

5 Ways To Increase Profit With Simple Picking Automation

White Paper

Increase your operation's profitability through improvements in inventory accessibility, floor space, time, improved ergonomics and better accuracy



Introduction

Investing in automated storage and retrieval systems—such as horizontal carousels, vertical carousels and vertical lift modules (VLMs)—optimizes manual picking processes, which leads to increased profits. That’s because, by implementing automation, multiple areas of a manufacturing or distribution facility will benefit from savings in inventory accessibility, floor space, time, improved ergonomics and better accuracy.

How will your facility, and your bottom line, be impacted? To justify your cost for low risk picking automation, consider five key areas of potential profit in your current warehousing and order fulfillment operations:

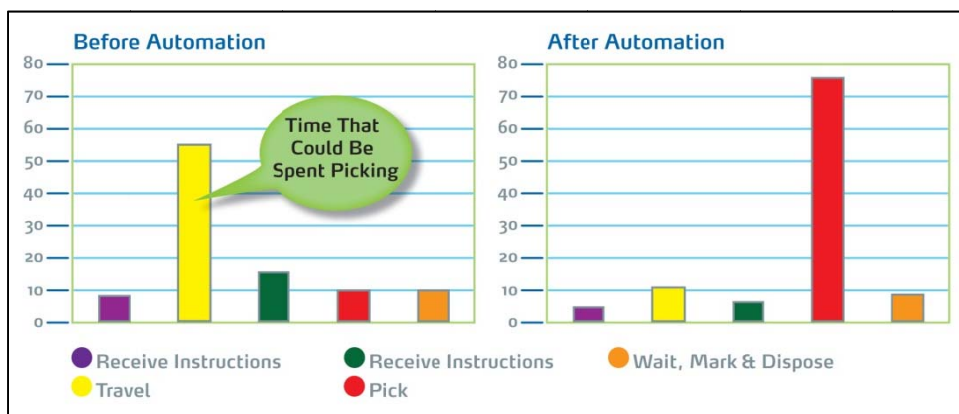
1. How much labor does your picking operation require?
2. What is the value of additional floor space?
3. Are picking operations fast enough to meet customer demand?
4. What is the cost of an absent, or injured, worker?
5. How much does a picking mistake cost?

This white paper outlines the five areas of improvement an investment in automated storage and picking systems will produce, yielding increased profits for your facility.

Possible Area of Profit # 1: Reduced Labor Costs

How much labor does your picking operation require?

Picking involves much more than grabbing an item off a static storage rack or shelf. In the typical manual distribution center, picking means an operator receives a paper list of instructions about what to pick and where, travels to the correct storage location, refers to the paper pick list to determine the number of items required from that pick face, picks the items, confirms the pick by marking the paper, then delivers the items for packing.



Because distribution centers are packed with pallets, cases and pieces, order fulfillment is frequently acknowledged as, “the most labor-intensive and costly activity for almost every warehouse, where the

cost of order picking is estimated to be as much as 55% of the total warehouse operating expense.”¹ That’s because travel in a conventional, manual fulfillment operation can account for as much as 60-65%² of a picker’s time.

Implementing one or more automated horizontal carousel, vertical carousel or VLM lets your order fulfillment staff work smarter, not harder. That’s because these solutions present stored items directly to an operator. The “goods to person” method eliminates time spent walking from one pick location to another within a warehouse.

These automated solutions are equipped with indicator lights that illuminate the item’s location and pick quantity required. This cuts the time spent searching for a specific stock keeping unit (SKU) upon arrival at the pick face. The result is more time to spend picking.

Further, because the automated solution interfaces with both inventory management and order management software, the picks are sequenced so the machine’s movement is optimized to match the required picks. This means all items can be picked in one rotation, or cycle, of the machine’s storage bins or trays, further maximizing pick time.

All three of these functions can optimize an existing labor force, increasing productivity from 200% to 600%. Because an automated solution enables just one worker to handle the picking assignments of multiple operators, as many as two-thirds of a facility’s workforce can be reassigned to other, non-picking tasks—without a loss of throughput. Alternately, implementing these automated storage solutions can compensate for scarce or unreliable labor.

Facilities implementing an automated solution to increase picking capacities most often choose to maintain current labor levels. Increased picking capabilities enable the consolidation of multiple picking operations, meet increasing order demands and accommodate the addition of more SKUs to inventory.

Possible Area of Profit # 2: Reduced Floor Space Costs

What is the value of additional floor space?

Automated storage equipment opens up your facility’s floor space by utilizing your building’s height to store inventory overhead. This eliminates both the footprint required by static shelving and pallet rack, as well as the aisles required to access them. Further, automated systems utilize tightly configured totes, bins, dividers, drawers and specialty holders. These components separate and organize the maximum number of stored items possible in each of the system’s trays or bins.

To further maximize every square inch of storage space within the automated system, inventory management software is integrated. Programmed to dynamically manage the cube space within the automated storage system, the software keeps shelves holding the inventory as tightly compressed as possible. Because of this capability, automated storage systems eliminate the empty reach-in space

¹ Martin Murray, “Order Picking in the Warehouse,” About.com Logistics and Supply Chain Guide, accessed January 5, 2014, http://logistics.about.com/od/operationalsupplychain/a/order_pick.htm

² Lee Rector, “Warehouse Slotting,” Toolbox.com SCM Blogs, accessed January 5, 2014, <http://it.toolbox.com/blogs/warehouse-planning/warehouse-slotting-6655>

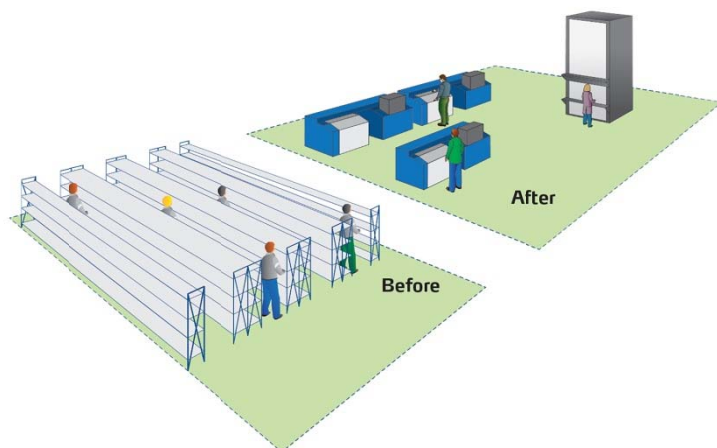
required by shelving. As a result, the equivalent amount of inventory held in 120 bays of static shelving can be condensed as shown by Table 1.

<i>TABLE 1: System Comparison - Floor Space & Storage Density</i>		
System	Wasted Floor Space (Based on 20' Ceiling)	Wasted Unit Density
Shelving	70%	50 - 70%
Drawers	80%	40 - 60%
Flow Rack	70%	60%
Pallet Rack	70%	60%
Horizontal Carousel	30%	25%
Vertical Carousel	10%	20%
VLM	10%	10%

The value of the freed-up floor space depends on its new use. Open space can be used to store larger volumes of the same SKUs, or accommodate expanded inventory of new SKUs. Alternatively, the opened-up areas can be repurposed for other, revenue generating processes. Additional light manufacturing for customization, kitting of related items, or enhanced quality control processes are value-added activities that can positively impact the bottom line.

The warehouse has ceased to be a box into which material is shipped and pulled out of. Rather, the warehouse has become an extension of the production finishing operation. Special allowances of space and material flow paths need to be identified and allocated to accommodate operations often referred to as value-added services such as:

- A. Pricing and labeling
- B. Repackaging
- C. Pack and hold
- D. WIP [work-in-process] storage
- E. Customer configured pallets³



³ James A. Tompkins, Jerry D. Smith. "The Warehouse Management Handbook," accessed January 3, 2014, books.google.com/books?isbn=0965865916

Possible Area of Profit # 3: Reduced Picking Costs

Are picking operations fast enough to meet customer demand?

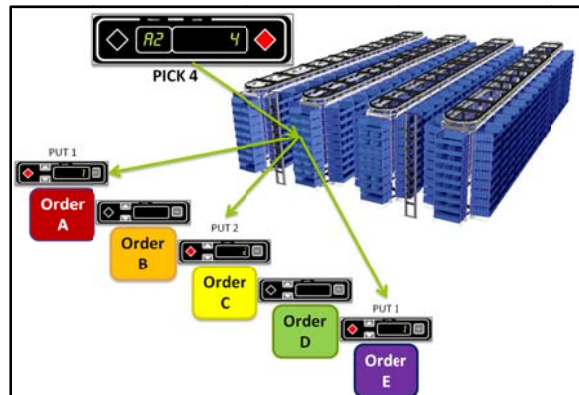
Operators picking manually are often restricted to filling one order at a time. Limited by paper pick lists and a lack of picking optimization software, they may visit the same popular SKU pick faces multiple times in a day. For a facility with static shelving or pallet rack, this translates into pick rates of approximately 50 lines per hour.

Alternately, an automated storage and picking solution facilitates batch picking. The process groups orders with a common item, or items, together.⁴ Multiples of the same item are picked, then sorted to their appropriate orders for shipping at a nearby workstation. This means multiple orders can be filled at one time—up to 750 lines per hour, as shown in Table 2.

TABLE 2: System Comparison - Picking Rates

System	Bag & Tag (lines per hour)	Pick & Toss (lines per hour)
Shelving	10 – 35	30 – 75
Drawers	10 – 35	30 – 50
Flow Rack	25 – 45	75 – 150
Pallet Rack	35 – 60	95 – 200
Horizontal Carousel	75 – 200	225 – 750
Vertical Carousel	50 – 175	150 – 225
VLM	50 – 150	125 –175

Because horizontal carousels, vertical carousels and VLMs utilize integrated inventory management software, batch picks can be completed in a single rotation, or cycle, of the unit. Batch picking with an automated system eliminates bottlenecks associated with waiting for one last item to complete an order or finish a manufacturing process. Should a “hot pick” crop up, the automated systems easily accommodate a pause in the batch picking sequence, allowing a non-batched order to be fulfilled on demand to prevent additional holdups.



⁴ “Batch Pick,” MHI.org Glossary, accessed January 4, 2014, www.mhi.org/glossary?q=batch&pb=1&fq=&sort=score+desc

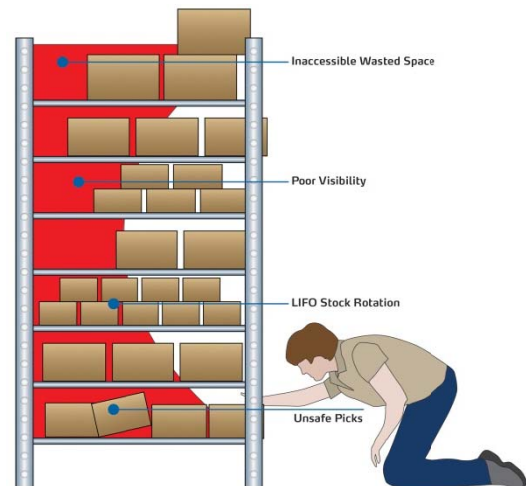
Batch picking can also be used to prioritize orders by importance or by inventory availability. This enables customer order cut-off times to be extended, increasing a company's competitiveness and customer satisfaction.

Possible Area of Profit # 4: Reduced Worker Absences & Injury Costs

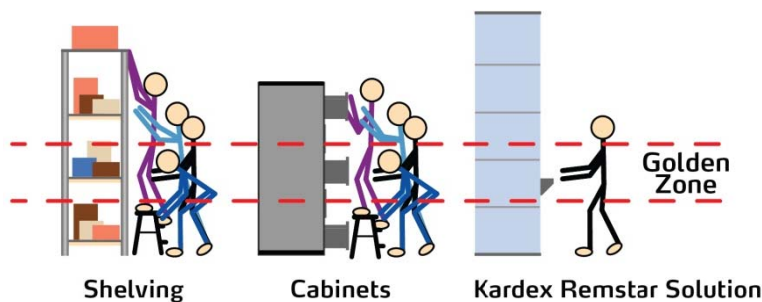
What is the cost of an absent, or injured, worker?

Manual picking operations utilizing shelving or pallet rack for item storage can require a picker to reach, bend, lift, twist, stretch, push or pull to retrieve inventory. The storage units are characterized by:

- Wasted space due to inaccessibility
- Poor visibility of products in the back
- Last-in/first-out (LIFO) stock rotation
- Unsafe picks due to storage position (height or distance)



To avoid potential injury, it is often recommended that workers pick items from the “golden zone,” which extends from the belt height to the shoulder height of the average individual. Items within this zone can be grabbed or moved without either stretching or bending.”⁵



In contrast, automated storage systems present stored items at the proper ergonomic, golden zone work height. This creates a safe working environment that minimizes injuries from bending, reaching and stretching. Further, walking and climbing are no longer necessary. Not only does this reduce fatigue, but also the chance of worker injury is substantially lessened. In turn, absenteeism, insurance premiums and claims for worker's compensation will be reduced.

To further safeguard workers, a variety of safety systems are integrated in the automated systems. Light curtains, emergency stop buttons, presence-detecting safety mats, software-enabled access, automatic shutter doors and photo eye sensors prevent pinch points and entrapments while a worker is interfacing with the machine.

⁵ Kenneth B. Ackerman, Art Van Bodegraven, “Fundamentals of Supply Chain Management: An Essential Guide for 21st Century Managers,” accessed January 3, 2014, books.google.com/books?isbn=0979597609

Possible Area of Profit # 5: Mispick Elimination

How much does a picking mistake cost?

In October 2012, a survey of 250 supply chain and distribution managers across the United States, United Kingdom, France and Germany—conducted by research company Vanson Bourne—found that “distribution centers are losing an average of nearly \$390,000 per year due to mispicks.”⁶

The cost of a picking mistake includes not only the cost of the item, but also “the expenses associated with shipping the item back, processing it upon receipt, returning it to stock, and loss of customer satisfaction.”⁷ Further time is lost in correcting the mistake by picking, packing and shipping the correct item back to the customer.

An estimated 35% of facilities experience ongoing mispick rates of 1% or more. Although 1% sounds like a slim margin for improvement, it adds up quickly, as illustrated here (and in Table 3):

A facility picking 250 lines per hour, averaging three SKUs per order, and running one 8-hour shift per day picks 6,000 items daily. If 1% of those picks are incorrect, that translates to 60 mispicks. The cost of each mispick... can average as much as \$100 apiece, or more. Therefore, 60 mispicks equal \$6,000 in lost revenue a day.⁸

TABLE 3: Calculating the Cost of a Mispick			
	Example 1	Example 2	Calculate Your Own
Lines per Hour	65	250	
Average SKUs/Order	x 3	x 3	
SKUs Picked per Hour	= 195	= 750	
One 8 Hour Shift	x 8	x 8	
SKUs Picked per Day	= 1,560	= 6,000	
Mispick Rate	x 1%	x 1%	
Mispicks per Day	= 15	= 60	
Average Cost of a Mispick	x \$100	x \$100	
Total Lost Revenue per Day	= \$1,500	= \$6,000	
Working Days per Year	x 260	x 260	
Total Lost Revenue per Year	= \$390,000	= \$1,560,000	

Because automated storage systems incorporate advanced picking and real time inventory tracking technologies—such as light-directed indicators that pinpoint the precise SKU location and quantity to be picked—picking accuracy increases up to 99.9%. The storage system mitigates human error and produces better inventory control. Not only will this contribute to a dramatic reduction in picking

⁶ “Mis-Picks Cost Businesses Nearly \$390,000 Per Year According to Intermecc Study,” accessed January 4, 2014, www.intermec.com/about_us/newsroom/press_releases/2013-01-21-Mis-Picks-Cost-Businesses.aspx

⁷ Hannah Kain, “Simple Fulfillment Errors Will Affect The Bottom Line,” accessed January 5, 2014, <http://www.alom.com/resources/focus.asp?file=002.inc>.

⁸ Ibid.

mistakes, but it will result in tremendous cost savings, as shown in Table 4. Further, customer satisfaction will improve, likely leading to an increase in repeat purchases.

TABLE 4: Reducing the Cost of a Mispick

	Example 1	Example 2	Calculate Your Own
Lines per Hour	65	250	
Average SKUs/Order	x 3	x 3	
SKUs Picked per Hour	= 195	= 750	
One 8 Hour Shift	x 8	x 8	
SKUs Picked per Day	= 1,560	= 6,000	
Mispick Rate	x 0.1%	x 0.1%	x 0.1%
Mispicks per Day	= 1.5	= 6	
Average Cost of a Mispick	x \$100	x \$100	
Total Lost Revenue per Day	= \$150	= \$600	
Working Days per Year	x 260	x 260	
Total Lost Revenue per Year	= \$39,000	= \$156,000	
Savings per Year	90% Cost Savings \$351,000	90% Cost Savings \$1,404,000	

To learn more about how automated storage systems can optimize your picking for increased profits—and to compare that against the cost of doing nothing—contact your Kardex Remstar representative today.

About Kardex Remstar

Kardex Remstar, LLC, a company of the Kardex Group, is a leading provider of automated storage and retrieval systems for manufacturing, distribution, warehousing, offices and institutions. For information about the company’s dynamic storage solutions, call 800-639-5805 or visit www.KardexRemstar.com.