

Warehouse Technologies

How to Get it Right

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If applied successfully, warehouse technology improves accuracy, business performance and ultimately profit. Choosing which technology should be applied to your warehouse, to achieve the best results, can be a challenge because the quoted performance of any system is dependent upon many business-specific factors. The ultimate objective when implementing new technologies must be realisation of the expected performance and associated benefits to the business.

The most significant factors affecting the successful deployment of new equipment are: product range and product demand profile; order profile; product cube and building configuration. It is a common error not to take these factors into account and the result is a solution that disappoints when it comes to delivering the promised improvements.

As a guide, direct picking labour accounts for approximately fifty percent of a warehouse labour budget, and typically only half of picking activity is product handling. Three commonly deployed techniques that address the non-product handling facet of the picker's work are conveyorised picking, pick-by-light and sortation. These solutions have been widely adopted in fulfilment operations with varying degrees of success.

Conveyorised picking

A conveyor installation is used to reduce pick walk distances. Operators work in zones placing the items required from that zone into an order carton or tote. The conveyor transfers the order tote to the next zone from which items are required for the allocated order.

Typically, this solution is suited to multiple line orders, picked from an extensive range of products, where only one or two items of each product are required. Most installations require a standard carrier, such as a tote bin or tray, as order cartons are often too variable in size and weight to be handled effectively by the equipment.

Balancing the work load across each conveyor zone is a key requirement. Grouping products which are commonly ordered together and placing the fastest moving products closest to the conveyor will improve picking efficiency.



A conveyor system is relatively expensive. To maximise the benefits, the conveyor can be used to transfer product replenishments to the pick faces. Ensure that products are allocated to pick faces in such a way that the resultant replenishment rates do not exceed conveyor throughput capacity. Products that require frequent, bulky replenishment are best placed in a pallet picking area rather than a conveyerised zone.

A well-designed conveyor system will allow an order to start its journey around the conveyor from any zone. This ensures that, as long as there are orders that require products from that zone, the pickers will have work immediately available. “Wearable” label printers reduce the reliance on fixed peripheral equipment, minimising walking distances and increasing picking efficiency.

Pick by Light

Pick-by-light is a paperless picking system, often seen as a logical enhancement for a paper-based conveyerised picking solution. Small lights and displays are mounted at each pick face, and when an order line has to be picked, the light is illuminated to guide the picker to the correct location. The display indicates the quantity to be picked and the picker confirms the completion of this task by pressing a pick-complete button adjacent to the light. The display clears ready for the next pick and the picker moves to the next illuminated light in the zone.



Usually, the operation is restricted to one picker in each zone, but the latest developments offer as many as six pickers in a zone by using multiple colours for the lights and displays.

Pick-by-light introduces hands-free operation and offers faster order processing time with increased accuracy when compared to picking using a paper pick list. However, the system places a greater emphasis on timely and accurate replenishment of the pick faces as there is no product check during the picking process.

This technology is ideally suited to an order profile where a large number of order lines is picked from an extensive range of products, but is less beneficial for applications requiring only a small number of lines per order.

In both conveyerised picking and pick by light, balancing the workload across zones requires flexibility with regard to product layout, and may need multiple picking locations for the fastest moving products.

Sortation

Sortation equipment comprises high speed conveyors onto which picked items are inducted and outsorted to output chutes or lanes. Its objective is usually to increase facility capacity by reducing the total elapsed time required for processing orders. Sortation is often used in conjunction with conveyerised picking for routing orders to packing benches prior to despatch, but maximum benefit is derived for the picking operation when a group of orders is consolidated and processed concurrently as a batch.



For example, orders can be batched for a group of stores or for a delivery route, batch picked and then inducted onto the sorter. The sorter divides the batched items back into individual orders and directs each order quantity to the allocated chute. Batching orders should reduce the total number of location visits and increase the items picked at each location with a resultant increase in picking productivity. The batch may even be large enough to allow full pallet quantities to be inducted onto the sorter, with commensurate picking efficiency improvement.

The batch picking productivity gain is, however, offset by the work required at the chutes to complete the outsort of picked items to individual orders.

Sortation requires high capital cost for installation and can be sensitive to a number of issues. Products must be suitable for sortation, key requirements being; practical maximum and minimum size differences and stability when conveyed. To optimise performance, manage batch changeovers carefully to avoid delays when ensuring that all the items for one batch are complete before the next batch commences. Provide adequate process buffer capacity, for chutes and between picking and induction, to allow operators to work efficiently. Induct at both ends of the sorter to achieve good machine utilisation.

It is worth recognising the dynamic nature of all warehouse technologies. As a business develops, the product range and demand profile, order profile and product cubes will probably change. Ensuring that products are allocated to the most appropriate configuration in any installation is an on-going task in order to maintain the effectiveness of the equipment.

In conclusion, a thorough understanding of the requirements and constraints of any technology must be obtained before equipment is purchased. Hopefully, this demonstrates the benefits of reviewing all the options before deciding on a preferred solution.