

Warehouse & Distribution Center Construction — Thoughts on Future Efficiencies

By Ed Turner

With the advent of ECR, food distributors are always on the lookout for innovations in warehouse design to reduce costs and heighten productivity. Consultants in the warehouse design industry underline a number of significant areas that can make food distributors more competitive in the market place. These include innovations in space utilization, improvements in labor and warehouse efficiency and increased emphasis on higher turns.

Chief among areas that warehouse managers should be concerned about is space utilization. One important element of space management relates to cube utilization the ability to store more products in the warehouse. Cube utilization, among other things, means pallets and case sizes are managed so that they're slotted into an effective storage system.

For example, if a pallet opening is five feet high, pointed out Anthony Venitu, vice president of The Consulting Group, Inc., and you have a lot of product only a foot and a half or two feet high, you're not managing the use of that slot carefully the result being excess space not being used properly. Fundamentally, continued Venitu, if you had a warehouse management system, it would periodically drive you to survey rack openings and lead you to consolidate product into a smaller slot, or put multiple products into a slot for better utilization of the space, the overall building cube.

When Eugene Stasiuk, Project Manager of KOM International, Inc., discusses cube utilization he pro-

duces a surprising figure when he says that, "In a good, well designed warehouse say a regular 26-to 30-foot high building when you look at the overall square feet and the height of the building, you're actually only going to get anywhere from 15 to 18 percent of that airspace for product. So how we design the facility is very, very important."

Only a small percentage of the cubic volume of the building is actual product. The rest aisles, docks, the steel of the racks, the flue spaces between the racks for the sprinklers in fact, contains no product, Stasiuk explained.

Aisle Configuration and Racking

For Stasiuk, changing the layout of a warehouse becomes all-important in order to create greater capacity for product. In some cases, he recommends moving from floor stacking to racking to double deep racking, to taking away fixed

equipment that is a hindrance to capacity and installing racking that can increase overall net capacity in the facility.

Changing aisle configuration can also increase capacity for product, cutting costs further. In some operations, Stasiuk observes, wide aisles force selectors to walk a lot as they do cross aisle picking. In those cases, you can reduce labor and increase capacity by using narrower aisles. In fact, Stasiuk points out that there's equipment now that can work in 10foot to 10foot 6inch aisles, versus the old days of 12foot 6inch aisles when you had the counterbalance lift trucks.

Narrower aisles also mean more space for fixed equipment like racking, whether it's single deep or double deep racks, thus increasing capacity. In fact, Stasiuk told Food Distributor of examples in which his firm increased the cubic capacity by 35 percent, through redesigning the layout of the facility and, of course, increased profit margins.

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Cube Utilization Expanding Upward

Another aspect of reducing costs and increasing productivity through effective space utilization is expanding upward instead of outward, creating greater cube utilization. With property costs rising, building upward holds particularly true for warehouse companies in urban settings or for those who are landlocked. Paul Pisarcik Project Manager at Sedlak, Inc., spoke of a recent client that could not expand as much as it needed. In fact, it was running out of space and needed to increase capacity for the freezer as well as the dry goods area.

After careful consideration, Pisarcik and Sedlak decided upon installation of a high-rise storage and retrieval system in a freezer and cooler application. Sedlak is constructing a 110foottall, rack-supported building. "We're doing some pretty unique things with the operation itself," explained. "We're using some automated storage and retrieval cranes so that in a total space of about 90,000 square feet, we're actually storing about 40,000 pallet positions with a significant increase in cube utilization." Sedlak is also confident that the automated storage and retrieval cranes employed in the facility are sophisticated enough to meet the throughput requirement that the client needs in order to get the product out the door.

In a rack supported facility, explained Stuart Gordon, Vice President of Sedlak, the building is



not a conventional building. First, the floor is poured, then the racks are installed on the floor and then the roof and skin of the building are applied. "In fact, the building is constructed around the racking system," said Gaylord Gray of Consulting Group, Inc. "That's what makes that unique, because your actual building, itself, is focused on the structural integrity of the rack, he said.

The trend, however, is away from rack-supported buildings. Not only are they initially more costly, but they become a high longterm maintenance expense. Although a racksupported building is more efficient in that it offers greater space for product in structures with limited floor space, the building's sophistication makes it inflexible. It must remain a rack-supported building for its lifetime and may even require pallets of a particular size. In fact, specific requirements must be met before you can even consider recommending a rack supported building, Gordon said.

Thus, the trend is toward buildings in the height range of 40 to 50 feet, observed Gordon. At that height, you still maintain some of the

efficiencies of a tall structure as well as versatility if you want to alter the building later, but without the initial or continuing costs. These more conventional buildings still contain a narrow aisle operation, with a VNA (very narrow aisle) truck, maximizing space utilization.

Salvage Congestion

Efficiency in space utilization takes other forms as well. When KOM's Stasiuk looks for ways to cut costs and increase productivity for a client, he searches for avenues to increase warehouse capacity and obtain more life from a facility. As an illustration, congestion and obstruction problems within the warehouse can increase costs by affecting throughput and flow through.

Stasiuk, for example, recounts a recent client that had a salvage and return operation that blocked three doors in the middle of a loading dock. Of course, that salvage and return operation created congestion in the other 20 doors that were available. That ultimately led to slowdown in the warehouse and decreased throughput. Dock areas frequently

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contain congestion that can be eliminated, increasing productivity, Stasiuk said.

After some consideration, Stasiuk and KOM moved the salvage and return operation to a corner, therein reclaiming the three lost doors, which meant that lifttrucks could turn around quicker not only for receiving but for shipping. In addition, it meant that selectors would not lose time searching for a place to drop pallets. This new efficiency in space utilization on the loading dock also meant the client could start direct loading and save costs in terms of loaders that the client no longer required.

Reslotting

Another means of effective space utilization is reslotting, which also directly relates to labor and warehouse efficiency. In fact, selector productivity, measured in cases per hour, is one of the central elements Stasiuk examines to increase warehouse and labor efficiency concerns. He views as a significant priority looking for ways that the selector can perform his job with more ease and thus make more picks per hour.

Reslotting the product to where it will be easier for the selector to build a good pallet, to where he's moving quicker because he's not trying to figure out where he's going to put his next case, finally means he's doing his job more efficiently.

Stasiuk recalls situations in which facilities were reslotted and achieved an increase of 10 to 12 percent in terms of selector productivity. Those increases allowed the client to eliminate three or four selectors from its labor pool and thus reduce its warehouse-operating budget.

Increasing Turns

A significant trend toward greater labor and warehouse efficiency revolves around increased turns in warehouses, particularly in the grocery sector. "What this means is that clients want to turn their product as quickly as they can," Gordon said. It's the concept of 'just in time inventory' the more you crossdock,

In the grocery industry, higher turns and less inventory are paramount because of limited shelf life. In facilities with perishables — like produce, fresh meat, dairy products, and deli products — warehouses tend to need more square feet to handle the variety that is required because product is turned around very, very quickly.

the less you have to store in your racks, and the less you have to pay for while the product sits in the warehouse.

However, increased turns through crossdocking require the proper support system principally, a warehouse management system for crossdocking. This system includes bar coding and advance shipping notices from suppliers so that people in warehouses know that a particular product is in transit and due to arrive shortly and therefore they can now download the orders so they can crossdock immediately.

In fact, greater turns mean less inventory. In the past, buyers thought they were saving money by buying a lot of product. However, it eventually cost more in terms of warehousing the product and moving it around over time. Significantly, in recent years inventory has been a very serious cost consideration, so the faster warehouse people can turn their inventory, the better their financial flow becomes. KOM's Stasiuk provides the following observation about less inventory: "He who has the least inventory normally wins."

In the grocery industry, higher turns and less inventory are paramount because of limited shelf life. In facilities with perishables like produce, fresh meat, dairy products, and deli products warehouses tend to need more square feet to handle the variety that is required because product is turned around very, very quickly. In fact, produce and fresh meats, particularly poultry and pork, need to go out in a day and a half to keep freshness. Dairy and deli products have to turn over in a week. Frozen foods don't require as quick a turnover time. Thus, in warehouses with perishables,

automated high rise systems are not worth the investment, according to Stasiuk, *because of* quick turns.

Crossdocking

A high rise storage system would simply waste labor and *warehouse costs* by first storing product, then retrieving it when crossdocking can *eliminate those* elements. In fact, it's important to *keep the* product on the floor so *selectors can* have easy access. *Moreover, less expensive* equipment than the ASR systems can put loads up in the air at 35 to 40 feet and retrieve product relatively quickly.

The trend in the warehouse industry is toward greater turns and smaller warehouses. Stasiuk, for example, points out that some warehouses have actually decreased their inventory as they've grown. Their secret is increasing turns so as they've grown they can avoid, among other things, having to break ground and add extensions, thus saving significant expenses. Moreover, with higher turns, warehouses can give prime locations to products that represent most of their business or most of the volume they're shipping through, allowing those products to have the best locations and correct size of slots, again boosting productivity.

Finally, innovations in space utilization, improvements in labor and warehouse efficiency, and an increasing trend toward crossdocking and higher turns offer warehouse companies various solutions to their own unique problems that, if solved, will make them more competitive in the market place.