

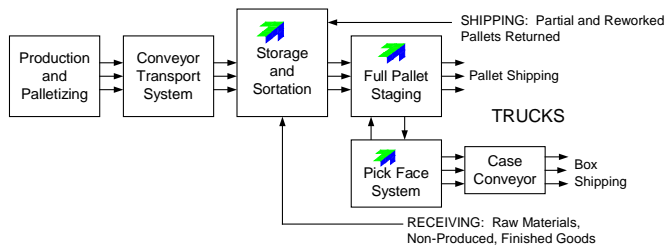
Enabling Supply Chain Improvements via Automated Pallet Storage and Retrieval

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As Supply Chain designs of many U.S. corporations move toward high turn/low inventory models, a number of process elements must be in place. First and foremost is the ability to manage manufacturing so the products produced closely align with demand; that is, a 'pull versus push' approach. Second, and key to success, is the ability to avoid storing the manufactured goods. At a 25% carrying cost¹, this is critical to maintaining profitability.

'Pull versus push' remains a black art, requiring a combination of order forecast and history to successfully manage production vs. demand in any product area, at any time. With household consumer goods, a successful new product introduction, promotional inventory, demand from positive trends and other market influences can cause the inventory turn rate to change dramatically, rapidly, and perhaps for extended periods.

In an ideal world, companies have the right quantity and mix of finished goods to meet any market demand from inventory and in the worst case, from safety stock. Yet, the problem of creating service rate to meet demand remains. In some cases, the 'in the pipeline' aspect of product en route can solve the 'needed now' demand in many consumer products areas. Still, the need to turn product quickly from inventory to orders en route cannot be overstated.

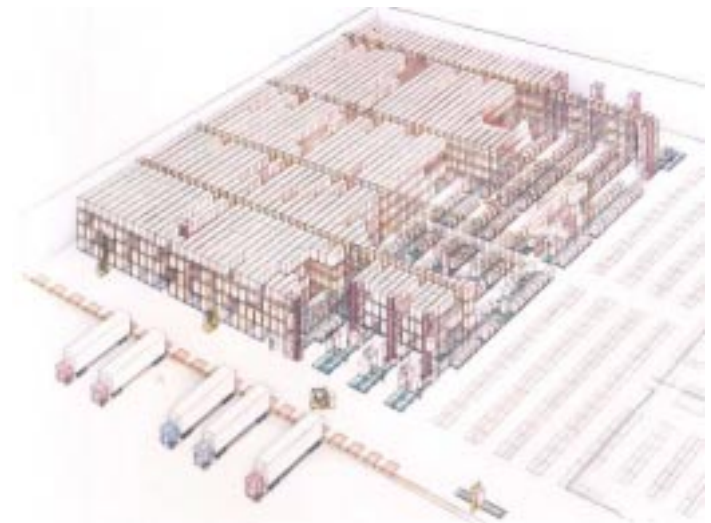


System Flow – Plan View

In conventional manual warehouses, fixed labor levels coupled with rapid demand changes can cause significant order flow disruption. In four-shift operations (weekends plus three-shift weekdays), the change can drive a normally optimal labor force to overtime and/or additions of temporary labor and equipment.

This type of stressful warehousing activity is characteristic of large-scale manufacturers who have already consolidated the supply chain and now must work within relatively fixed limits of product on-hand and distribution. These trends have also occurred for retailers as market forays have proven successful within growing regional markets. Since manufacturing companies can usually scale-up production to meet orders, and retailers often have excess capacity or ability to acquire product from manufacturing, the real bottleneck comes in managing higher turns. This rare but not surprising situation can be exacerbated by limits of available qualified labor and equipment to meet the more pronounced surges of order activity in the already optimized warehouse.

A solution to this problem is the ability to have excess capacity for turns built into the warehouse. This attribute of a well-conceived, mechanically automated pallet warehouse allows a company to meet unexpected market demands quickly and without the difficulties associated with personnel and real estate. The ability to build performance headroom into mechanical systems of material handling is much more straight forward than attempting to hire, train, and deploy a labor force on short notice.



In effect, a well-applied pallet automated storage and retrieval system (AS/RS) can quickly absorb surges of put away, retrieves and replenishments in controlled and manageable ways. Solving a basic business problem for rate and flow is easily understood. Moreover, the turn capability of such equipment and the opportunity to use equipment to solve rate and flow issues is manageable for most Fortune 500 clients; especially those with manufacturing and process based backgrounds. Planning flexibility into the fit of such systems exists, and advanced function and performance can be accomplished by spending time to thoroughly design for current and future business models. Previously, the AS/RS industry focused on selling hardware to clients without careful regard for the business model being served. The AS/RS industry of the future must focus on delivering business requirements first.

At no other time in recent history have so many factors come together to make capital investment in such equipment viable: labor shortages, increasing land/construction costs tied to prime logistics locations, and of course, much more demanding order cycles and characteristics from clients. In the high turn, high-volume warehouse, so prevalent in the consolidated supply chain, no better tool for managing customer service and productivity exists.

1. WERC Report, 1999. "Warehouse Inventory Turnover", Tom Speth.