

Optimizing E-commerce Returns with Automated Storage Systems

White Paper

Quickly organize returned items by dispensation category to minimize inventory costs, labor requirements and space demands through deployment of flexible automated storage and retrieval systems.



The Returns Headache

Shopping online has been embraced in a big way. Actually, “big” might be considered an understatement.

In 2018, U.S. e-commerce retail sales to consumers was expected to approach \$525 billion—a 15.9% jump over 2017. By 2020, online sales are projected to top \$660 billion, and analysts project U.S. online retail sales will surpass \$1 trillion by 2025—a compound annual growth rate (CAGR) of nearly 10% over the next decade.¹

Yet with all those parcels arriving in the mailbox or on the doorstep of consumers, there are bound to be some returns. After all, unless a shopper is buying an item already seen in person elsewhere, e-commerce purchases are highly dependent on images and text that describes a product—whether generated by the online merchant or reviewers who have experienced it.

Just how many returns do e-commerce operations experience, and why? Here’s a few statistics:

- At least 20% of all products purchased through e-commerce channels are returned; during the holiday shopping season, that number swells to 30% and even higher—50%—for the priciest items.²
- Apparel is the most often returned online purchase at 43%³, and 41% of shoppers buy multiple sizes or variations at one time with the intent of returning some of them.⁴
- 23% of e-commerce returns are caused by a mispick (the wrong item or quantity of item(s) is picked instead of the correct one⁵).⁶
- 22% of e-commerce returns are due to the product not matching its online description.⁷
- 22% of e-commerce returns are because the product received is damaged.⁸
- 67% of all returned online purchases are the fault of the retailer.⁹
- 48% of online shoppers report returning at least one online purchase in the past 12 months.¹⁰

With the e-commerce returns data just as staggering as the explosion of online shopping’s popularity, many online retailers are discovering that their returns management process isn’t operationally efficient or effective. In fact, “reverse logistics is one of the most often overlooked elements of the complete operations cycle.”¹¹

¹ J.D. Wichser, Christa Hart, Khaled Haram and John Yozzo. “2018 U.S. Online Retail Forecast.” *FTI Consulting*, 2018. Accessed June 4, 2019. <http://info.fticonsulting.com/2018OnlineRetailForecast>

² Nick Winkler. “Ecommerce Returns: Policy, Rates, Best Practices & Statistics (2018 Holiday Ed.)” *Shopify*, 2018. Accessed June 4, 2019. <https://www.shopify.com/enterprise/ecommerce-returns#4>

³ Daphne Howard. “27% of Apparel Sales are Now Online.” *Retail Dive*, July 2, 2018. Accessed June 4, 2019. <https://www.retaildive.com/news/27-of-apparel-sales-are-now-online/526941/>

⁴ Nick Winkler. “Ecommerce Returns: Policy, Rates, Best Practices & Statistics (2018 Holiday Ed.)” *Ibid.*

⁵ Rammelmeier, Tobias et al. “Active Prevention of Picking Errors by Employing Pick-by-Vision.” Accessed November 20, 2015, <http://www.fml.mw.tum.de/fml/images/Publikationen/2011-06%20Active%20prevention%20of%20picking%20errors%20by%20employing%20Pick-by-Vision.pdf>

⁶ Dan Berthiaume. “Report: Online Returns Are a Big Problem.” *Chain Store Age*, September 29, 2015. Accessed June 4, 2019. <https://www.chainstoreage.com/news/report-online-returns-are-big-problem/>

⁷ *Ibid.*

⁸ *Ibid.*

⁹ *Ibid.*

¹⁰ Daphne Howard. “27% of Apparel Sales are Now Online.” *Ibid.*

¹¹ Greve, Curtis and Davis, Jerry. “Recovering Lost Profits by Improving Reverse Logistics.” June 2014. Accessed June 4, 2019. https://www.ups.com/media/en/Reverse_Logistics_wp.pdf

And yet, it shouldn't be. That's because an unmanaged, uncontrolled returns process can put tremendous strain on a facility's available space and labor. Further, and perhaps most compelling, are the costs associated with returned inventory.

Returned products turn back into inventory. Depending on how long it has been, since the initial sale, that inventory may even be less valuable as a sale than it once was... With unmanaged or poorly managed returns process, the more returns you receive, the more it effectively bogs down your system. Eventually, many of those returns will have to be sold at a discount, just to get them out of the system... These returns are eating into your profit.¹²

Reverse logistics isn't just a cost of doing business. It's a significant cost that can have an enormous impact on the bottom line. According to research by Aberdeen Group, "the top challenge facing manufacturers and retailers in regard to returns management is cost containment."¹³ In fact, as online retailers expand their customer-friendly policies with easier options for returns—including free shipping and no restocking fees—return costs have jumped to as much as 8% of online retailer costs.¹⁴

Why? Here are some more statistics:

- Anywhere from 50% to 90% of e-commerce returns cannot go back into inventory for resale.¹⁵
- Liquidation of returned inventory that cannot be re-sold typically generates anywhere from 12% to 25% of the item's original cost.¹⁶
- Goods priced \$40 or less are typically discarded instead of liquidated or returned to inventory.¹⁷
- 52% of distribution center managers lack the ability or resources to process returns; 44% consider returns handling to be a pain point within their operations.¹⁸
- An estimated 10% of overall supply chain costs result from managing return/repair processes. Inefficient processes can exacerbate this cost, cutting profit by 30%.¹⁹
- 64% of retailers have identified returns management as an area needing improvement.²⁰
- Online clothing retailer Revolve reported net sales of \$400 million in 2017, but spent \$385 million on returns in the same period—cost of return shipping not included.²¹
- Returns costs for 2017 were projected to reach \$260 billion.²²

¹² Lunka, Ryan. "Item Returns: How increasing your sales can reduce your profitability." *nChannel*. November 20, 2014. Accessed November 17, 2015. <https://www.nchannel.com/blog/item-returns-how-increasing-sales-reduce-profitability/>

¹³ Pinder, Aly. "Returns Management Matter: The Biggest Hidden Secret in the Supply Chain." *Aberdeen Group*. November 12, 2015. Accessed November 17, 2015. <http://www.aberdeen.com/research/11115/11115-RR-returns-management-manufacturers.aspx/content.aspx>

¹⁴ Merrill Douglas. "Send It Back! How to Manage E-Commerce Returns." *Inbound Logistics*, August 22, 2018. Accessed June 4, 2019. <https://www.inboundlogistics.com/cms/article/send-it-back-how-to-manage-e-commerce-returns/>

¹⁵ Ibid.

¹⁶ Peter Sobotta. "Returns Management: Help Your Customer." *Return Logic*, May 19, 2019. Accessed June 4, 2019. <https://www.returnlogic.com/blog/returns-management-help-your-customer>

¹⁷ Abha Bhattarai. "UPS Expected to Handle Record Returns." *The Post and Courier*, January 3, 2018. Accessed June 4, 2019.

https://www.postandcourier.com/business/ups-expected-to-handle-record-returns/article_ab88949e-f00a-11e7-bb86-4b3a7bb7180e.html

¹⁸ Nick Winkler. "Ecommerce Returns: Policy, Rates, Best Practices & Statistics (2018 Holiday Ed.)." Ibid.

¹⁹ Ibid.

²⁰ Peter Sobotta. "Returns Management: Help Your Customer." Ibid.

²¹ Erica Pandy. "An E-Commerce Pitfall: Never-Ending Returns." *Axios*, October 8, 2018. Accessed June 4, 2019.

<https://www.axios.com/ecommerce-retail-returns-loss-revolve-amazon-fe6d49b0-0f29-4f6b-8b15-f1ec0bae3621.html>

²² Jennifer McKeivitt, "Reverse Logistics Dilemmas Cost Companies up to \$260B." *Supply Chain Dive*, December 20, 2016. Accessed June 4, 2019. <https://www.supplychaindive.com/news/reverse-logistics-returns-supply-management/432665/>

- At the conclusion of the 2017 holiday season, UPS anticipated processing 6 million returns in the first week of January 2018.²³
- The U.S. Postal Service reported 26% growth in online returns during the last two weeks of 2017.²⁴
- Companies that implement an improved reverse logistics operation that enhances the speed and efficiency of returns save roughly \$300,000 in costs annually.²⁵
- Companies with best-practice reverse logistics operations are 47% more likely to process returns daily.²⁶
- Implementing a managed reverse logistics process can increase a company's revenue by up to 5% of total sales.²⁷

What can an e-commerce operation do to get a better grasp on returns? Consider establishing an automated returns practice.

A top executive at one of the largest third-party logistics (3PL) providers, GENCO, says automation can cut reverse logistics costs associated with excess inventory, returns processing and asset liquidation by 10% to 15%.²⁸

That statement is supported by research from the Aberdeen Group, which evaluated 167 service and manufacturing operations about their reverse logistics practices. The top 20% of aggregate performance scorers (what Aberdeen calls the "Best-in-Class" companies) in the study were 74% more likely to have automated their returns process. By putting "a system in place to predictably and repeatedly execute on the return and disposal of a part or product,"²⁹ these companies are better able to both manage the complexity of a reverse logistics operation, and resolve customer issues as quickly as possible.

Further, the report states:

As a result of automating the returns operation, service organizations have been able to achieve improved results in better first-time fix of issues [64%], greater service level agreement (SLA) compliance [58%], increased value reclaimed from returned parts [24%], and a higher level of customer satisfaction [77%] as compared to those organizations that have not leveraged the efficiency gains of an automated returns process.

This white paper examines how the deployment of affordable, flexible automated storage and retrieval systems can simplify reverse logistics processing. Through the implementation of such a system, returns can be handled as another form of inbound shipping through efficient routing and restocking items to minimize inventory costs, labor requirements and space demands.

Automated Storage and Retrieval Systems Simplify Returns

The first handling step of receiving and processing returns is decidedly manual. Operators trained in quality control must open received parcels, assign them a tracking number printed on an associated barcode label, then carefully

²³ Abha Bhattarai. "UPS Expected to Handle Record Returns." Ibid.

²⁴ Ibid.

²⁵ Pinder, Aly. "Returns Management Matter: The Biggest Hidden Secret in the Supply Chain." Ibid.

²⁶ Ibid.

²⁷ Greve, Curtis and Davis, Jerry. "Recovering Lost Profits by Improving Reverse Logistics." Ibid.

²⁸ Vehec, Dave. "About Face—Reversal of Fortune." *Supply & Demand Chain Executive*. January 21, 2015. Accessed June 4, 2019.

<http://www.sdexec.com/article/12037309/statistics-reveal-8-to-9-percent-of-goods-purchased-at-stores-get-returned-and-25-to-30-percent-of-e-retail-orders-are-sent-back>

²⁹ Pinder, Aly. "Key Trends in Returns Management." *Aberdeen Group*. April 8, 2013. Accessed June 4, 2019.

<http://www.aberdeen.com/research/8443/ra-returns-operation-management/content.aspx>

inspect and test the item(s) inside. Based on a variety of factors—including the condition of the item, its age, visible defects or damage, seasonal category and others—returned items are then assigned a disposition destination. Classifications might include:

- **Restock** and return to inventory for immediate sale (95% of items are returned not because there is something wrong with them, but because of customer dissatisfaction³⁰).
- **Repackage** for re-sale in a secondary channel, such as a discount retailer’s online or brick-and-mortar stores.
- **Repair**, refurbish or remanufacture—particularly for electronics such as mobile phones and tablet computers.
- **Return** to supplier, vendor or manufacturer—most frequently seasonal items purchased with a sales agreement stipulating that the source will accept unsold inventory.³¹
- **Recycle**, reclamation or disposal. High-tech devices utilize rare earth metals, such as gold, palladium, silver, copper, titanium and more. The Environmental Protection Agency estimates that reclaimed metals from one million cell phones is worth more than \$2.8 million.³²



³⁰ "Streamlining the Five R's of Reverse Logistics to Maximize Revenue Streams." *Ryder Exchange Blog*. March 6, 2014. Accessed June 4, 2019. <http://blog.ryder.com/2014/03/five-rs-of-reverse-logistics/>

³¹ Greve, Curtis and Davis, Jerry. "Recovering Lost Profits by Improving Reverse Logistics." *Ibid*.

³² *Ibid*.

Once returned items have been inspected and labeled with a disposition destination, however, things tend to fall apart for many returns operations. Inundated with a potentially overwhelming number of discrete items, managing their sortation and routing can be a real challenge for fulfillment centers. Boxes and totes of returned items can quickly overwhelm both the space allotted for their temporary storage, and the labor assigned to their management. Especially for facilities with hundreds of thousands of square feet of conventional inventory storage racking, sending an operator to physically return one item to its stock location can be a time-consuming and ergonomically fatiguing task.

To move returned items through the disposition process quickly, utilizing an automated storage and retrieval system (AS/RS) can speed up the processing time to maximize asset value recovery in a compressed footprint while reducing cycle times and labor-associated handling costs.

While there are a variety of AS/RS technologies offered in the market—including capital-intensive, multi-million-dollar robotic installations—the most affordable and flexible solutions are horizontal carousels, vertical carousels and vertical lift modules. These self-contained systems offer higher density storage in a more compact footprint than manual storage equipment can provide.

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



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 search time.

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 pick window, eliminating travel and SKU search time.



Vertical Buffer Modules (VBMs) – In the middle of a multi-segment shelving system is an aisle, where a moveable mast with a telescopic gripper operates. The control unit sets the gripper in motion picking a bin and transporting it to a picking station.

The selection of the most appropriate AS/RS for a given reverse logistics operation is dependent on a variety of factors, including number of inbound returns received per day, the size variability of the returned items, and the desired rate of throughput for returns. When paired with fixed mounted or radio-frequency (RF) scanners for barcode reading, light-directed picking workstations and/or put walls, items routed to the automated returns processing area post-inspection can be quickly identified and operators guided to the appropriate receptacle presented by the AS/RS. Because the automated systems deliver the destined receptacle directly to the worker and highlight its position, both walk and search time are eliminated, enabling fewer personnel to sort and route more returns.

In certain applications, the storage bins in the AS/RS can even be utilized as forward pick areas. This functionality is enabled by integrated inventory management software that not only keeps track of the contents held within the machine, but also interfaces with a facility's warehouse management system (WMS) and enterprise resource planning (ERP) systems. This function allows picks to be sourced from the most convenient location (in this case, the returns processing area) for even faster restocking and resale of returned inventory.

Likewise, when the AS/RS' software recognizes that a pre-determined quantity of returned inventory has been reached, it can work with the WMS to assign and interleave a task for those items. This might include routing to outbound shipping for return to a vendor or transfer to a secondary market reseller; transport by conveyor or cart to a stock position within the warehouse; or shipment to a reclamation or disposal service provider.

Sorting Returns with Horizontal Carousels: A Real Life System Example

A major omni-channel retailer who sells a broad variety of items through the Internet, mobile applications and broadcast television uses a combination of software, put walls and [six horizontal carousels](#) to sort returns by disposition destination.

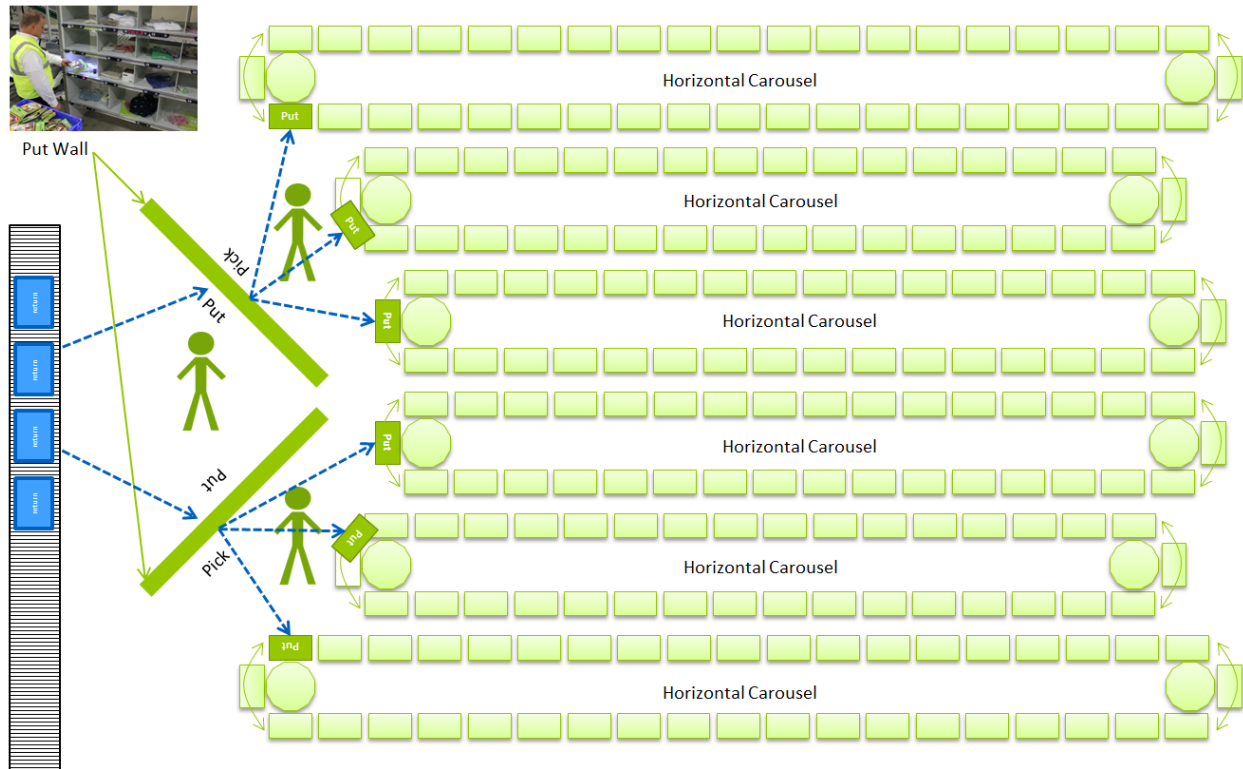
As illustrated below, after passing through a manual inspection process to assign a disposition category, returned items are routed in totes via conveyor to the automated sortation area. Upon arrival, their barcodes are scanned with a fixed mounted scanner. This triggers the operation's warehouse control system (WCS) to pass the item information onto the horizontal carousels' inventory management system, which determines the carousel put away location. This determination triggers the illumination of a light beneath a cubbyhole position on one of two put walls.

The operator places the item into the cubbyhole and moves to the next scan. Meanwhile, the carousels' inventory management system tracks all product SKUs, dispositions and quantities as they are placed in each put wall location; the system also sends confirmation of the put to the operation's labor management system (LMS) via the WCS.

While the WCS suggests locations within the carousels for item put away, the carousels' [inventory management system](#) makes the ultimate decision based on a variety of factors, including what other inventory is already in each carousel and the items' sizes. The illumination lights on the carousel-side of the put wall indicates time for placement of items into the carousel. This alerts an operator positioned between the put wall and the horizontal carousels (three per put wall) that items are ready to be picked from the put wall and placed into the automated storage system.

The carousel spins until the appropriate column of storage bins is presented. Lights on the carousel illuminate to indicate into which storage bin the item should be placed. Bins can be sub-divided internally to hold multiple stock keeping units (SKUs), or multiple units of the same SKU. The bins can also be different colors to indicate a different disposition destination (yellow for internal restocking, blue for return to vendor, red for recycling, etc.)

The carousels' inventory management software is in continuous, real-time communication with the WCS, which passes pick information to both LMS and WMS. Pick tasks can be assigned to retrieve inventory from the carousel, either as carousel-only picks or mixed picks that marry items picked elsewhere with items stored in the carousel. This prevents items from having to be returned to stock elsewhere in the warehouse, saving both time and travel while minimizing cost of inventory. Likewise, when a pre-determined number of items is reached within a dispensation category—a minimum number of items required for a return to vendor, for example—the carousels' software sends a transaction to the WCS.



Benefits of Automated Storage and Retrieval for Returns Processing

By applying flexible and affordable automated storage and retrieval systems—such as [horizontal carousels](#), [vertical carousels](#), [VLMs](#) and [VBMs](#)—with integrated inventory management software to a reverse logistics function within a warehouse or distribution center, e-commerce retailers will benefit from:

- A significant reduction in inventory costs
- A significant reduction in returns handling time
- A significant reduction in the amount of labor required to process returns
- A significant reduction in the amount of space designated to house returned items
- Fast and simple sortation of items per their disposition destination
- Faster crediting of customers
- Quicker return to inventory for resale, including the ability to use the returns area as a forward pick zone

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To learn more about how automated storage and retrieval systems can help e-commerce operations better manage returns, 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 visit www.kardexremstar.com.