

Distribution Center MANAGEMENT

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Managing people, materials and costs in the warehouse or DC

From the Golden Zone

Selecting the most effective racking system requires careful analysis

By John T. Phelan Jr.

Before selecting the storage system for either a new distribution center or an existing facility, the first step is to analyze the products that will be handled. Whether it's 150-pound mattresses, cases of bottled water, or 10,000-pound rolls of paper, the product determines the proper storage.

Although conventional thought may be that racking is just racking and there is nothing very complex about it, selecting the most effective rack system is almost never simple. This is especially true when your business operates in a dynamic environment, as most do. Balancing building layout, product mix, and type of access required for that product, warehouse and distribution managers have some tough choices to make.

Evaluating product mix and access

To help facilitate the process, there are guidelines for evaluating which storage system best meets your needs. Start by answering the following questions:

- Is the product first in, first out (FIFO) or last in, first out (LIFO)?
- How much storage density (items stored in a given area) do you need?
- Are there specific product flow requirements?
- How much forklift access do you require?
- Do you normally pick pallets, cases, or pieces?

Building requirements

Make sure that whatever rack storage system you choose will fit the footprint of the facility.

Ask questions such as these: "what is the space allocated for storage?" and "what limits are there within the area?"

In an ideal scenario, you should identify and

design the storage system prior to site selection or building design, although this isn't always possible.

Critical components of a building footprint as it relates to a storage medium are:

- Building column layout
- Building clear height (useable vertical space below the roof or ceiling)
- Overall square footage
- Permanent and semi-permanent obstructions (HVAC, offices, electrical, sprinklers, lighting, etc.)
- Simplicity of building layout (a rectangular building is typically more conducive to efficient storage design than one that has large square footage through multiple build-outs)
- Dock door placement
- Safety requirements (egress paths, forklift aisles vs. foot traffic, etc.).

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Types of rack storage

When choosing rack storage it is important to understand how each type works, the pros and cons, and best uses.

- **Pallet flow rack.** With pallet flow rack, the pick face is always occupied since gravity rollers or tracks allow products on pallets to flow to the front of the pick face. Since the lanes are slightly pitched, the pallet moves forward until slowed or stopped by a retarding device, physical stop, or another pallet in front of it. When an operator removes pallets at the pick face, the remaining pallets accumulate forward. Since pallet flow rack is the only dynamic rack system that offers a first in, first out (FIFO) method of inventory management, this is beneficial when expirations are a consideration, as well as the risk of product obsolescence.


- **Drive-in/drive-thru rack.** As the name implies, drive-in/drive-thru rack means that a forklift can travel inside a storage bay that is multiple pallet positions deep in order to place or retrieve a pallet. Oftentimes, forklift drivers are guided into the bay through the guide rails on the floor and the pallet is placed on cantilevered arms or rails. Drive-in/drive-thru rack is typically used when space is limited and when there are many of the same type of products (SKUs) being stored. This medium also requires experienced fork truck drivers. Since every pallet requires the truck to enter the storage structure, damage is more common than with other types of storage. In designing a drive-in system, dimensions of the fork truck, including overall width and mast width, must be carefully considered.

- **Selective rack.** Selective rack is the most popular and widely recognized bulk storage solution in industrial environments. It is also commonly referred to as static rack, and as the name implies, there are no moving parts. Selective rack is an ideal solution for a warehouse that has a

wide variety of products (SKUs). It offers direct access to all stored pallets, allowing warehouse operators the ability to handle one pallet without the need to move another. Selective rack also offers ease and simplicity with respect to inventory location and designation as each pallet position can be assigned a dedicated SKU for storage.

- **Push-back rack.** Push-back rack uses between two and six carts that nest within one another and travel by gravity to the first position of a lane when empty. A warehouse operator can drop a pallet on the first cart just as if he would with selective rack. In the event that another pallet needs to be stored, the warehouse operator gently pushes the first cart back, thereby making room to place the second pallet on the second cart. When an operator needs to retrieve a pallet, he lifts the first pallet in the lane and gravity forces the carts behind to move forward and present a new pallet to the first position in the lane. This storage medium provides a last in, first out (LIFO) method of inventory management similar to drive-in/drive-thru rack. The advantages of push-back rack are increased density of storage, very similar to drive-in/drive-thru rack, but coupled with the ease of selecting the pallet at the pick face instead of driving into the racking system.

By taking all of these factors into consideration and prioritizing them appropriately to develop the ROI you want to achieve, the result will be the ideal storage situation, meeting both your current and future needs.

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