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May The Labor Force Be With You

White Paper

As the human workforce ages and shrinks, automated storage and retrieval systems can help to maximize warehouse associates' productivity levels while reducing overall labor requirements.

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Introduction

Not long ago (between the end of World War II in 1946 and 1964), and in this very galaxy (the U.S. to be exact), 76 million babies were born—the largest generation in American history—the baby boomer generation.

Their numbers had a dramatic impact on the domestic economy, raising home ownership, consumer spending and employment rates to unprecedented heights. As baby boomers retire, however, so does the available workforce. The U.S. labor force participation rate (the percent of the adult population that is either employed or seeking a job) has been steadily declining since the late 1990s, and "hit a 36-year low [in April 2014.]…[W]hile there are multiple reasons for the decline, the aging of the baby boom generation is a dominant factor. In 2003, 82 percent of boomers were part of the labor force; a decade later, that number has declined to 66 percent, and it will only continue to fall."[1]

The steep decline in available workers poses a challenge for employers, including those throughout the supply chain. With a declining overall U.S. population, there simply aren't as many individuals as needed to fill job openings in manufacturing, material handling and logistics, as *The U.S. Roadmap for Material Handling & Logistics* noted:

> …the retirement of baby boomers will substantially dampen growth in the labor force for the next decade. Although not unique to material handling and logistics, this issue is especially pressing because so many current workers are close to retirement.[2]

Further, as retiring baby boomers take their unique skills with them, replacing them with new workers of equivalent skill sets has proven difficult. A 2011 survey of manufacturers found that 67% report a severe shortage of qualified workers—a trend that 56% of respondents expect to worsen over the next decade. The same survey estimated 5% of American manufacturing jobs (600,000 positions) remain open due to a lack of qualified candidates.[3]

To compensate for these two workforce challenges—fewer workers and the skills gap—more companies are investing in automated solutions. These technologies help to both reduce the physical demands of warehouse activities, as well as streamline and organize the required tasks for better productivity with fewer workers.

This white paper explains how automated storage and retrieval systems can help to maximize labor efficiency to support throughput in operations with workforce limitations. These systems aren't the futuristic technical marvels found in the movies, but instead are real solutions available today.

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[1] Ben Casselman, "What Baby Boomers' Retirement Means for the U.S. Economy," FiveThirtyEight Economics, http://fivethirtyeight.com/features/what-baby-boomers-retirement-means-for-the-u-s-economy/, accessed December 12, 2014.
[2] Kevin Gue, ed., "The U.S. Roadmap for Material Handling & Logistics," http://www.MHLRoadmap.org, 54.
[3] Deloitte and The Manufacturing Institute, "Boiling point? The skills gap in U.S. manufacturing," pg. 1, 2011.

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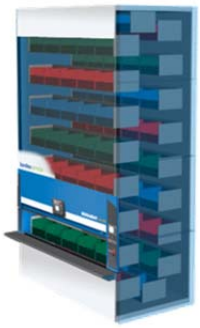
The Solutions: An Overview

Automated storage and retrieval systems provide highly dense storage in an extremely compact footprint. Three primary types include:

Horizontal Carousels – Consist of bins mounted on an oval track that rotate horizontally to deliver storage locations to an operator. These units eliminate unproductive travel and search time by delivering the product to an operator.[4]

Vertical Carousels – Comprised of a series of shelves that rotate around a track—similar to a Ferris wheel—these automated storage and retrieval systems deliver stored items safely and quickly to an ergonomically positioned work counter at the operator's command, eliminating walk and item search time.[5]



Vertical Lift Modules (VLMs) – An enclosed automated storage and retrieval system that consists of two columns of trays with an inserter/extractor in the center. The inserter/extractor automatically locates and retrieves stored trays from both columns and presents them to the operator at a waist-high access window, eliminating travel and SKU search time.[6]

[4] MHI, Order Fulfillment Solutions Industry Group, "Horizontal Carousels," http://www.mhi.org/ofs/solutions-guide/horizontal-carousels, accessed December 5, 2014.
[5] MHI, Order Fulfillment Solutions Industry Group, "Vertical Carousels," http://www.mhi.org/ofs/solutions-guide/vertical-carousels, accessed December 5, 2014.
[6] MHI, Order Fulfillment Solutions Industry Group, "Vertical Lift Modules," http://www.mhi.org/ofs/solutions-guide/vertical-lift, accessed December 5, 2014.

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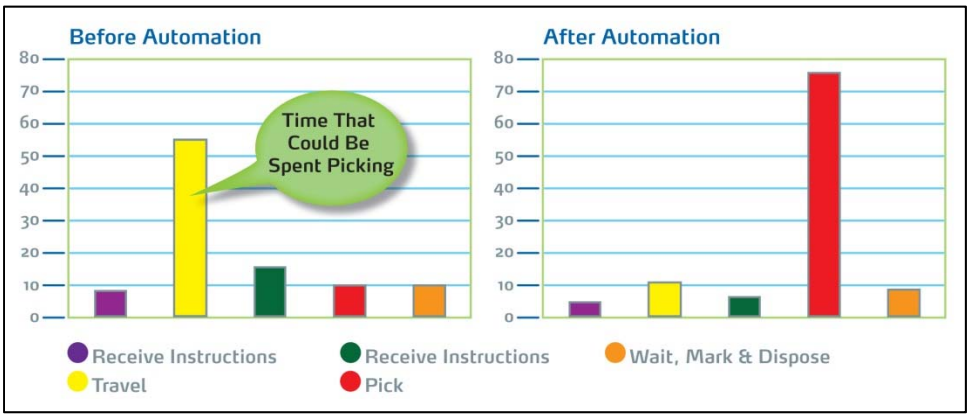
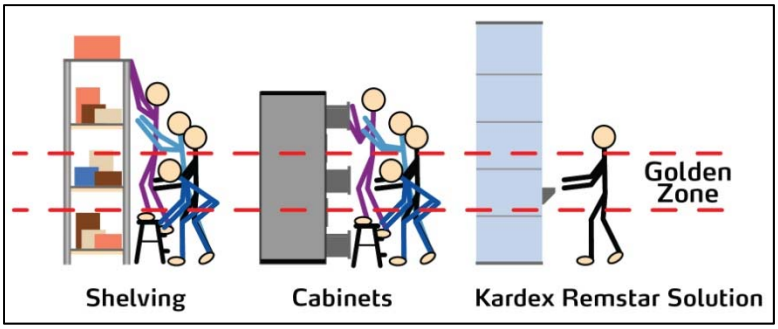
Maximizing Labor Efficiency

Automated storage and retrieval systems maximize associates' time and productivity when filling orders in a variety of ways. Among them:

Elimination of travel time. Travel to pick faces in a conventional, manual fulfillment operation can account for as much as 60-65%[7] of a picker's time. Alternately, automated storage and retrieval systems present stored items directly to an operator via the "goods to person" methodology. This eliminates time spent walking from one pick location to another within a warehouse. A pod (or group) of automated storage and retrieval machines can be picked from by a single operator, dramatically increasing picking speed and accuracy with significantly lower labor requirements.



Improved Ergonomics. Manual picking operations require a great deal of physical effort on the part of associates: bending down to retrieve an item stored low or stretching up to grab an item stored high, for example. Picking items from drawers or shelves might also require lifting, reaching, walking, stretching, bending, pushing, pulling, twisting, spinning, stooping and climbing on ladders or stepstools. Conversely, every item stored in an automated storage and retrieval system is delivered to the operator at the correct ergonomic work height, called the "Golden Zone" (waist-high). This substantially reduces the chance of worker injury and its associated absenteeism, insurance premiums and claims for worker's compensation.



[7] Lee Rector, "Warehouse Slotting," Toolbox.com SCM Blogs, http://it.toolbox.com/blogs/warehouse-planning/warehouse-slotting-6655, accessed December 5, 2014.

Reduction of search time. Once an associate arrives at a pick face, time must be spent searching the racks or shelves visually to locate the correct item, then verify the stock keeping unit (SKU) and required quantity. Conversely, automated storage and retrieval solutions are equipped with light-directed systems that highlight the item's location and quantity required for picking (or replenishment), eliminating search time and boosting accuracy.

Searching standard shelving

Light directed picking

Error prevention. Because manual picking operations rely solely on the picker's decisions and actions to fill orders correctly, the opportunity for human error is significant. Resulting costly mispicks can be attributed to the wrong item or quantity being chosen, omissions and oversights, or selection of damaged or mis-labeled items.[8] In addition to indicator lights, automated storage and retrieval systems feature integrated message centers that communicate pick information to the operator. Together, these systems indicate the precise location within the carrier of the item to be picked, display the part number or description, and specify the required quantity. They can also show a photo image of the required item, giving an operator clear visual cues that can help to verify the correct item has been picked.

Pick to Light TIC (Transaction Information Center)

Optimized picks. In manual order fulfillment operations, pickers often just fill one order at a time, achieving pick rates of approximately 50 lines per hour. For faster throughput, automated storage and retrieval systems utilize both inventory management and order management software, sequencing picks so all items are picked in one rotation, or cycle, of the machine's storage bins or trays.

[8] Tobias Rammelmeier, et al. "Active Prevention of Picking Errors by Employing Pick-by-Vision," http://www.fml.mw.tum.de/fml/images/Publikationen/2011-06%20Active%20prevention%20of%20picking%20errors%20by%20employing%20Pick-by-Vision.pdf, accessed December 4, 2014.

They can also leverage batch picking, grouping orders with a common item or items together for simultaneous selection. Multiples of the same items are picked then delivered to a nearby workstation for sorting into appropriate orders. Because multiple orders can be filled at the same time, batch picking can increase throughput by as much as 200%—up to 600 lines per hour.

Fast Training. Facilities that utilize seasonal hiring to accommodate spikes in customer demand experience considerably shorter training time with automated storage and retrieval systems, largely due to the indicator lights and integrated message centers. A temporary worker unfamiliar with a facility's layout can be stationed at an automated storage and retrieval system for highly productive picking after just a brief introduction to the equipment.

Conclusion

All 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 a scarce and declining labor pool—a trend that will only progress as baby boomers continue to retire, and take their valuable skills with them. By implementing one or more automated storage and retrieval systems, an operation can maximize the productivity and efficiency of its existing labor force—particularly skilled associates—by minimizing the amount of time it takes to pick orders.

Ready for the (labor) force to be with you? Learn more about implementing an automated storage and retrieval system from your Kardex Remstar representative today.

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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.