

# Dynamic Warehousing

**Distribution centers capable of real-time data are critical to lean, demand-driven supply chains.**

BY THOMAS R. CUTLER

There is ‘buzz’ that heightened concerns about supply chain resiliency are prompting tactics of ‘regionalization’ of the supply chain process, keeping inventory closer at hand, if not necessarily taking possession sooner. The result is making warehousing a key element in enterprise strategy much more so than just five years ago.

The concept of renewed centrality of warehouses within supply chains may be a paradigm shift more about how new warehouse control systems are part of lean efficiency, than simply the new role of warehouses in strategic thinking.

Jerry List, Vice President of Cincinnati, Ohio-based QC Software debunks that any paradigm shift has taken place.

“When did warehousing ever go away? The most significant impact on warehousing has been the need for real-time warehouse data via WCS (warehouse control systems.) In today’s economy, distribution centers need to be more dynamic to meet the ever changing demands of the global economy. They must constantly re-invent themselves, whether it is simply expanding an existing

footprint, adding new operational processes such as value added services, or finding better ways to fulfill orders quicker. Warehouses cannot remain stagnant.”

The ability of a warehouse to be dynamic depends on the configurability and scalability of the WCS. The warehouse control system enables an automated warehouse or distribution center to reach peak operating performance. These new technologies remove the inefficiencies commonly associated with under or over utilized labor and material handling equipment. As an element of lean manufacturing and elimination of waste, a warehouse control system pulls product through an automated warehouse or distribution center increasing overall productivity and throughput.

Some solutions offer that the key to the optimization of material flow by warehouse automation is tracking key performance indicators such as the current and anticipated workloads at workstations in order to make key material routing decisions; inbound and outbound order tasks to make key material release decisions.

## Corporate examples of WCS impacts *Under Armour*

Under Armour started with a simple plan to make a superior T-shirt—a shirt that provided compression and wicked perspiration off your skin rather than absorb it; essentially, a shirt that worked with an athlete’s body to regulate temperature and enhance performance. The company was founded in 1996 by former University of Maryland football player Kevin Plank. Under Armour is the originator of performance apparel—gear engineered to keep athletes cool, dry and light throughout the course of a game, practice or workout.

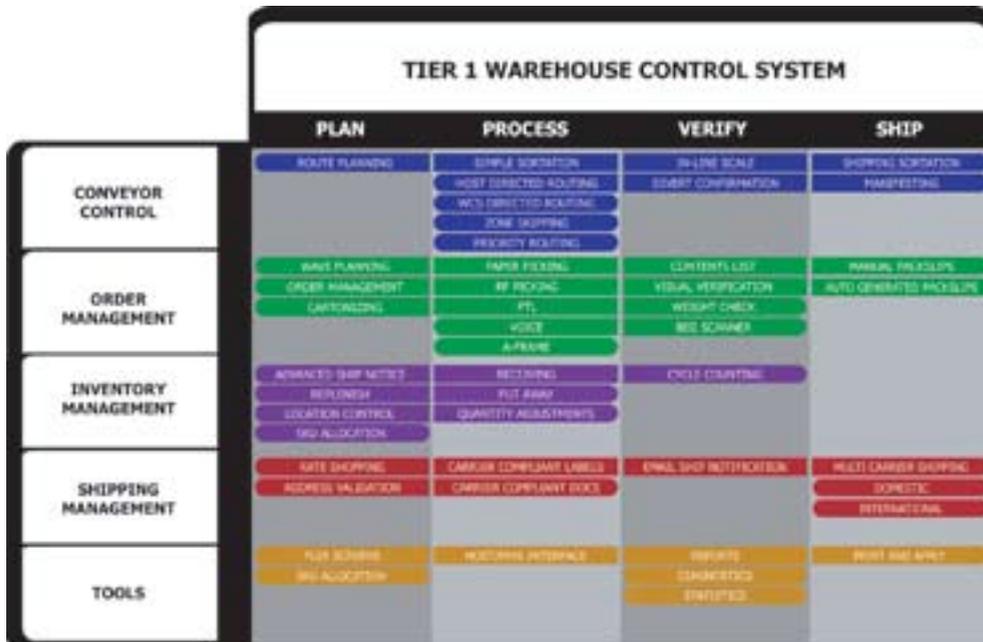
The technology behind Under Armour’s diverse product assortment for men, women and youth is complex, but the company’s mission is to provide the world with technically advanced products engineered with superior fabric construction, exclusive moisture management, and proven innovation.

Under Armour continues to enjoy phenomenal global growth. The popularity of their merchandise is increasing the demand. Products that were initially “slow movers” now need to be moved to pick zones that support higher piece-pick rates. As new products continue to be released, there are increasing SKU counts and the

Under Armour’s brand ambassador “Big E” is front and center at the company’s first branded retail store, which opened Nov. 1, 2007.



KC Southern



need for additional pick locations.

To address these needs, the system underwent the following physical and operational changes this year:

- The number of forward pick zones serviced by RF (radio frequency) picking was expanded from a single pick line with 8 zones to 2 pick modules with 3 levels each providing a total of 45 pick zones.
- The efficiency of the pick-to-light area was increased by converting it from a “pick & pass” to a “zone picking,” thereby eliminating the need for an operator to touch every order.
- Routing of completed orders to the packing area had to be prioritized such that expedited orders and “aged” orders were delivered ahead of recently completed orders. The WCS manages this by re-directing orders once the packing area exceeds 50 percent full.
- The manual delivery of replenishment product was enhanced with the addition of a separate replenishment carton routing system. Cartons are now inducted from a single location and delivered to the point of use.
- A new feature was added to the WCS to allow product being re-slotted from one pick zone to another to be placed into totes and then routed on the conveyor system to the new pick zone.

### Lia Sophia

Lia Sophia provides an extensive line of high quality leading fashion jewelry via direct sales. The company was founded more than thirty years ago and is run by the second generation of the legendary Kiam Family of Remington Razor fame. The company is a member of the Direct Selling Association (DSA), the international trade organization for industry best practices.

At Lia Sophia, the warehouse control system was also changed to meet growing business demands as well as changes in operations to increase productivity: a second

A-Frame was added to increase order fulfillment capacity, and packing operations were separated by order size.

Lia Sophia’s products are sold through a network of sales consultants. Each “order” represents a collection of smaller orders that are consolidated and delivered to the end-user customer by the consultant. This results in a large amount of packing documentation (individual packing list for each customer order plus a consolidated statement for the consultant.) Larger orders can therefore take a long time to pack-out and backup the packing operation. These large orders are now directed by the WCS to a separate packing area, allowing smaller orders to flow through the original packing area.

In addition, the application of shipping labels was converted; from a manual process at packing, to an automated print & apply to further streamline packing operations. Supply orders were separated from normal customer orders to segregate product and eliminate the extra boxes in the picking area, and wave planning was enhanced to segregate orders by pick area to allow supervisors on the floor to drop orders to better manage floor operations.

### Demand driven supply chain

Ultimately, finding methodologies and technology tools to implement powerful and accessible frameworks to reduce inventory levels, increase productivity, and process flow are most critical. A demand driven supply chain is best characterized by a cost-effective digital supply replenishment network.

A key component to a lean initiative is the use of kanban, the “pull” method of keeping production lines suitably stocked with inventory when needed and in the correct quantity. Kanban is the signal needed for inventory replenishment, and as a product is consumed, an order for the utilized inventory is automatically placed. Given the challenges of lost or duplicated kanban paper cards, digital kanban is the leanest methodology for a demand-driven supply chain.

According to Stephen Parker, CEO of Datacraft Solutions, “Inventory reduction and number of turns are key benchmarks in determining whether a solution is truly an on-demand SaaS (software as a solution) electronic pull-based supply chain solution. Only with real-time material flow status, intelligent demand load leveling, and digital kanban, can an instant ROI be realized.”

Indeed, those actively engaged in lean initiatives seek to reduce inventory levels, automate process controls, and enable supply chain integration both internally and through suppliers globally. Many Tier One manufac-

turers report that inventory savings have exceeded \$1 million in saving in just three months in a single cell with a single supplier, with one international transportation component leader achieving an \$8 million reduction in less than six months with 1000 percent increase in turns.

A global environmental systems leader accomplished a 78 percent reduction in transaction costs and a 500 percent improvement in customer response time as a result of a Demand Drive Supply Chain automation

solutions delivered securely over the Internet. A distinct advantage that drives the rapid, even instant, ROI is the SaaS process requires a far smaller up front investment financially than a similar software system that requires maintenance and installation costs.

## Maximizing productivity and reducing total costs

Whether distributors or manufacturers (or a blend of both), there is a need to continually innovate to maxi-

mize productivity and reduce total costs; initiatives of process improvement and waste reduction result in cost-saving efficiency. Productivity is output, efficiency, and production. Waste is identified many ways, yet ultimately is any activity that requires allocated resources but adds no value from the customer's perspective.

Some activities, while not directly adding value to a product or process, such as time spent on equipment maintenance or an accounting function, are necessary in the production of goods or services and must be perpetuated. Non-value-added activities must be reviewed and constantly reevaluated, identified as waste, and eliminated.

Foolishly, many firms still maintain inventories of a million plus items. Using extensive networks of distribution centers and warehouses to ensure prompt and reliable deliveries to their customers, success is still not guaranteed. Lean methodologies represent problem-solving tools and must allow enterprise-wide integration with the firm's core strategy.

Purchasing organizations wrongly assume that "just-in-case" inventories are less costly than the cost of downtime or lost production. Preparing for an emergency or downtime situation usually creates inventories of items never used. Lean procurement activities must be directly related to production; otherwise they are waste. Many organizations have lean strategic sourcing initiatives implemented, yet find nearly half the purchases are spot buys or unplanned. This inefficiency trumps the possible advantages of warehousing 'regionalization' to manage inventory control. WT

---

*Thomas R. Cutler (trcutler@trcutlerinc.com) is the President & CEO of Fort Lauderdale, Florida-based manufacturing marketing firm TR Cutler, Inc. and is a frequently published author within the manufacturing sector.*

**For reprints of this article, please contact Sunny Coverly at [coverlys@bnpmmedia.com](mailto:coverlys@bnpmmedia.com) or 610-436-4220 ext. 8522.**