

Dense racking vis-à-vis Conventional Racking

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A famous aerated beverage company got land on lease for their warehousing requirement. The projects team decided to utilize the height of the warehouse and went for great conventional racking storage for pallet racking. They were quite happy to have created additional space inside the limited land of the warehouse. They bought some good quality stackers and inaugurated the warehouse. The company scored big on their sales and with good marketing hacks, the demand grew manifold that within a year they felt that even the additional space was short, and they again started looking for land nearby. Sounds like a relatable story?



The most important question here to ask is, **was all the storage space of the warehouse utilized properly?** Are there any different ways of storing the bulk goods? Can additional space be created with the storage pattern itself without expanding the existing structure? If you ask these questions to us,



without any hesitation, we say “**Dense Racking**” and we would like to present our views on dense racking, alongside the popular conventional racking systems.

Dense racking uses a Pallet Shuttle which can go deep into the storage lane to retrieve, deposit and reshuffle pallets. It helps in achieving vertical utilization of space, where in the height of the racking can be as tall as 40 meters. **Also, as it doesn't require an aisle between the racks for movement of forklifts, hence results in increase of usable space by up to 75 percent.** Distribution operations that **require high volume order fulfilment or freezer and cooler applications** are some examples of when a high-density pallet storage rack system would be required.

In fact, all types of pallet racking systems create some level of increased storage density in their own set of applications; also, carry certain advantages and disadvantages in terms of operational efficiency, flexibility, safety and speed of operation. **Let us gaze into the intricacies of some of the popular bulk storage warehouse racking systems.**

- **Selective Racks** – The most commonly used pallet system, selective racks provide access from an aisle. These warehouse racking systems are ideal for narrow aisle racking, standard systems, and deep-reach systems. Selective racks require special narrow lift trucks and accommodate a single pallet in depth. This system has the lowest storage capacity of pallet & also the lowest cost per pallet, however the it is not scalable & and will be expensive when the no. of pallet positions exceeds 3000. **In contrast, with more no. of pallet positions & the product lines, dense racking structure would bring greater cost optimization anywhere between 20% to 50% in terms of reduced storage cost per pallet.**
- **Drive-In and Drive-Through Racks** – Conventionally, for high-density storage drive-in racks and drive-through racks have been in use. With one entrance and exit, drive-in racks have been commonly used where LIFO can fit the bill; and with access at both ends, drive-through racks have been used where FIFO process is required. Constructed of steel in most cases, these warehouse racking systems have enough space for a forklift to move into their bay. However, these systems pose **some serious limitations when it comes to the safety of forklift operators while handling the material** inside these racks. Also, the systems **won't work quite well for storing small batches and more variety of products.** Lastly these racks will pose restrictions the choice of forklifts.



- **Push Back Racking Systems** – Typically used for bulk storage, push back racking systems store products that span 2-5 pallets. When a pallet is loaded onto the system, it pushes the next pallet back, and when a pallet is unloaded, it is pushed to the front of the system. Push-back racking systems utilize the LIFO system and often feature inclined rails and sliding carts and double lanes. **This racking system doesn't require a forklift to go into the lanes unlike drive-in/drive-through & hence enhances the safety of the forklift operator. When it comes to the limiting factor of this system, it's the depth of the reach with a maximum of 4-5 access lanes.**
- **Flow Racks** – Also known as gravity racks, flow racks are also one of the commonly used storage systems for high-density storage up to 20+ pallets deep. With this type of warehouse racking system, items are loaded at the higher end and removed at the lower end using a FIFO system. The rotation of products becomes automatic as the racks flow with loading and unloading. Flow racks make use of gravity rollers that move in conjunction with the rack load and feature brakes or speed controllers to regulate item movement. **One advantage of flow racks is they do not require electricity for operation because gravity powers them.** High cost compared to all other conventional racking systems and poor accessibility to all the pallets are the attenuating factors for the choice of this racking system.

The challenge with today's warehouse racking is to store an ever-increasing number of pallets, in a less storage space. Dense racking system saves both time and money on product management and storage, delivery and shipping, product transference, and labour cost.

