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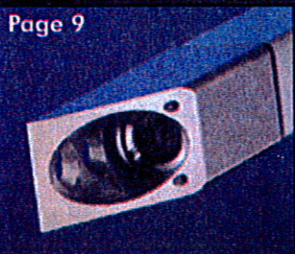
*Ontario's Business & Industrial Equipment Magazine*

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## Improving the Bottom Line with Optimal Slotting

Facility slotting is a dynamic process. Facilities that have implemented logical slotting and that maintain it on an ongoing basis are always more productive both on direct and indirect labor.

Basic Slotting can be best described as the placement of Stock Keeping Units (SKUs) in a storage location. These locations can be on the floor, in shelving units, racks, case flow lanes, etc... These locations are usually labeled for track ability and tied into a database that has some basic information such as: SKU characteristics, quantity on hand and average sales.

Optimal slotting incorporates historical sales, inventory levels, growth, numbering, hit rates, priority, cube, weight, ergonomics, etc. This allows you to gain productivity savings on all direct labor functions (receiving, put away, replenishments, and selection). When taking basic slotting and creating an optimal slotting, we typically see a savings of at least 20% on direct labor.

The following article describes the steps taken to create an Optimal slotting.

The Optimal slotting process consists of four stages: the Preslot Stage, the Slot Refinement Stage, the Final Slotting Stage and the Slot Maintenance Stage. For most distribution centers, all these stages are needed to determine the optimal slotting system.

To begin the first or Preslot Stage, detailed analysis of each Stock Keeping Unit (SKU) must be performed. Specifically: SKU sales (case and cube movement), inventory levels and dimensions data. The Preslot Stage can also incorporate rules to insure that unique complexities of your operations are adhered to. Examples of these complexities are: Vendor pallet heights

and pallet weight, date or lot sensitive products, fire protection, chemical protection and other restrictions. Once analyzed, we then determine what the slot type should be for each item and then assign each specific item its optimal slot type. These slot types can be as small as shelving units or as large as multiple deep and multiple faced full pallet slots.

While the preslot may have yielded the optimal slot type for each item, the preslot slot types rarely fit existing warehouse layouts and equipment. Assuming we are not going to build a new Greenfield facility, we must then proceed to the second or Slot Refinement Stage. Therefore, the slot types and/or layouts must be adjusted to ensure a good fit between the assigned slot types and the slots available in the facility.

After the sum total of all the assigned slot types correctly fit the given warehouse layout, the third or Final Slotting Stage can begin. In this stage, items are assigned an actual new slot or position number that is based on a combination of criteria. These criteria ensure that the most efficient warehouse operating system possible will be put into effect – providing Optimal slotting for a given point in time.

There are two basic methods for final slotting. The first, the Customer Receiving Method, emphasizes efficiencies in customer receiving and the second, the Warehouse Shipping Method, emphasizes the efficiencies in warehouse operations. The method chosen by most companies is a compromise between these two methods and is designed to suit the specific needs of both the warehouse and the customers.

This method combines the best attributes of the first two methods. Slow and fast moving items are slotted together in one continuous pick by Family and SKU Type. Thus, a selector need not travel the entire pick line for every order. Items are then slotted by sequence (descending/ascending case height or weight) within each Family, so as to facilitate the actual stacking of items on a pallet.

The combined method tries to satisfy the requirements of customer receiving, while emphasizing efficient warehouse shipping techniques. It also reduces selection travel by segregating different types of orders.

Other guidelines to slot items within a grouping are, as follows:

- **Numbering:** Different numbering methods are used to optimize the productivity of all direct labor (Z-Pick, U-Pick, X-Aisle, One sided, etc.) The preferred method is dependent on your type of operation.
- **Priority:** Once the preferred numbering method is chosen, Items with the highest movement are slotted at "dot" positions. These positions concentrate movement and minimize the number of times an order picker will cross the aisles and walk backwards.
- **Weight restrictions:** Heavy items are kept at an ergonomically friendly height.
- **The number of slots:** This should include a minimum of 10% opens positions for introduction of new SKUs and flexibility.

When new racking is installed or a major reslot of aisles occurs you must determine at what levels to set the new rack elevations. There are multiple factors to consider for this stage:

- **Existing Limitations**
  1. Building clear height
  2. Sprinkler levels
  3. Maximum fork lift height
  4. Vendor TIER and vendor HI
- **Ergonomics**
  1. Height of the beam in a two level pick (low enough to select product but high enough to get a pallet in the bottom

position)

2. Height of the beam in a one level pick (high enough not to hit your head!)

It's a challenge to take all the above information, tie it together and then use it to make all the necessary changes in the physical building. Creating a detailed step-by-step move plan with associated time-lines is an integral part of the re-racking, re-setting and re-slotting project.

The Final Slotting of a facility is performed for a snapshot or a specific moment in time. Past historical levels of movement and inventory can quickly change due to new items, changing sales patterns, seasonality and many other factors. As a result, the slotting must be constantly monitored and maintained, if you are to keep the warehouse at its highest operational efficiency.

Finally, the fourth or Slot Maintenance Stage would be the ongoing process of keeping the warehouse at peak operating efficiency. Reports of changes and additions to the final slotting will allow you and your employees to keep the slotting continually up-to-date.

Slot Maintenance reports are essential to pinpoint problem areas and summarize overall operations.

These reports will provide the analytical and support tools needed to easily keep your facility up-to-date. Many imprudent companies stop after completion of the final slotting stage and suffer the consequences later, when the delicate balance achieved during final slotting is degraded over time.

The overall objective of the Slot Maintenance reports is to simplify the ongoing task of maintaining a good slotting system. Slotting systems are dynamic and cannot be maintained without continuous effort.

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