



# In the right place

Distribution centre managers are constantly trying to do more with less. However, as Tom Zosel Associates argues, they often overlook the advantages that can be gained from thinking more about where items are kept.

In the emerging age of mass customisation and internet-based fulfilment, logistics managers are faced with a proliferation of stock keeping units (SKUs) in their warehousing and distribution facilities, regardless of the industry. They also face continued pressure from top management and the competition to accomplish more in less time and with fewer resources. One of the best kept secrets in this context, whether for raw materials, components, assemblies, work in progress (WIP) or finished goods, is the importance of managing where we put

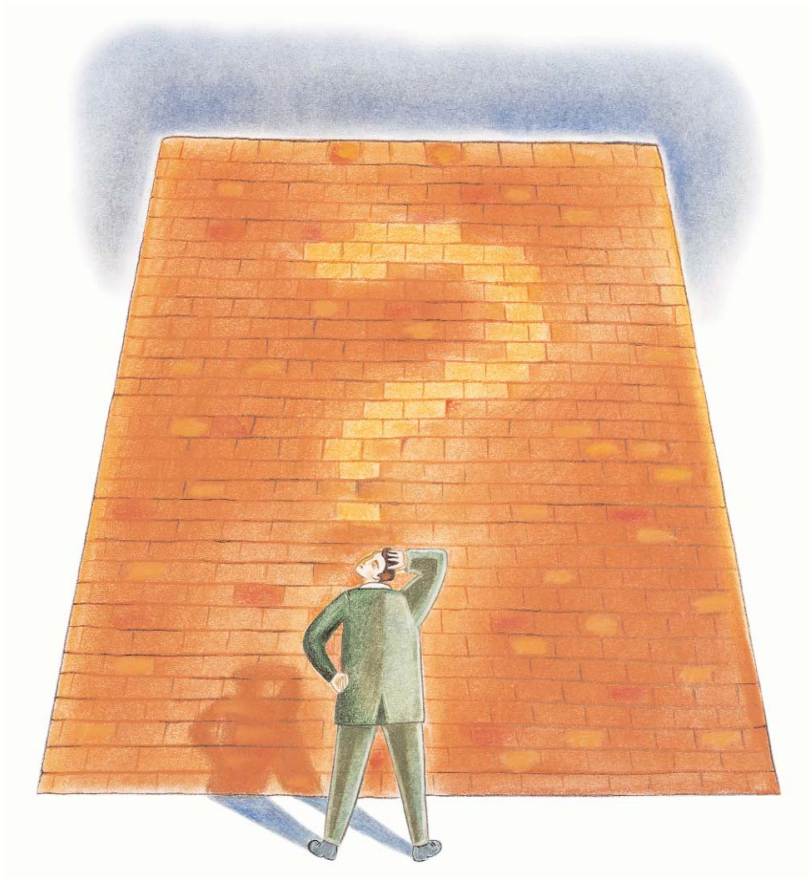
things. This seemingly simple task has powerful implications for productivity, handling and fulfilment costs, inventory turns, service levels, carrying costs and shrinkage.

There are three elements to consider in studying this matter. One is the nature of the places we create for storage (capacity, shape, where they are located and how they are identified). The second is what we store in those places (the kind of product, its popularity, its physical characteristics, its seasonality, etc.). The third, and probably the most often overlooked, is maintenance. It is

important to acknowledge that today, more than ever before, slotting needs to be an on-going process, not a one-time event.

## HOW WE STORE THINGS

There are several factors that bear on the 'how' question. The first element that comes into play is the mission or role of the facility. It makes a considerable difference whether the facility is to supply a single, attached plant or whether it provides full line distribution for other locations, or something in between. Cross-docked items dictate a



very different kind of storage than warehoused items. Are the loads to be handled unitised? Are they one or a few standard sizes or do they vary widely? Obviously the physical size and shape of the available space also dictates a lot. Local fire, safety and zoning codes may also play a major role, depending on the material involved. For many, a third element is what is inherited — existing rack, shelving or other storage units, the current layout, and the kind and size of available materials handling equipment.

Invariably, our existing facilities reflect more accurately the requirements of the past than those of the future. The number of pick locations, the amount of reserve storage required, the physical qualities of the product or material and the importance of stock rotation are a few of the considerations that need to be made here.

Knowing how many additional SKUs will be housed in a location, what quantities of that item will be on hand at any one time, how it will be packed on receipt and how it will be consumed enable management to anticipate future activity. It also facilitates advanced

planning and helps management predict capacity requirements.

#### WHAT WE STORE WHERE

Whatever the characteristics of the storage location, we need to match specific locations or location types with specific products or product groups. Again, many considerations may bear on the decision.

Beyond fire and safety requirements, we need to take into account the way the product will utilise the storage space. If it is too large for the space, it will require more handling to break the unitised load and store it in two places. If it is too small, a significant amount of space will be wasted.

Another essential consideration is the popularity of the product. If it is in high demand, the closer it is located to its next destination (a position on the manufacturing line, a dock door or an injection point in an assembly process, for instance) the less travel will be required to move it. Demand, for this purpose, is best measured as ‘hits,’ i.e. the number of times the item is requested, as distinct from how much is

requested. (12 trips to retrieve 12 units is very different from two trips to retrieve six units each time.)

Two other factors impact the ease of retrieval. First, if all the most popular items are stored in close proximity, the likely outcome is high congestion. Some trade-off has to be made, therefore, between less travel and less congestion. The vertical placement of the item also affects the difficulty of retrieval. Given five shelves or levels on which an item could be stored, as an example, the most popular ones are best stored on the most easily accessed level(s). When a level represents a pallet height, the most easily accessed level is usually the floor. It also takes the least time (vertical travel takes longer). When the vertical levels are case flow or bin shelving, the ‘best’ locations are usually between the waist and shoulder level of an average person, sometimes referred to as ‘the golden zone,’ because it is ideal for picking.

One other consideration is dependency, which is sometimes related to order patterns. In hardware, wheelbarrows are usually shipped in component parts rather than assembled to save space. Seldom, however, does one buy a wheelbarrow without wheels or handles. Those components need to be stored adjacent to one another, unless the available storage fixtures will not accommodate such unlike items. If, whenever a customer orders ‘x,’ there is a high probability that they will also order ‘y’ (two colours of the same garment, or matching purses and gloves, for example), then those items should be located near one another as well.

#### SLOTTING MAINTENANCE

As noted at the outset, maintenance of item slotting needs to be an ongoing process. When seasonality, promotional programs, weather, product obsolescence or other factors change the demand for a product, the cost to handle and replenish the product, let alone the best utilisation of space, strongly suggests relocating that item. Only by managing the process on an on-going basis, or at least using a formal, scheduled review process, can optimal slotting be maintained. There is an inverse relationship between slotting review frequency and operational costs (more reviews usually equal lower cost).

For most warehousing operations, it is valuable to periodically review entire zones or sections or even the whole facility. Organisations that are seasonally driven or where a large number of the items change over within a few months should probably review slotting even more frequently. Systems can help a great deal in this context by tracking hits and replenishments. Using exception reporting, the products that need attention (those that fall outside a defined range for that location or zone) will surface quickly.

In a large scale review process, or when setting up a slotting scheme for a new layout, there are several software applications available on the market today that can greatly improve the level of refinement that is possible. They can also greatly reduce the time required to arrive at the preferred solution. The best of these tools even go so far as to recommend changes and to define the sequence in which to make those changes, so that item moves are minimised.

#### WHY BOTHER?

Operational costs, customer service levels, inventory performance, and carrying costs are all impacted by item slotting. When replenishments become too numerous, handling costs go up, pickers are less productive, product damage increases, service levels suffer and turns are reduced. When unit loads have to be split due to wrong slot size matches, the risk of 'lost' product increases, impacting many of these factors again. While an aggressive slotting program will not solve all of those problems, it almost always impacts on them very favourably.

The trade-offs for these benefits are the one-time investment cost and the on-going labour cost to execute the program. Current single site license fees and implementation costs will run around US \$100,000 to \$125,000, depending on the specific application and the context for its use. Training usually takes a couple of weeks. The most time consuming part of the process is usually defining storage equipment and

configuring the system for the existing layout(s). Inventory data is loaded into the software from existing systems using standard file formats. Regular work with the software can be very effective in sustaining maximum space utilisation, while minimising travel to and congestion around the most popular items in the warehouse.

Depending on the volatility of the environment, operations with more than a few thousand items or those with several sites and a significant degree of change in demand will find this application easily justified. Payback in a high volume, highly dynamic environment can be six months or less. The ROI calculation can include not only the cost of production delays, but inventory performance, increased operational costs and even lost sales.

For anyone being asked to do more with less, or to continue wringing costs out of their part of the supply chain by making long term improvements, slotting may be an untapped opportunity that is close at hand. *LME*

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