



Warehouse Processes 101
**THE BASICS OF MANUAL
AND AUTOMATED PICKING**

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“TIME IS THE SCARCEST RESOURCE AND UNLESS IT IS MANAGED, NOTHING ELSE CAN BE MANAGED.”

*- PETER DRUCKER
AMERICAN MANAGEMENT CONSULTANT
AUTHOR, EDUCATOR*

1. INTRODUCTION

As a small and medium size business that fulfills and ships orders for customers, the “Picking Process”, if it is not already, will consume more resources than any other area of your fulfillment operation. Whether you know it or not, you *do* already have a picking process, even if it is just the daily ritual of taking the day’s orders and walking out into the garage to find the items you need to ship.

The question is, are you going to be comfortable using that process as you grow and have confidence that you will achieve the most important objective which impacts your customers - accuracy?

Will the process that works for you now with thirty orders per day still make sense when you have one hundred thirty orders per day? What about a thousand? If you are banking on your own business success in the future, then the answer to that question has to be “No”. Yes?

Now that you know that: 1. Picking is going to be a *huge* part of your business in terms of resources and customer impact and 2. Your existing process isn’t going to cut it as you grow. What are you going to do about it?

Continue reading to learn more about some of your options and the benefits of being pro-active about constantly evolving tools, technology and processes - your business depends on it!

2. BENEFITS FOR SMALL AND MEDIUM ENTERPRISES

Why optimize your picking process? Reducing costs, increasing productivity and staying competitive are a few benefits when optimizing order picking. Consider other benefits below:

Orders and items are more organized: There are some very clever techniques for organizing products that are based on how you prioritize the importance of accuracy versus speed versus product size, dimension and other factors.

Minimize travel time of picker: If you already are well organized, even the most rudimentary software for warehouses will help you optimize your process and minimize the time it takes to get items from shelf to packing station.

AN ORGANIZATION'S ABILITY TO LEARN, AND TRANSLATE THAT LEARNING INTO ACTION RAPIDLY, IS THE ULTIMATE COMPETITIVE ADVANTAGE.

- JACK WELCH
FORMER GE CHAIRMAN & CEO

Improved morale and lower stress of workers: An optimized picking route means less footsteps and less wear and tear on your biggest asset on the floor - your employees.

Faster order completion and cycle time: More items picked per hour means more orders per waves, which means more waves per shift and higher turns.

Increased accuracy: If you aren't measuring your picking accuracy the way IT measures net-

work downtime - in "9s" (as in 99.999% = "three nines"), then you are only losing customers.

Increases in productivity: With speed and volumes increasing without the loss of accuracy, you get more velocity per square foot of space. Very often a decision to move to a bigger warehouse or redesign an existing one can be avoided if you make the changes needed to maximize productivity.

Higher customer satisfaction: This is perhaps the most important benefit. Designing a process for productivity and accuracy goes hand in hand with building a team culture where they know their work is important to the customer. After all, who is the last person to touch your product before a customer sees it?

Faster training: Good processes lend themselves naturally to easier training. This might come partly from automation, but also in part because a good process tends to be more intuitive than a bad one.

A competitive edge: If improved processes mean moving shipments out the door faster, reducing the per-piece handling cost, increasing turns and reducing waste, do you think that will be an edge for your business versus your competitors?

Now that just a few of the benefits are clear and easy to visualize, let's get on with learning about a few of the options!

Before You Start: Know Your Basic Picking Methods

There are literally dozens of different methodologies for picking - some commonly known throughout the industry and some that may be uniquely named by the company using it - because they evolved it on their own to fit their business needs.

Among the many terms you will see out there include cluster pick, pick-to-light, carton flow rack, etc. These refer to an increased level of sophistication and complexity which has developed from innovations in the field of warehouse and distribution center management.

Businesses with warehouse and distribution centers at the heart of their operation have long been preoccupied with decreasing costs while still improving productivity within their centers. Each year, more investments are made to boost technology, subsequently optimizing warehouse performance to accommodate the needs of a specific industry or business model. This can be achieved through increased automation in order picking or utilizing a hybrid of different order picking methods.

3. MANUAL AND AUTOMATED ORDER PICKING

Order picking methods have a large range of variances, but for our purposes here we will divide them into manual order picking and automated order picking. The mission of achieving optimal performance in warehouses and distribution centers relies heavily on choosing the right order picking method. While you may be familiar with and confident in understanding the order picking methods, we will do a quick review of the basic methods below. For both big and small businesses, it often makes sense to develop new processes that use a manual approach. For smaller businesses, the higher level of investment for automated processes is a barrier and for bigger businesses, using the manual approach to test things and make adjustments before investing in all the software and equipment reduces risk and improves the success of implementations.

There are a few things most, if not all methods, will have in common:

Picking Area where requested products are collected. This is where the order picking process happens and where your employees will be spending their time while executing the process. Everything here needs to be optimized in a manner that reduces excess movement of people and goods while improving accuracy.

Replenishment Area where additional products are stored before moving to the picking area. Product often remain in cases or pallets while in this area with only the required quantity for the next day being moved to the picking area

Transfer Equipment - once picked items, need to get moved away from the Picking area as soon as possible and moved to a packing area, a quality assurance, the shipping dock or whatever area in the facility that is designed to apply the next process to the picked items. This means either specialized cards, conveyors, tray sorters and other types of equipment or a combination of some or all of them.

Manual Order Picking Methods and Examples

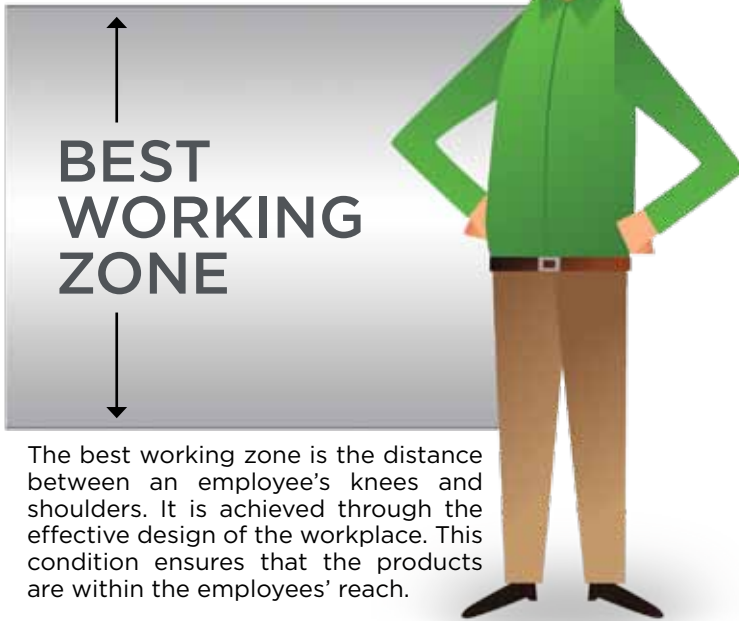
A warehouse management or warehousing system is an essential component to control the movement and storage of products and merchandise. The following is a variety of manual order picking methods.



Definition of “Manual Order Picking Methods”

These methods involve the process of picking items, products or merchandise from the warehouse’s inventory without the benefit of software and other equipment that would automate some or all of the process.

In order to comprehend the seven important principles of the manual order picking method, you must first understand what the best working zone is.



The best working zone is the distance between an employee’s knees and shoulders. It is achieved through the effective design of the workplace. This condition ensures that the products are within the employees’ reach.

The Seven Order Picking Method Principles

Principle 1: Mechanical equipment should be used for picking and packing high volume orders.

Principle 2: Physical changes in the warehouse layout and design are better than implementing administrative controls and safety precautions.

Principle 3: Employees should pick and replenish items within the ‘best working zone’.

Principle 4: Heavy items must be conducted within the employee’s ‘best working zone.’

Principle 5: Employees are not required to handle, select and replenish items above their height.

Principle 6: The equipment that employees use to raise and store items should be helpful in providing close access and ensure employee safety and protection.

Principle 7: Provide accessibility to items and materials in order to minimize uncomfortable and risky postures.

These principles ensure employee safety and efficiency during manual order picking.

Manual Order Picking Methods

Just like any other inventory management systems, manual order picking methods have several categories. Examples include:

Picker to Part or Piece Picking Method

This simple and most common method of order picking involves sending an employee through the warehouse or distribution center with an order list and a container. The order picker either walks or drives along aisles to retrieve items specified for orders one by one from a storage area, a forward area (also called a picking area) with a material handling system to link them.

Typically the picker is directed on a route dictated by the labels or pick list they are holding which uses the most efficient route possible for walking through the warehouse to reach the required items in a specific order. It remains a very common approach for direct-to-consumer operations where there are thousands of SKUs that can be packed together. While picker-to-part picking simplicity may be an advantage, it has disadvantages. If the order picker is slow, manually piece-picking can impact profits and

customer satisfaction.

Since this is easy to measure, managers can recognize and address performance very easily. In some cases, picker-to-part order picking may still be the best option for odd-sized requests and oversized products requiring special handling that may not lend themselves easily to automation and the equipment required for it.

There have been a number of innovations in the piece picking processes such as “pick-to-light” or “voice-picking”. These technological advances have improved picking operators by informing the picker about which item to pick based on a light appearing on the item location or a voice informing the operator which item to select.

Although this process is simple, it is not always the most efficient, since the warehouse size and product volume may overwhelm the employee.

Zone Picking Method

With this method, each order picker is assigned to one specific zone and only picks orders within this zone. Each employee is in charge of a section and pulls from his or her section to accommodate incoming orders.

A box may travel through many areas until the order is complete, usually using a conveyor belt. This method is great for operations with a large number of SKUs and/or numerous orders per day but has a relatively low pick-to-order ratio. Zone picking is an excellent option for piece

“ALMOST ALL QUALITY IMPROVEMENT COMES VIA SIMPLIFICATION OF DESIGN, MANUFACTURING... LAYOUT, PROCESSES, AND PROCEDURES.”

- TOM PETERS
BUSINESS AUTHOR & SPEAKER



picking, but the physical dimension of cases hinder it from being used in case picking.

Wave Picking Method

This method is widespread and used in apparel catalogers and other catalogue and e-commerce operations. It is most common where there is both a large number of SKUs and a high ratio of similar looking packages. If set up correctly, wave picking offers advantages of being highly efficient and accurate. This is especially true for clothing items where a polo shirt may have up to 36-40 SKUs for each color. Storing these SKUs in nearby bins increases the risk of mis-picks. Accuracy is critical for both accounting and cataloging purposes.

Wave picking allows for all products to be picked from what appears to be random locations. A sorter will bring common items of the same order together later to the packing area. As a result, 36 SKUs of a one color polo shirt can be placed far away from each other in separate places in the warehouse, removing the danger of inaccurate picking. The operation does not slow because the picker needs to read labels.

With order picking being the most labor-intensive aspect of warehouse operations, minimiz-



ing labor costs is always top of mind. Wave picking allows operators to estimate the throughput capacity of order picking based on staffing levels and to better understand the nature of a workload as it varies per season, as a result of demand, marketing campaigns and sales performance of clients.

This is an efficient picking process that lends itself well to scheduling workers and predicting output every day in addition to aligning nicely with other downstream batch processes.

Pick to Box Method

This method has a bit of basic automation involved. With the pick-to-box method, the box moves and may be packed by more than one picker. The picking area is structured to have a number of picking stations linked by a conveyor. The order picker fills the container with the products from his station and the box travels to the other picking stations until the customer order is fulfilled.



Who Uses the Manual Order Picking Method?

The manual order picking method is effective when it comes to catering to customers' needs. Retail and businesses selling fast moving consumer goods with high SKU counts appreciate the benefits of manual order picking methods

in part because it does lend itself to a degree of verifiable accuracy without as much investment in technology and expensive equipment required for more automation.

Companies such as Tonello Fratelli s.r.l., TEVA, Disneyland Resort, Tyco, NGK Sparkplugs and ALSO Schweiz AG were able to increase their efficiency by improving their product picking, distribution, handling, shipping and storage using the manual order picking method.

4. AUTOMATED ORDER PICKING METHODS AND EXAMPLES

Technology, of course, is always trying to eliminate labor-intensive processes and replace them with efficient machines and warehouse management systems to automate order picking methods.

What is the Automated Order Picking Method?

An automated order picking method is a process of placing, picking and retrieving items and materials from their specified storage areas through the use of computerized systems that marry software with equipment in an integrated manner.

Types of Automated Order Picking Methods

Nowadays, businesses are continually seeing greater budget justification for using more automation, especially in picking, where the highest labor costs are present. Automated systems vary widely depending on industry and purpose of design. The type of automated order picking method is dependent on the kind of operations of the business.

Examples of Automated Picking Methods

Zone Picking System

Zone Picking System or ZPS is a system where each order picker or employee is designated to a specific area or zone. Each order picker is in charge of an area. He or she will only pick the items from his or her area if there is an incoming order. The box or container will move through the different zones through a conveyor belt. This type of picking area often calls for using flow-racks or similar shelving where the items being picked can easily be replenished from a separate area without interrupting the activity on the picking floor.

Automated Case Picking System

This system makes use of an automated crane to pick up heavy as well as voluminous cases. This automated mechanism can transport, lift, store, replenish and select big cases in order to meet the clients' orders and demands. As with the pallet picking system, automated case picking also allows for much higher shelving to be utilized given there is no need for workers to put themselves in danger by working high in the rafters on an aisle picker. It also means greater space utilization rates that allow facility managers to build or rent space with higher clearances



that can maximize the impact of these systems. For some businesses, this method is commonly applied in the replenishment process even if the picking area is more manual, with cases being retrieved nightly to replenish picking areas.

Pallet Picking System

The pallet picking system is the combination of pallet conveyors, automated cranes and sortation systems that ensure the standard capacity as well as cautious product management. Where a business is involved mainly in the receiving and shipping of palletized products and cases, automation can not only be highly efficient, but can also provide improved safety with fewer direct interactions for forklifts and entire areas of the facility that no longer require them to travel there.

Batch Picking or Multi-order Picking

This process combines the product demand from several orders into a single picking instruction. This promotes efficiency, since it eliminates the employees' tedious process of manual order picking. The wave picking method described in the manual process description in Section 3 can be automated to a certain extent, like both batch and multi-order picking can.



Benefits of Using Automated Order Picking Methods

Applying automated machines to your business operations is known to provide many benefits. This is one of the major reasons why big companies are eliminating time-consuming methods and replacing them with automated order picking methods.

Businesses as well as corporations adapt this automated method because of the following reasons:

- It increases productivity and efficiency. Automated order picking methods eliminate or

reduce the business' dependency on labor as well as manpower resources.

- It promotes safety. Since computer-controlled machines do most of the work, this process promotes the safety of labor and employees. The machines do all the heavy lifting, replenishing, picking and unloading.
- It eliminates or reduces errors. Most automated systems are programmed based on the daily operations of the business. It only performs tasks of what the computer tells it to do. As a result, it reduces human errors because the quantity, frequency and type of products it picks up and packs are calculated.
- It uses time and facility space efficiently. Machines can do things faster, which is why automated order picking methods allow businesses to meet the needs of more clients.

“OBVIOUSLY, THE HIGHEST TYPE OF EFFICIENCY IS THAT WHICH CAN UTILIZE EXISTING MATERIAL TO THE BEST ADVANTAGE.”

*- JAWAHARLAL NEHRU
FORMER PRIME MINISTER OF INDIA*



This method also enables companies to use their storage or warehouse space efficiently due to the increase in the product density level.

- It eliminates or reduces unnecessary labor costs. As said earlier, automated picking systems reduce the companies' dependency on human labor. Therefore, businesses can save more money since they can reduce their manpower costs.
- It ensures product quality. These systems can handle various products with utmost care. It ensures that only the best and high quality products are included in the final customer order.

Who Uses Automated Order Picking Methods?

Because of its benefits, many businesses as well as corporations use the automated order picking methods. This order picking method is applied to various businesses from the food and beverage, retail, pharmaceutical, manufacturing, warehousing and shipping industries.

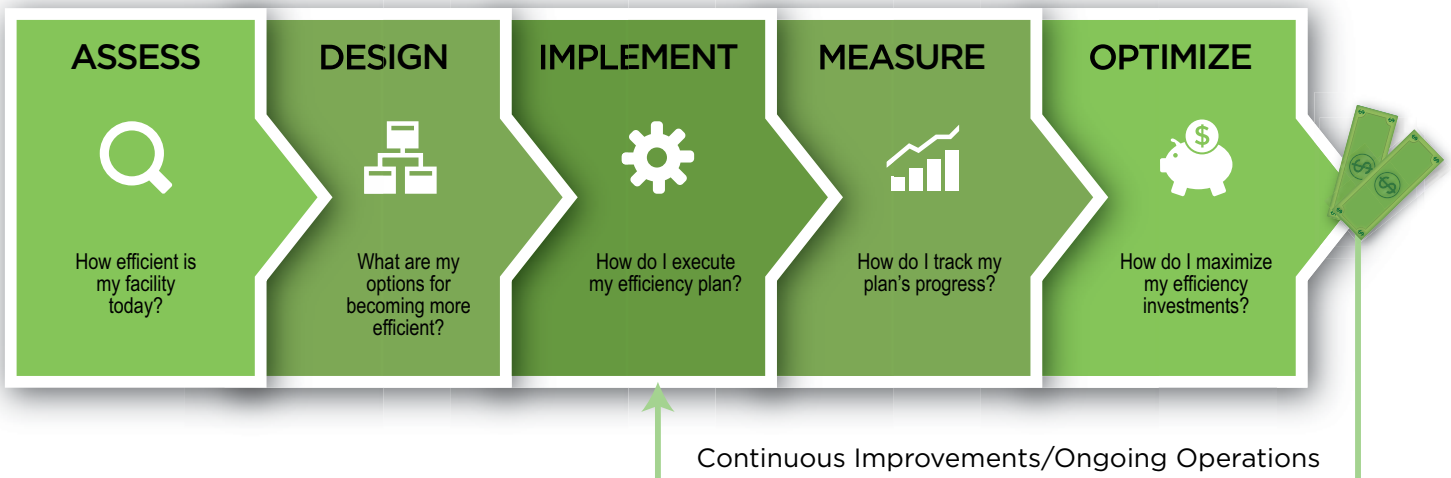
Companies such as DA Retail Groep, Arrow, Plieger and Rossman are some of the major companies that use the Zone Picking System.

Colombini, Arrow Electronics, Tchibo, Edeka and Argos applied the pallet picking system to most of their business and order picking operations. For batch picking or multi-order picking, Amazon, Euro Shoe, Staples and Game Stores are known for incorporating it into their daily business operations.

5. IMPROVING YOUR BUSINESS' PICKING PROCESS

Once you have analyzed your current processes, evaluated options and mapped them to your future expectations for shipments, SKUs, etc., then you will be better situated to choose an order picking method for your business. Now you can adjust and improve aspects of your picking process so that it will truly suit your business' needs. Improving inefficient aspects of your order picking process improves your picking accuracy, thereby improving your whole operation's performance. The result is happy customers. The goal of order picking operations is always to do more in the least amount of time. Continuous improvements are crucial to achieving this goal. The following are some ways to optimize your picking performance.

Warehouse Process Improvement Strategy



One Time Touches

A core principle in all materials handling processes is “minimize touches”. It is ideal that items only get one touch during the picking process. It is important to focus on avoiding errors during picking so that you won’t need further repacking or shipping checks. The pick process should allow enough verified accuracy that further quality control checking is not required. Picked inventory should go on trucks, touched only by the original order pickers. Techniques that pick straight into shipping cartons instead of totes remove an extra touch at the packing area or in some cases, the entire packing process.

Installing Built-in Verification

Planning standard operating mechanisms to double-verify almost every procedure in the picking process will allow you to save a lot of time. Over time, you can tighten or adjust this SOP as you deem fit. For example, you can adjust an area’s pick verifying flags to contain user examination and check LPN, amount, unit, size, and the like. Employing counting measures, whether counting near zero or counting back, may also be utilized to calculate remaining inventory in a location in-line with picking. The wave picking system simplifies this step because the labeling process makes every piece unique and difficult to misidentify.

Optimizing Storage Safety

A warehouse’s efficiency is improved when items are allocated to the correct storage media. Optimum storage strategies minimize product handling by lessening the amount of hands holding the boxes.

Storing the units in the proper bins is the top priority. It is inefficient to store slow moving SKUs in pallet racks, as is storing fast moving SKUs in shelving bins. Operators can refer to a unit of measurement named cube movement velocity. This calculates each SKU’s volume of movement.

It is equal to the movement in units multiplied to the unit’s cube measurements.

A variety of storage strategies can boost warehouse performance. Slotting may help with storage intensity, accident reduction or product damage, congestion reduction and the improvement of retrieval times. A company should regularly evaluate its storage practices in order to accommodate changing client and seasonal demands. Investing in good tracking and inventory software aids in accurately tracking all the different positions and statuses of the inventory in every aspect of the picking process.

Creating Hot Zones

Order picking productivity gets better with “hit” density. Order picking is slower when the operator selects from one out of every hundred pick locations as compared to when the operator picks from one out of every ten pick locations.

It is advisable to set up hot zones in the warehouse to group the SKUs that create the majority of picking activity. Certain warehouse operations have velocity definitions so that the fastest moving SKUs are placed together within selected wider operating aisles to reduce congestion. One method is through the creation of 80/20 zones. Combining the 20 percent of your SKUs that make up 80 percent of your orders and constructing a “warehouse within a warehouse” can increase warehouse efficiency.

This adjustment cuts down travel time for your pickers. It is crucial that the 80/20 zone is properly designed to allow for high-volume activity. This is most appropriate for sorting or box picking strategies, and less so for the wave picking method. These zones can work on zone picking facilities if the racking and aisles are built for higher traffic that will culminate in that exact zone.

Always Evaluate Your Order Picking Method

Your business' needs can always change according to your clients' output demands. It is not uncommon for warehouses to change their order picking strategy. Your picking system may be well designed and perfect for you in the past, but evolving customer requirements will make it falter.

For this reason, you should consult with industry experts and consultants to evaluate your warehouse performance and the effectiveness of your order picking method. It makes no sense to stick to a strategy when it hinders your warehouse from performing optimally. Investing in productivity and accuracy improvement, and regular warehouse quality check-ups and discussions are essential in identifying issues and proposing solutions, which will reward your warehouse operation in the long run.

Automating Your Picking Process

A lot of innovations have taken place in the warehouse and distribution industry. Automated picking through computerized forklifts or cranes allow for increased accuracy and less travel time around warehouses to look for orders. Order pickers consume about 60 percent of their time walking product or moving product around. Installing conveyor belts can increase picking speed. You can eliminate wasted steps and reduce errors by setting up a mobile workstation with a power pack that allows the picker to create labels and to follow a guided route displayed on a computer.

Minimizing Travel Time To Reduce Errors

Reducing travel time increases order picking productivity. This is the reason why batch and cluster order picking techniques are used in warehouses and why warehouses have conveyor belts installed. As previously stated, travel time



can make up 60 percent or more of order picking hours. You can reduce worker movement around warehouses by grouping orders into a single travel occurrence. Other ways to reduce travel time can be letting order pickers pick from both sides of the aisle, with the use of small pick facings or by storing slow-moving items on side aisles, which are only entered when necessary. A physically tired warehouse worker is more susceptible to making a mistake. Decreasing the amount of walking needed can benefit your warehouse in the long run.

Getting the Help You Need

Suppliers in this industry provide consulting, software, equipment, training or some combination of all of these.

Contact a representative of Newcastle Systems and we can help you connect with the right resource based on your current needs through our network of industry experts and suppliers.

THE POWER TO MOVE YOUR WORKPLACE



ABOUT NEWCASTLE SYSTEMS

Newcastle Systems is committed to providing innovative solutions that help make Auto-ID technology and other hardware truly mobile and information more readily available across an entire enterprise.

Loss of productivity and inefficiencies such as wasted steps to the printer on a fixed desk, inaccurate inventory counts, improper labeling, time delays, manual processing and incorrect shipments are just some of the challenges that are alleviated with a mobile powered workstation.