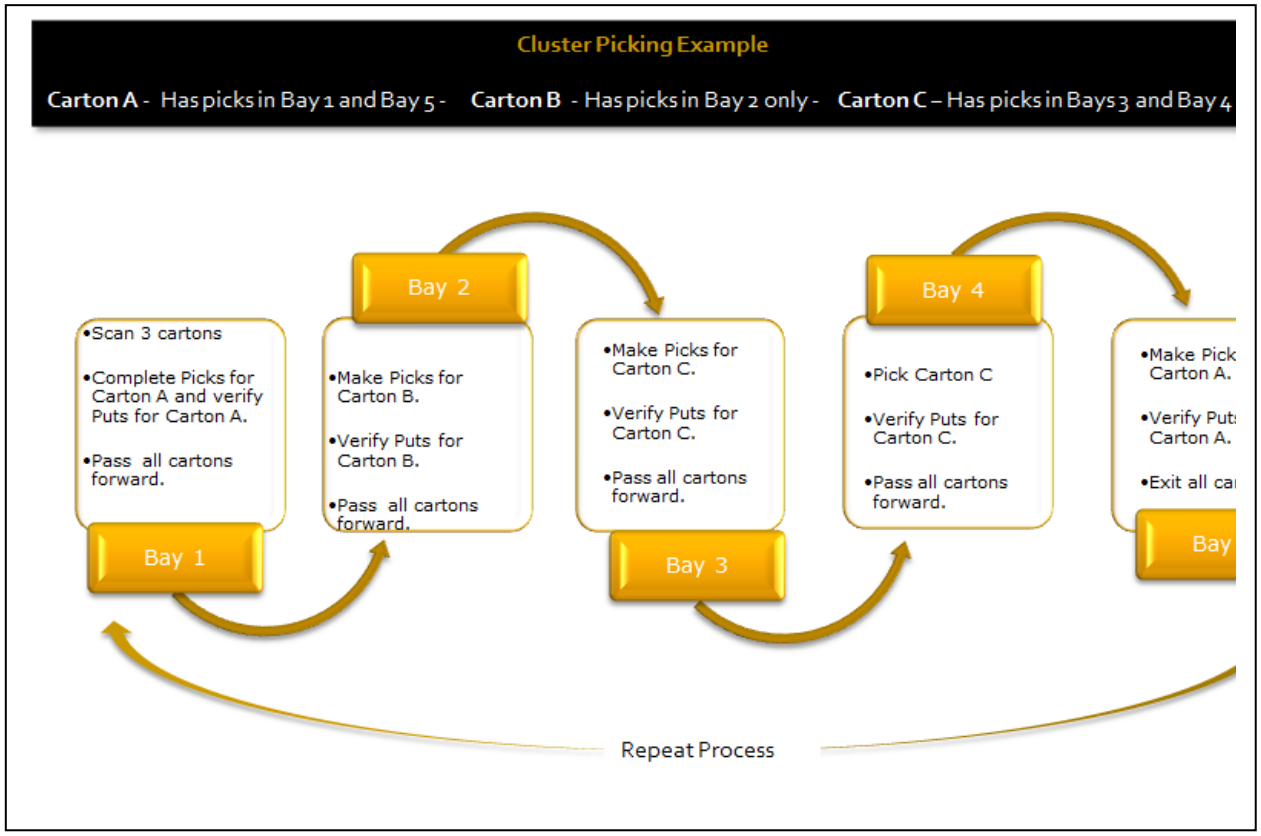
The version of Cluster Picking discussed here came about when a major national retailer was looking for a gain in productivity without changing equipment. The only changes required were software enhancements and training of pickers for the new process. The equipment used in this discussion is a traditional Spectrum Pick-To-Light system using Motorola Wrist Wearable guns to scan cartons.

After conducting some preliminary tests, it was determined that implementing Cluster Picking would produce gains of approximately 10% or better for the facility. In order to fully implement Cluster Picking correctly, the software changes would have to allow the picker to scan multiple cartons (instead of one at a time), make the pick for one carton at a time by bay, lockout the other items after a pick is made forcing the picker to place the items just picked into the carton, and then to verify the 'put' by scanning the carton. The results provided better quality and increased productivity.

After the desired software changes were done, this concept was put into production with approximately thirty pickers. The process is described below.

Description of Cluster Picking

In this case, Cluster Picking is the ability to scan or pick multiple cartons and display the picks by bay simultaneously allowing the pick-to-light hardware to show all of the items possible for all scanned cartons at once. The only caveat is if two cartons have a pick in the same bay, the picks will be queued up behind the previous order or carton displayed. The picker walks the 'train' of cartons from bay-to-bay to complete the picks as required. Below is a simple graphical representation of the process.



Process:

The process starts with a picker signing into a "Work Area (a number of bays where there are outbound cartons in front of the picker to be processed and shipped to the customer). The picker will now create a cluster or 'train' of cartons. The picker scans the desired cartons and places a clip on the first carton scanned and another clip on the last carton scanned. This identifies the 'train' and keeps it segregated in the event more cartons come into the work area. This also maintains the carton sequence numbers based on the scan sequence.

1. As each carton is scanned, the lighted display indicates the last few digits of the carton number, the scan sequence number for the carton and the lights illuminate for the picks within the "Work Area". i.e. If it was the third carton scanned, the sequence number '03' will be displayed on the zone controller along with the rightmost digits of the carton number.

2. Bays that have no picks for the cartons scanned will display 'No Picks' on the zone controller.

3. If carton 03 has picks where a previously scanned carton (carton 01) is displayed, it will be queued up behind carton 01.

4. Once all of the cartons are scanned, the picker travels to the closest bay and completes the picks (by bay) for the carton displayed on the zone display.

5. The picker then places the picked items into the correct carton as shown by the scanned sequence number. This avoids looking for a carton id and speeds up the picking process.

6. The picker scans the carton to verify it is the correct one and can only continue when the system verifies that the scan was successful. If the wrong carton is scanned, an error beep will alert the picker to the problem.

7. The picker then looks to see if there are any other cartons and/or picks displayed for that bay. If not, the picker moves the carton 'train' to the next bay in their zone and continues picking.

8. Once all of the cartons in that 'train' have been processed, the user can exit all of the cartons. The cartons are kept together to maintain the scan sequence for identifying the 'puts' for each carton.

9. The software also automates some of the Pick-To-Light processes that previously required a manual press thereby eliminating some steps but allowing for full scan verification to help reduce picking and placement errors.

10. Once done with the current 'train', the picker pushes those cartons onto the power takeaway conveyor and starts a new carton 'train'.

Cluster Picking - From Idea to Production

After the idea was conceived and tested, creating the software to allow the facility to implement this task was done. All of the necessary testing and implementation processes had to be approved before using this in production.

Once the software was implemented, it was enabled piecemeal, by individual picker, only after he was trained and went through a learning curve to get adjusted to the new process. The process was monitored very closely by supervisors. After several weeks of trials and getting used to the process, Cluster Picking as described here proved to produce an increase in productivity by approximately 18%. In addition, there were also improvements in pick accuracy to go along with this gain.

Conclusion

As individuals, we use technology every day that employs some form of custom software and often take it for granted. Everything from hand held phones to WMS systems work because some level of software customization and solutions were designed and carefully deployed. As integrators, this is a powerful tool and one that can be used to solve a number of different operational and process challenges. And when it is done with some thought and care, it can result in significant changes and operational improvements for the end user. The key is to make it meaningful and useful.

Acknowledgements

The software discussed in this paper was designed, created, and installed by the staff at Wynright Selection in Manchester, NH. This is based on a real project that is working today and producing actual results.