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Order Fulfillment Optimization

When to Make the Move From Paper to Paperless



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Order Fulfillment Optimization

When to Make the Move From Paper Picking to Paperless

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For the fulfillment operation considering making the transition from manual paper picking to paperless processes, two key questions inevitably arise: 1) When is the best time to make the move from manual paper picking to paperless picking, such as RF, pick-to-light or voice picking? 2) What can we expect if and when we make the move? This white paper outlines the factors to consider, the benefits of current automated picking technologies available, and reviews some of the efficiency improvements and ROI these technologies can bring to an operation.



Business as Usual: A Review of Some of Today's Fulfillment Challenges

Today's distribution center managers face a host of challenges. Some come with the territory but some are expected, and unexpected, consequences of the global economy. These business and economic pressures stand between a DC manager and his or her goals of achieving increased productivity and higher accuracy.

Accuracy is an order fulfillment driver that will never go away. When paper picking places limits on accuracy rates, RF and automated storage and retrieval systems (ASRS), combined with lights and/or voice technologies, are among the most economically viable methods to achieve desired accuracy improvements. For some businesses, such as pharmaceutical companies, accuracy trumps everything else in the DC. Regardless of product, ensuring an accurate pick, check and pack is paramount when fulfillment accuracy can build a loyal client base — and when mistakes can cost a company valuable customers.

Some of the newer challenges that have really come on strong in the past few years are the need to accommodate non-native English speakers in the labor pool, and the need for increased flexibility to adapt to the ups and downs of growth, economic influences and increased seasonal demand curves.



To meet these challenges, more and more DC managers are looking to automated order fulfillment solutions, including pick-to-light and pick-to-voice. But where is the best place to start, and what should be considered in making the move?

Start Where You Are

The old adage "How can you get where you want to go if you don't know where you are?" certainly applies to assessing the viability of moving from manual to automated fulfillment. The best place to start is with a thorough analysis of the current DC operation, including data from the last 12 months of operations to capture seasonal fluctuations. It's equally as important to carefully document the DC's current business processes — from inbound to outbound product flows — because data alone is often insufficient without a clear understanding of the complete process landscape. Most sophisticated automated material handling integrators have detailed operational analysis questionnaires that can assist the DC management. The data from these surveys will generally point out a clear direction for the most appropriate technology and systems. Typical information sought will include:

- Location data (racks, shelving, number of SKUs, etc.)
- Labor data (number of shifts, pickers, checkers and packers)
- Costs (labor and returns)
- Current pick methods
- Typical order profile (number of orders, lines, pieces, shipping data, error rates and error costs)
- Physical product flow from receiving to shipping
- WMS or other software in place
- Key issues faced

After completing the survey with a provider, the DC manager will have established a baseline as well as identified weaknesses and areas where automated solutions may produce an ROI.

Setting the Bar: What to Expect From Automated Fulfillment

When committing to an investment in new technology, it is important to know exactly what to expect in ROI, both in hard numbers as well as any subjective benefits. Common ground when calculating ROI includes productivity and accuracy, while additional benefits include flexibility, management insight and host integration.

Calculating Return on Investment (ROI): Productivity and Accuracy

Determining an estimated return on investment is crucial to any operation considering a shift from manual picking to a paperless picking solution. A simple method to calculate ROI begins by validating where the operation is today, and an example of a company moving from a paper-based to a paperless picking solution has been provided.

Productivity Gain ROI

Many companies are looking toward increasing efficiency to keep costs under control. When making the move from paper to pick-to-light, companies can realize up to 50 percent or higher productivity rates; those companies that move from paper to RF or voice achieve around 25 percent increases. With software to monitor productivity of workers on an individual or zone basis, automated fulfillment technologies provide a host of management options that are buried in a paper picking and reporting system.

Historical data helps DC managers allocate workforce to proper areas, evaluate shift structuring, and look for opportunities to maximize productivity of an existing facility. Real-time data is a powerful tool for DC managers, helping them make immediate decisions to optimize throughput and respond to daily demand fluctuations. As demand increases in the DC, the cost of applying automation to increase productivity may turn out to have a higher ROI than adding an additional costly labor shift.

To estimate the ROI from the increased productivity provided by a paperless picking solution, the first step is to determine the operation's current total number of order fillers and their associated salaries. Multiply these numbers by 2,080 (the total hours in a year). In the example below, the total wages per year is $374,400. As discussed earlier, an investment in a paperless picking solution can increase productivity by 25 to 50 percent. At a 30 percent gain in productivity, the example below provides a reduction of labor cost of $112,320. This results in a reduction of labor or increased volume.

FIGURE 1 - Productivity gain ROI calculation example

CURRENT COST	
Total Order Fillers	6
Avg. Hours/Year	2,080
Wage/Hour (w/ Benefits)	$30.00
Total Fulfillment Labor Hours/Year	12,480
Total Wages/Year	$374,400
GAIN	
Productivity Increase	30%
Annual Labor Hours Saved	3,744
Annual Labor Dollars Saved	$112,320

Accuracy Gain ROI

Accuracy plays a huge role in DC success metrics. Accurate fill rates not only result in high customer satisfaction, but also in reduced cost of returns. And, as previously discussed, for businesses such as those in the pharmaceutical industry, the issue of accurate

fulfillment forms the foundation of success for the entire company. With changing labor needs, the issue of how long it takes to train accurate and productive pickers is always an issue. Incorporating non-English speakers into the labor mix and providing effective training are among the greatest sources of stress in the DC. With pick-to-light and pick-to-voice capable of multiple language and dialect support, training time can be cut from days to minutes, with accuracy rates approaching 100 percent.

Based on the 30 percent increase in productivity used in the example, the total number of order fillers required for this example is reduced from six to four, and the total lines per hour throughput is increased from 250 to 325. This increase in productivity is reflected in Figure 2.

FIGURE 2 - Accuracy gain ROI calculation example

ACCURACY GAIN	CURRENT	GAIN
Number of Order Fillers	6	4
Order Filler Lines/Hour (8 hrs. per day)	225	293
Accuracy Rate	99.90%	99.95%
Cost/Error	$15.00	$15.00
Errors/Year (260 days per year)	2,808	1,310
Error Cost/Year	$38,880	$16,848
Annual Accuracy Savings		$22,032

To estimate the ROI realized from the increase in accuracy provided by fulfillment technology, first determine the current accuracy rate, the cost of a selection error, and the current number of errors occurring per day. Multiply these numbers and the result is the cost of the errors generated by the current fulfillment process. In the Figure 2 example, the estimated error cost per year is $38,880. Fulfillment technology implementation will result in an accuracy increase of 0.05 percent or greater, with some accuracy rates improving as much as 10 percent. An increase in accuracy by as little as 0.05 percent results in an annual cost savings of $22,032.

Total Estimated ROI

Based on these calculations, the combined ROI from the implementation of a paperless picking solution for this example operation is $134,352. This represents an ROI in only one year for most fulfillment systems with six order fillers.

Other determining factors which will add to the operation's ROI are simplified training, reduced cost of consumables (labels, pick lists) and fewer support staff required. In addition, operators will realize opportunity cost gains from real-time management and reporting enabled by an automated picking solution, as well as the solution's ability to integrate with existing host systems.

Other Benefits of an Automated Solution:

Flexibility

Dynamic demand curves, seasonality and projected growth figures are often cited as reasons for replacing a paper-based pick system with automated picking solutions. Automated systems can accommodate hot or accelerated orders, which can be a significant challenge in a paper pick environment.

In areas where high turnover presents staffing challenges, automation brings some real benefits to the table. If a skilled team is reduced in size due to slow orders or an economic downturn, the DC manager may later be faced with rehiring from a potentially unskilled labor pool once demand returns. Depending upon the availability of skilled labor and turnover rates, an investment in advanced picking technology can prove to have a higher ROI than extended training and additional quality positions. The ability to maintain flexibility in the labor force, whatever the turnover, is a challenge that advanced picking technology can help solve.



Management Insight

Today's pick-to-light systems bring real-time, total labor force transparency to the DC manager. Labor location, pick rates and accuracy rates are available 24/7 via virtually any type of digital display device, from handheld PDAs to smartphones to laptops. Wherever management is located, even offsite, the efficiency and productivity of the DC workforce are instantly available.

With senior management demanding increased levels of data from every aspect of the enterprise, management dashboards must be populated with accurate, real-time data. With paper-based systems, this requirement cannot be met. By moving to an automated order fulfillment solution, the DC manager not only has real-time insight for optimal management, but can also provide senior management with the necessary integration into corporate data systems.

Giving the Green Light to a Paperless Picking Solution

Every company, DC, geographic location, labor pool and industry faces unique challenges that may be unlike any other. Certain circumstances are shared by those considering a move from paper-based manual picking to automated paperless picking systems. These can include company growth, concerns regarding labor turnover, a growing demand for increased productivity and accuracy, or a need for a higher degree of real-time management insight. Working with an automated material handling integrator and developing a performance baseline are the first steps toward an automated solution. Thorough analysis of the current demands over the past six to 12 months and projected future requirements of the next three to five years can provide a firm foundation for developing the ideal automated solution, and is key to an ultimately successful implementation.

For more information, contact Honeywell Intelligrated® by email at info@intelligrated.com, by phone at 866.936.7300, or visit www.intelligrated.com.

Choices, Choices, Choices: An Overview of Today's Automated Pick and Put Technology

Pick-to-light was developed approximately 30 years ago, and provides the most efficient picking solution for high-speed order fulfillment. Based on the use of colored lights to inform the picker of both the pick slot and the quantity, pick-to-light has enabled the development of a multitude of modern order fulfillment processes, including cluster picking, bucket brigade and dynamic slotting. Pick-to-light has also enabled the development of sophisticated picking algorithms, ensuring reduced walk times and the accommodation of hot picks. Pick-to-light order fulfillment systems routinely provide a management window into all DC activities, integrating with existing WMS, ERP or legacy software systems to give the DC manager a clear and real-time picture of their total operation.



Put-to-light is sometimes referred to as pick-to-light in reverse. Just as a pick-to-light system directs pickers to the correct bin to pick an item, put-to-light systems direct the picker toward the right bin or slot into which to place an item. Chiefly applied in systems where batch-picked items require sorting into individual orders, put-to-light brings the same benefits of increased productivity and accuracy over manual sorting and packing. By replacing pick tickets, shipping lists and other paper-based manifests, a put-to-light operator has to simply scan a product bar code to be instantly informed of exactly where to place that item.

Voice picking provides clear and concise voice commands via a wireless network. Providing a cost-effective alternative and/or additional technology, voice picking eliminates many of the inefficiencies associated with paper pick lists, while increasing picking velocity, accuracy rates and overall productivity. An additional benefit is the ability of the voice commands to be programmed in non-English languages, greatly decreasing the training requirements for the DC operator. In some applications, voice picking may be used in addition to pick-to-light, with both applications integrated into the system via the order fulfillment software.



RF pick-to-cart solutions are ideal for low-velocity and distant breakpack locations. Designed to allow batch or cluster picking of multiple orders of items that can traditionally slow picking and introduce high levels of error, cart picking combines elements of pick-to-light and RF scanning technology into a single platform. Ideal for picking large numbers of slow-moving items, pick-to-cart systems have the same level of integration with the order fulfillment software for real-time communication and reporting.



Goods-to-order picking, such as carousels or shuttle-based AS/RS systems, reduce the labor associated with moving items in and out of inventory for order-picking workflows. In addition to reduced inventory levels, these systems allow for more accurate inventory tracking and feature densely stored items to maximize available space in the facility.

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