Goods-to-Person or Person-to-Goods?
10 Factors to Consider When Determining the Right Order Fulfillment Solution
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**10 ORDER FULFILLMENT METHODS TO CONSIDER WHEN DETERMINING THE RIGHT SOLUTION**

In recent years, there has been considerable debate about whether modern Goods-to-Person (GTP) item picking is superior to more traditional Person-to-Goods (PTG) item picking. Each picking methodology has its pros and cons, but how do they compare, and is one superior to the other?

**AN OVERVIEW OF GTP AND PTG SYSTEMS**

In a GTP environment, pickers remain at their workstations while a software-driven Automated Storage and Retrieval System (ASRS) retrieves, conveys and delivers required SKUs directly to the order picker’s workstation in a designated SKU donor tote or tray.

Directed by RF, pick-put to voice and/or pick-put to light technologies, pickers select the required quantity of SKUs from the SKU donor tote/tray and then “put” the selected items into a container or bin that has been assigned to a particular order. Once the requested number of items has been selected and put into the correct order location, SKU donor totes/trays are returned to the ASRS for put-away or are rerouted to a different workstation that requires the identical SKU.

Contrarily, in a PTG environment, order fulfillment is accomplished by directing picking associates to static pick facings located in varying storage media throughout the warehouse.

As with GTP systems, PTG picking systems also utilize RF, voice and/or light directed technologies to direct pickers’ activities.

Once at the pick facing, the requested items are selected and placed into an order container before the picker continues on to the next pick location.

In highly automated PTG systems utilizing automated sortation, the order containers are conveyed and diverted directly to pre-determined pick zones where pickers are responsible for item selection for only the specific SKUs slotted in their assigned zones (also known as zone routing).

**COMMON PERCEPTIONS OF THESE SYSTEMS**

Despite the increased attention and coverage that GTP order fulfillment systems have received over the past few years, they are not a new concept. GTP systems have been around for decades, but recently, new technologies and software advancements have enabled significant improvements in functionality, efficiency, inventory management, and space utilization. However, many companies in the United States and abroad are not been fully convinced that GTP integrated systems are reliable, and that they can effectively deliver acceptable ROI.

On the other hand, an increasing number of distribution and warehousing professionals are starting to believe that PTG technologies and order fulfillment methods are somewhat outdated in modern distribution environments. Large warehouses, SKU proliferation and smaller order fulfillment windows are rendering PTG processes less effective due to increased picking travel, mispicks and increased labor requirements.
Both order fulfillment practices have their advantages and disadvantages. To determine the order fulfillment system that best fits your specific business requirements, careful review of the following 10 operational considerations is key:

1. **Order Picking Travel Time**
   For many traditional PTG order fulfillment operations, a sizeable percentage of order picking labor is spent merely traveling to and from pick locations. In some extreme cases, employees can spend up to 35 percent of their shift traveling between pick facings while walking upwards of five miles.

   GTP advocates have capitalized on this inefficiency by touting the fact that employees in GTP operations don’t have to move at all – all the work comes directly to their workstation, thereby reducing travel time, increasing individual productivity and potentially reducing FTE requirements.

   GTP operational efficiency is particularly important when organizations are managing a large number of very slow-moving SKUs. In some traditional PTG operations, employees often travel to remote pick facings within the facility for a single item, once a day. Multiply this laborious effort by hundreds or thousands of SKUs that require infrequent daily picks, and the productivity losses mount.

   There is no doubt that eliminating travel time for order picking can increase productivity. GTP operations definitely have the edge here over PTG operations, but not every distribution operation will realize similar benefits. Operations with small facilities or very densely slotted pick engines will benefit less due to the shorter distances that employees are required to cover. When it comes to GTP and reduced travel time for picking, the larger your facility and picking engine, the greater the benefit.

2. **System Scalability**
   Everyone understands the importance of flexibility in their order fulfillment system. Rapid growth, SKU proliferation and changing business requirements affect an order fulfillment system’s efficacy and can highlight existing inadequacies and limitations.

   GTP systems are known for being highly scalable. Simply add another aisle of your preferred automated retrieval technology with a new bank of pick/put workstations and your system instantly scales up to meet demand. That said, well-designed PTG operations can also be engineered to scale easily. Pick modules can grow vertically with the installation of additional levels, or new modules can easily be added adjacent to existing ones.

   When deciding whether a GTP or PTG operation provides optimal scalability for your business, thorough, data-driven analysis is required. Several questions must be given careful consideration: What additional labor requirements are needed? Will scaling result in system bottlenecks due to equipment throughput limitations? What capital investment will be required? The answers to these questions depend greatly on the selected order fulfillment system design, your business’s order profiles, the desired increase in productivity and available capital.
3. Order Accuracy
GTP system providers frequently point to increased accuracy as a major differentiator for their technologies. This reasoning is based on the idea that GTP automated retrieval systems deliver the correct product directly to order pickers’ workstations, reducing the opportunity for mispicks. Real-world data confirms that most GTP systems easily exceed 99-plus percent order accuracy. However, the accuracy gains realized with GTP systems might not be as significant as one might assume.

Operators of traditional PTG order picking driven by Pick-To-Voice (PTV) or Pick-To-Light (PTL) routinely realize 99-plus percent order accuracy as well. Both GTP and PTG order fulfillment systems are able to achieve exceptionally high order accuracy when properly implemented with optimal system design, technologies and well-trained employees.

4. Smaller Footprint/Better DC Cube Utilization
Within GTP operations, automated retrieval systems can be more condensed horizontally than traditional PTG picking/order fulfillment systems. This allows for a smaller footprint even when compared to the most condensed PTG order picking modules or Very Narrow Aisle equivalents. Keep in mind that the need for dedicated pick/put workstations in GTP operations can reduce this horizontal footprint advantage to some degree.

The real benefit of GTP systems, however, is unparalleled vertical space utilization. ASRS systems can be constructed up to 100 feet high – an elevation that far exceeds the range of even the tallest reach and turret trucks. Distribution centers (DCs) with taller clear heights (40 feet and over) benefit the most from GTP systems with ASRS technologies since previously inaccessible vertical space can now be utilized. Facilities with lower clear heights (under 35 feet) will realize reduced vertical space utilization improvements. The lower your building’s clear height, the less your operation will benefit from GTP DC cube utilization.

Improved DC cube utilization is something every business can aspire to achieve. GTP systems with automated storage and retrieval systems are particularly adept at economizing and utilizing space. Organizations focused on reducing real estate costs, maximizing vertical space in existing buildings, and improving ‘time to customer’ with smaller, but taller, regional urban DCs will realize the most benefit from GTP system DC cube utilization.

5. Single Point Of Failure
Today, GTP ASRS technologies are tremendously accurate and productive. However, if the GTP automated storage and retrieval system goes down due to a catastrophic mechanical or software failure, manual access to inventory contained within can become nearly impossible. An entire order fulfillment operation can come to a grinding halt.

Assuming a 99 percent overall system uptime, one percent downtime in a six day per week operation could mean that a GTP ASRS system is down for over three days a year. If those three days happen to coincide with a peak period, the inability to fulfill orders could have severe consequences on a company’s financials and long-term client retention.

Automated PTG systems are certainly not immune to malfunction, but the easy accessibility to pick facings can allow order fulfillment operations to continue to function at some level despite the loss of automation.

Operational flexibility and inventory accessibility of an automated PTG system can help to avert disaster in your DC.

When it comes to GTP and reduced travel time for picking, the larger your facility and picking engine, the greater the benefit.
Organizations focused on reducing real estate costs, maximizing vertical space in existing buildings, and improving ‘time to customer’ with smaller, but taller, regional urban DCs will realize the most benefit from GTP system DC cube utilization.

6. Productivity Optimization
Depending on the operation, pickers in many GTP environments can achieve 500-plus lines per-hour (LPH). This is a significantly higher rate than pickers in the most efficient PTG automated zone routing operations, who typically peak at 250 LPH. On the surface, this might seem like a huge advantage for GTP operations over PTG systems, but there are some additional factors to consider.

In GTP order fulfillment, additional touches are required to remove picked items from the order totes/bins for placement into shipper cartons. This extra GTP process necessitates additional labor post-picking and impacts overall order fulfillment productivity.

When comparing GTP productivity to PTG productivity, it’s also important to consider the organization’s SKU movements and order profiles. If a business’s order profiles are skewed towards a relatively small quantity of high volume “hyper-mover” SKUs, a GTP ASRS system can significantly benefit your operation’s productivity by utilizing batch picking. Batch picking is the process in which multiple quantities of a single SKU are delivered to a picker who simultaneously fulfills multiple orders that require that particular SKU. If your operation has a large number of SKUs with a relatively flat SKU velocity curve, your operation may benefit less from a GTP system.

Additionally, automated equipment limitations are important considerations in evaluating the productivity of PTG and GTP systems. The maximum throughput capacities of automated equipment will define the maximum productivity output. In other words, as your organization’s productivity demands increase, equipment limitations, and not employee productivity, will become the eventual factor that defines maximum order fulfillment productivity. Depending on the equipment utilized and the order profiles, PTG equipment technologies can often outperform GTP ASRS systems on maximum throughput capacities.

As a result, even if GTP pickers are more productive than PTG pickers in a vacuum, in real world order fulfillment operations, automated PTG systems can often equal or outperform their GTP counterparts.

7. Capital Expenditure
Typically, GTP systems with ASRS are much more expensive than automated PTG systems. The level of automation, equipment and software required for fully automated GTP systems can often result in capital expenditures that are 100 percent higher than PTG equivalents.

Yet, despite the initial capital expenditure differential, in some operational environments, GTP systems have the potential to generate excellent ROI when factoring the potential labor productivity efficiencies, real estate savings and life cycle costs.

At first glance, PTG picking systems seem to be an easy winner here, but further analysis is required to determine if any potential benefits of a GTP system can close, or perhaps, even overcome the initial capital disadvantage and generate favorable ROI.
8. Business Seasonality
One of the biggest challenges facing distribution operations is how to accommodate order volume spikes during peak periods. GTP system providers highlight the ability of their systems to handle high volumes, when required. Simply add additional workstations during peak, and the ASRS will ramp up to accommodate increased demand.

If your business experiences significant peaks one to three times a year, implementing a highly automated GTP system might be overkill during non-peak operation. With the considerably larger initial capital expenditure requirement for GTP picking, one might wonder if it’s worth having a very expensive asset that is severely underutilized 10 months a year.

Unlike GTP, the productivity and throughput of PTG operations are more closely tied to labor rather than automated hardware. In peak times, labor can be brought in to accommodate increased order demand. In non-peak times, labor can be reduced to correspond with decreased order volumes.

Many distribution operations that experience significant seasonal spikes in order volume and have access to sufficient labor pools find that it is more financially viable to select an optimal PTG picking system that reduces the initial capex outlay, and relies on ramping up temporary labor in order to manage anticipated temporary increases in volume.

9. Ergonomics
Companies that put a priority on ergonomic order fulfillment systems by enabling employees to perform job functions with well-choreographed movements, safe postures and minimal bending/twisting quickly realize reduced worker injuries, fewer workman’s comp claims, increased productivity and improved employee job satisfaction.

Since GTP operations utilize ASRS to deliver product directly to the picker, the need for lifting and carrying is significantly reduced when compared to PTG systems. Additionally, GTP workstations are often designed for exceptional ergonomics that allow employees to work at the midpoint of their range of motion, further reducing the opportunity for injury.

In comparison, PTG systems can require considerably more lifting, twisting, reaching and bending to complete order picking. When it comes to ergonomics, there is definitely a clear-cut winner.

10. Product Sequencing
If your distribution operation requires ‘aisle-ready’ totes or pallets, or its SKU mix necessitates intelligent product placement within an order container to accommodate weight distribution, grouping by product category or another logistics purpose, you are likely already familiar with product sequencing.

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<table>
<thead>
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<th>Feature</th>
<th>GTP</th>
<th>PTG</th>
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<tbody>
<tr>
<td><strong>ORDER PICKING TRAVEL TIME</strong></td>
<td>√ Greater benefits for larger facilities</td>
<td>Employees travel to picking locations; significant amount of order picking labor is spent traveling to and from pick locations</td>
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<tr>
<td><strong>SYSTEM SCALABILITY</strong></td>
<td>√ Highly scalable</td>
<td>√ Highly scalable</td>
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<tr>
<td><strong>ORDER ACCURACY</strong></td>
<td>√ Systems exceed 99 percent</td>
<td>√ Routinely realize 99 percent order accuracy</td>
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<td>**SMALLER FOOTPRINT/</td>
<td>Automated retrieval systems can be condensed horizontally; unparalleled vertical space utilization – can be constructed up to 100 ft. high</td>
<td>Limited vertical space utilization</td>
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<td>BETTER DC CUBE UTILIZATION</td>
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<td><strong>SINGLE POINT OF FAILURE</strong></td>
<td>If automated storage and retrieval system goes down, access to inventory is nearly impossible</td>
<td>√ Despite a loss in automation, pick facings can allow fulfillment operations to continue</td>
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<td><strong>PRODUCTIVITY OPTIMIZATION</strong></td>
<td>√ Pickers can achieve 500-plus lines per hour, but depending on the operation, post-picking labor requirements can significantly affect productivity rates</td>
<td>√ Pickers can achieve 250 lines per hour</td>
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<td><strong>CAPITAL EXPENDITURE</strong></td>
<td>GTP systems with ASRS are typically more expensive because of the level of automation, equipment and software required</td>
<td>√ PTG systems are typically less expensive because they require less automation, equipment and software</td>
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<td><strong>BUSINESS SEASONALITY</strong></td>
<td>Large capital expense requirements and high automation might be unnecessary for businesses with significant order volume spikes during short peaks but relatively low order volumes the rest of the year</td>
<td>√ Allows for effective and inexpensive productivity scaling by adding or removing labor, as required</td>
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<td><strong>ERGONOMICS</strong></td>
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<td><strong>PRODUCT SEQUENCING</strong></td>
<td>√ GTP systems with ASRS are unmatched; can automatically store, stage and retrieve product in an intelligent and systematic manner</td>
<td>The need for significant manual intervention increases labor requirements</td>
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In a GTP operation, the ASRS system can seamlessly store, stage and retrieve product in an intelligent and systematic manner. Because the process is completely automated and software driven, human intervention is practically eliminated and optimal product sequencing is easily achieved.

In PTG operations, human involvement is mandatory. Employee pick paths can be optimized for shortest distance or desired product sequencing, but not both. This either forces pickers to complete product sequencing in a secondary, laborious process post-picking, or to take a longer, more circuitous pick path to accommodate desired pick sequencing.

When it comes to product sequencing, GTP systems with ASRS are unmatched.

CONCLUSION
In conclusion, when it comes to deciding between a GTP and a PTG order fulfillment solution for your distribution operation, there is not a single, clear-cut solution. There are many factors that must be considered before arriving at the order fulfillment solution best suited for your business.

It starts with a comprehensive understanding of your current order fulfillment operation and data. Effective utilization of this data to identify operational weaknesses is critical. From there, companies must determine which business initiatives are most aligned with the organization’s long-term goals. Is labor cost reduction a bigger priority than improving time to customer? Is establishing new sales channels more important than SKU proliferation? How a company prioritizes strategic initiatives plays a large part in determining the best order picking system.

Ultimately, operational metrics provide the backbone for the initial data analysis and operational self-assessment. Strategic business initiatives and long-term goals provide the detailed roadmap forward. It’s only when today’s data and tomorrow’s direction are analyzed in unison, that the ideal balance between optimum order fulfillment system performance and maximum return on investment can be achieved.

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