Waving

The primary function of a distribution center is to fulfill customer orders. The specific methods used to sequence and ship these orders ultimately determine the overall performance of the facility.

Facilities fall in to two broad categories when it comes to servicing orders. The first category includes facilities with a small window of time to plan orders. The other category includes facilities with a relatively large window of opportunity.

The grouping and releasing of available orders is often referred to as waving orders. Both types of facilities can take advantage of the waving concepts described below.

How to group orders for release

One of the most basic items to ascertain about an order is its order type. Five of the most critical attributes of an order type are the number of lines, number of units, pick type, shipping method and due date. Some facilities may have to add customer requirements or product characteristics (such as hazardous or temperature requirements) to the attribute list. It is also beneficial to consider workorder or value added orders separately.

The first step is to look at the number of lines and units within an order. Orders that are single line and single unit should be processed separately. Single line/single unit (SLSU) orders can be released to the floor and, when possible, picked directly into the final shipping container. If a historical analysis of orders shows that certain SKUs are likely to be picked as single line orders, it may make sense to set up a special area to accommodate the picking and packing of these SKUs and orders.

The next step is to look at how the items are to be picked. Each line item quantity on an order should be categorized based on whether it represents full pallet, full case or loose piece picking, and then grouped accordingly. This grouping can be helpful in balancing the work load throughout the day in the distribution center. For example, the picking of loose piece orders is typically more labor intensive; therefore, having identified orders that are primarily full pallet/full case can help keep all areas of the warehouse busy while completing loose piece orders.

The final step is to look at how the order will ship and when it is due. Again, the objective here is to balance workload while meeting customer delivery requirements. Most distribution centers do not have unlimited shipping dock space. Therefore, orders that must be palletized for less than truckload (LTL) and truck load (TL) carriers will consume dock space until they are loaded onto the trailer.

A preliminary look at unreleased orders can often give a reasonable estimate of the number of dock spots required for groups or orders. A proven tactic in centers where the dock has to be reused is to have a first wave of primarily TL and LTL orders with the earliest due date followed up by a wave that is primarily fluid loaded small parcel carriers. If you floor load specific TL or LTL carriers, these can also be used during this follow up wave. The third wave or subsequent waves can be TL and LTL orders with later due dates and released to the floor when space becomes available. The

size of these subsequent waves is dependent on how quickly dock space becomes available.

Other factors for order release

Your specific SKU profile can affect the implementation of these techniques. If your SKU base dictates specific picking or packing techniques such as batching or highly automated picking equipment, these waving techniques will have to be tweaked to fit your specific needs. Product characteristics can also impact how you wave. For example, frozen or high security items would not lend themselves to earlier waving.

The most important factor that impacts the implementation of these concepts is expected order turnaround time. More time will result in greater efficiency when optimizing the grouping and release of orders. However, even if turnaround time is small, doing high level rough estimates can prove beneficial.

Waveless Order Processing

Several companies now offer products that can optimize orders on a much more dynamic basis. The basis of the aforementioned techniques is to analyze orders and release them in static waves. New software that sits between the WMS and warehouse control systems (WCS) offer waveless order release.

These systems continuously drop orders one at a time into the available work on the floor. The software searches for available capacity in the operation, then finds an order with the highest priority that fits best with the available capacity. The new order is then analyzed and efficiently integrated with the pre-existing work.

These systems are advantageous because they constantly evaluate priorities and capacity to maximize throughput. However, they can be complex to implement.

Like many other processes in the warehouse, waving is an art form. All factors must be balanced to develop an order release methodology that best matches up with your order processing operations.