

Sketching Tomorrow's Warehouses

Storing the exploding numbers of SKUs anticipated in 10 years time could require distribution centers that extend for miles. Instead, tomorrow's facilities will be designed to strategically expedite product flow rather than to provide long-term storage.

"In the future, we'll be 'wrapping a box' around logistics processes," says Keith Swiednicki, a partner with the logistics and supply chain consulting firm KOM International Inc., Montreal. "Distributors will be working more closely with vendor capabilities and retail requirements, which will change how products are handled through the distribution center. Today there's a lot of inventory in the supply chain and in the distribution centers. There will be a lot less inventory holding; instead, it will be moving."

In the evolution from product storage, distribution centers will emphasize identifying the least-cost method of moving products to customers and retail shelves. This strategy is expected to significantly decrease product square-foot storage requirements. Today's average storage per-item is estimated at 41 square feet, with best-in-class facilities managing 15 square feet. Identifying the least-cost movement method will enable tomorrow's warehouses to squeak by with only 12 square feet per item.

Emphasizing product movement over storage will also enable more efficient facility designs with length-to-width ratios of 1 to 1.75. KOM International foresees a model facility that is 570 feet long and 325 feet wide. To expedite flow through, two opposite or adjacent 110-foot deep docks will simultaneously handle shipping and receiving operations.

Distribution center operations will increasingly transition to a hybrid outsourcing model that enables certain product lines that are more efficiently handled by an outside provider to be cross docked through the main distribution center.

"In the warehouse of the future you'll see a lot more activity, items moving through the distribution center to fulfill whatever services the retailer is offering," Swiednicki says. "Another major change is that certain items may not be handled by the retailer or wholesaler, but solely by their network. An in-depth study of all items will determine how to best handle each item in a different product line. At a high level, decisions will be made as

to whether an item should be cross docked, flow through, or reverse line picked. In this environment not all items have to be in the door."

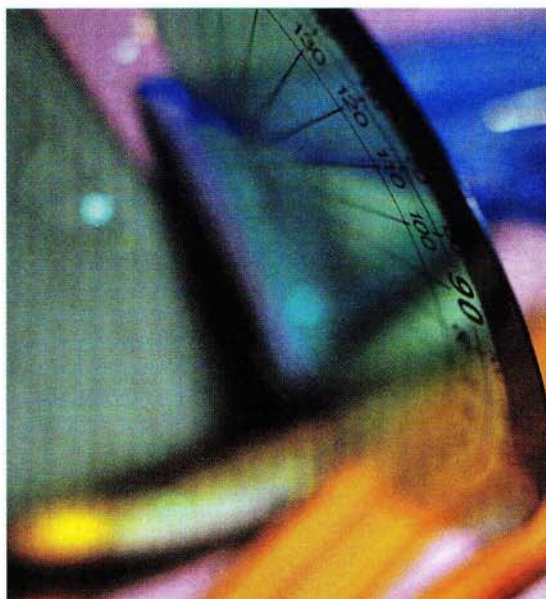
Items that do not qualify for cross docking, flow through or pick by line will be placed in a conventional storage zone within the warehouse. Various stacking heights will exist for dry and chilled products, and automated material handling equipment will be used to further increase product flow through. This highly efficient facility will be capable of handling peak inventory situations at 90 percent utilization without negatively impacting productivity.

The warehouse management system supporting such an operation will enable various technologies and best-in-class practices, including paperless picking, automation and conventional processes. This facility's material handling and storage systems most likely will be a culmination of various concepts, with each device chosen to perfectly match handling requirements. KOM International's model warehouse of the future uses cranes, A-frames and very narrow aisles, combined with conventional handling methods. "The facilities of tomorrow will also utilize innovative fork trucks that can operate up to 60 feet in the air and change aisles, says Swiednicki.

Facility locations within 24 hours of major trading and shipping zones, as well as in close proximity to highly skilled and motivated labor are the wave of the future. The cross-functional workforce of tomorrow will see distribution workers who

understand the relationships between functions and are capable of executing a wide variety of tasks in the warehouse. Because the ratio of management to workers impacts training, monitoring and management, each of which influences productivity, companies will seek to implement a direct to indirect ratio of 12 to one.

"The biggest difference is how products will be handled in the future," Swiednicki emphasizes. "Today, the approach is to hold and store inventory. Tomorrow, we'll be moving inventory, in some cases on the same dock where it's received." ❖



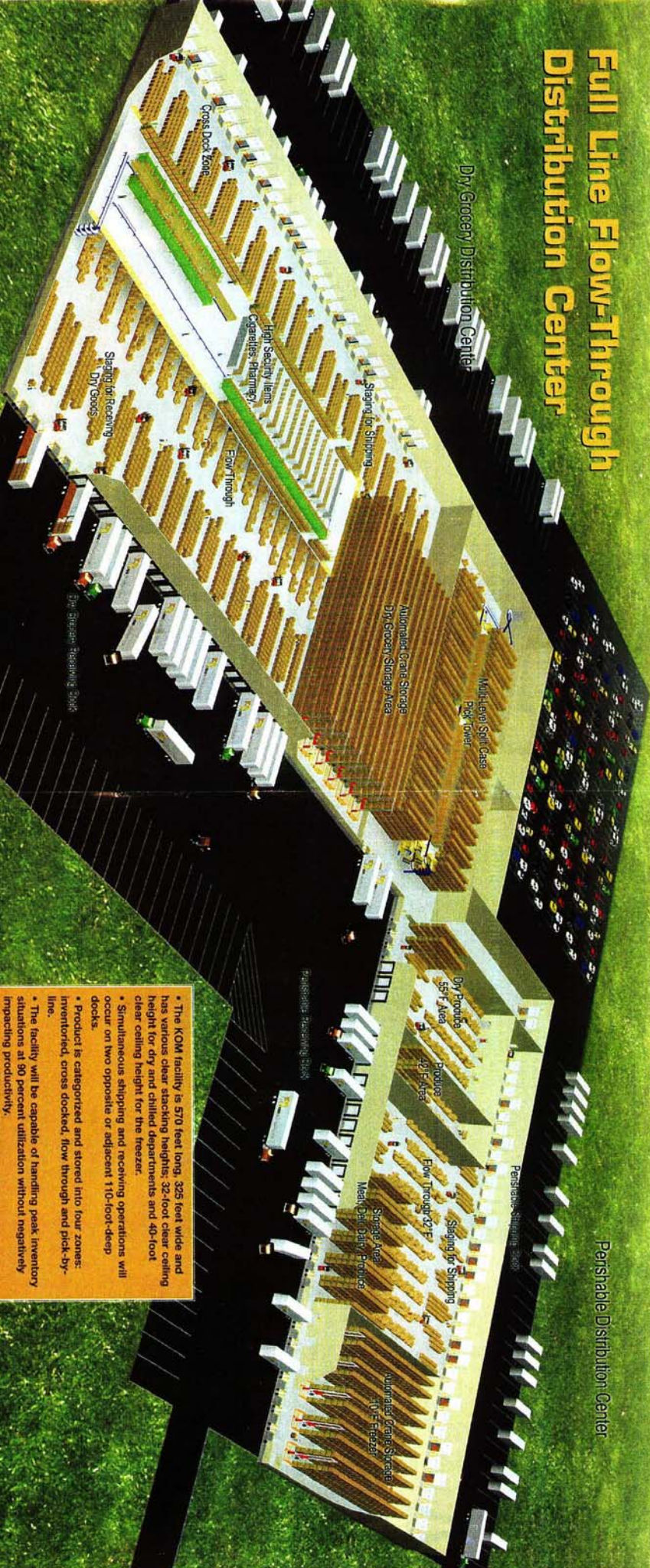
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On the following pages, KOM International Inc., Montreal, and Bastian Material Handling, Indianapolis, have created one possible scenario of the warehouse of the future.

Full Line Flow-Through Distribution Center

Dry Grocery Distribution Center

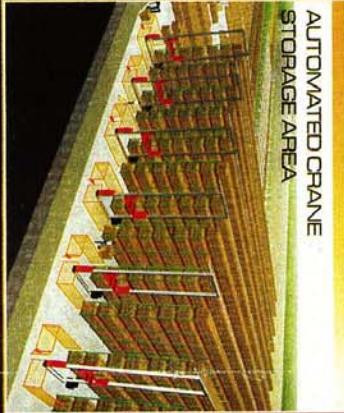
Persishable Distribution Center



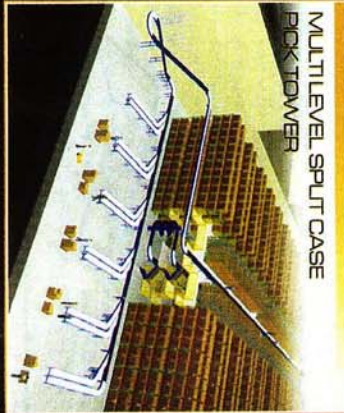
- The KOM facility is 570 feet long, 325 feet wide and has various clear stacking heights: 32-foot clear ceiling height for dry and chilled departments and 40-foot clear ceiling height for the freezer.
- Simultaneous shipping and receiving operations will occur on two opposite or adjacent 110-foot-deep docks.
- Product is categorized and stored into four zones: inventoried, cross docked, flow through and pick-by-line.
- The facility will be capable of handling peak inventory situations at 90 percent utilization without negatively impacting productivity.
- The operation will most likely consist of a hybrid in-house-outsource model whereby certain product lines carried are better handled by an outside provider and cross docked through the main distribution center.



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