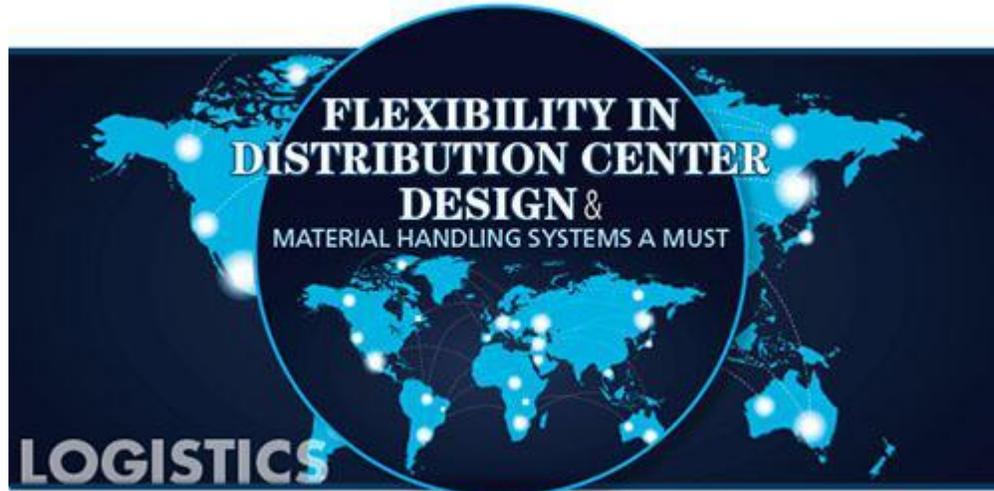


Flexibility in DC design and material handling systems a must

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By Allan Kohl, president and senior partner at KOM International

As we saw in the September 2015 Industry Feature story of Expansion Magazine, with rising global trade volumes and increasing imports to the U.S., inland ports are becoming a critical component in the global supply chain.

The inland port, or intermodal distribution centers that make-up these inland ports or hubs are connected directly to major seaports, and help retailers and manufacturers with cost-effective import distribution to consumers.

This is particularly so for West-to-East movement of product where an inland port can help to speed the flow of cargo between ships and major land transportation networks, creating a more central distribution point. Another advantage is improving the speed of getting imports and exports across the country at least cost to DCs or customers by providing value added services such as: container de-stuffing; product re-boxing; segregation and redirection of West coast/East volumes, and preparation of truckloads for Eastern destinations only.

For communities considering becoming an inland port for this type of activity key requirements to attract distributors include:

- Access to a sustainable and competitive labor pool for the warehousing resources and truck drivers required.
- Facilities or incentives to build the facilities to locate the value added de-stuffing, sorting and processing of containers for shipment of loads to destinations further east.
- Local 3PL operators to take on value added storage activities.

Flexible facility design for efficient processing and movement of product through the supply chain is another challenge for distribution operators and it's a paradox. On the one hand, flexibility in material handling is critical to ongoing operational success. On the other, there are a number of barriers to building flexibility into your system.

It's a tricky balancing act, one that requires accurately projecting volume growth and product variability, with an eye to keeping your options open — and providing the best solution for today's needs.

Supply chain execution demands a design that best facilitates speedy, timely, accurate delivery with an emphasis on the "perfect order." This results in distribution centers designed for velocity, with

higher-volume items located at the beginning of the order picking path.

For maximum efficiency, warehouses are re-slotted on an ongoing basis. Some operations are so keen to cut travel time and maintain high productivity that they might constantly monitor the movement, cube, and velocity of items and rearrange them on almost a weekly basis.

Order picking is one of the most important processes to optimize since it is the most labor intensive activity that goes on in a DC. It's where you run the greatest risk of bottlenecks and pick-pack slowdowns.

Re-slotting inventory at regular intervals — locating stock items to reduce travel time and increase velocity — goes a long way toward improving facility efficiency. Compare an efficiently slotted warehouse with an inefficient one, and you could see a 25 percent to 30 percent difference in labor productivity.

When it comes to efforts to derive further efficiencies from automated and mechanical equipment, one of the most important considerations is building flexibility into the system.

Before forging ahead, assess your current physical distribution infrastructure and operations. This includes examining the existing operations as well as buildings and sites to identify constraints, capacities, and opportunities. Very often an operations audit conducted prior to implementation of any new initiatives will result in significant cost savings and productivity increases.

Another important consideration is that distributors strive to keep their eyes open to the industry overall and be early detectors of opportunities that may provide competitive advantage.

With the Panama Canal Expansion Project due to be completed in 2016 there are potential gains to be made in regard to the net landed cost of goods to retail.

With this port of entry newly accessible to more and bigger container ships there is an expectation that the amount of container traffic to Eastern North American ports could triple.

The canal currently handles about 5% of the world's total trade, with roughly 70% of this heading to the U.S. An additional 7.5% of the world's trade is directed through the Suez Canal, while the bulk of the exports heading to North America primarily from China are shipped to Western North American ports - container traffic to Eastern ports is on the rise.

By 2030 it's predicted that 60-70% of the world's container fleet will be Post-Panamax 5th Generation vessels >14m carrying up to 12,500 containers aboard. This is compared to < 20% of these type of vessels making up the world fleet today.

Some of the Eastern ports are ready to handle these Post-Panamax vessels, some are not - yet.

North American Post-Panamax Ready Ports				
Port	Post-Panamax Status/Impediment	2012 TEUs (Est. 000s)	2011 TEUs	Global Rank
LA/Long Beach	Currently Ready	14,000	14,000	6th
New York/NJ	2015 - Bayonne Bridge	5,600	5,500	20th
Oakland	Currently Ready	2,400	2,350	<top 50
Seattle	Currently Ready	2,100	2,000	<top 50
Houston	2013 - Dredging	2,100	1,900	<top 50
Norfolk	Currently Ready	1,900	1,900	<top 50
Miami	2015 - Dredging/Cranes	950	900	<top 100
Baltimore	2013 - Cranes	650	630	<top 100
Subtotal		29,700	29,180	
Percent of N.American TEU Containers		66%	65%	

Source: American Association of Port Authorities, Colliers Int'l

With the potential of port of entry closer to the point of consumption in the East of the continent the winners will position themselves to maximize the opportunity.

If we were to compare the cost of getting a container from West to East on the continent of North America by truck, and then transporting about 25% of those goods back across the continent by truck to supply markets in the West, with the cost of getting a vessel through the Panama Canal this points to a possible net landed cost saving of roughly \$3.5K per container. Note that this is merely a rough estimate and does not factor in all detailed pricing elements of a full-blown comparative study.

Nevertheless \$3.5K per container when multiplied by a factor of up to 12,500 containers carried on a Post-Panamax vessel demonstrates there is likely a potential opportunity for those companies with the volumes that warrant it to undertake a formal comparative study of all transportation alternatives coming available to them with the completion of the Panama Canal Expansion project in 2016.

Ultimately 'he who has the lowest landed cost wins' and this can only be determined by exploring all the alternatives, in conjunction with the related costs and the overall number of days or weeks to make the transfer from product source to each individual company's consumer markets.

Another important piece of the puzzle is where a distributor's DCs are located, a possible re-evaluation of the strategic purpose of each DC within the distribution network, and optimizing the DC design, operational efficiency and flexibility.

When KOM conducts an audit, we analyze 52 weeks of order flow history to get a sense of item movement over time. We capture information on sales of units, pieces, cases, and pallets to identify the volume and item peaks and valleys. This provides an irrefutable portrait of what kind of pressures a facility experiences during the year.

In addition to order history, KOM looks at the company's individual customer order files to see whether orders typically comprise one-line item, 100 line items, or 1,000 line items. Most warehouses are a hybrid of two order types — large and small. You attack them differently. Large orders get picked conventionally while smaller items might get picked to totes.

The real gains have been made in the area of the capture, transfer, and processing of information — not only in the quantity and availability, but the incredible speed of handling. The physical materials handling equipment has evolved to keep pace with the speed of information capture and demand for faster order fulfillment response times.

With electronic information transfer, and particularly the accessibility offered by the Internet, the individual consumer and business customer now expect total transparency regarding product availability and delivery schedules.

Businesses face orders arriving from many different sources, all electronically. Strategies have been implemented to process and re-direct these orders almost immediately to the most effective location for fulfillment.

Not only has the physical materials handling equipment evolved to keep pace with the speed of information capture and demand for faster order fulfillment cycles, but so has the communication with these devices and steps taken to integrate them into a complete system providing as much flexibility as possible. Today, many companies are taking a second look at automated methods of receiving and selecting as a way of improving efficiencies.

Despite the importance of flexibility, most systems simply aren't built to adapt quickly. This is because many companies are dealing with the requirements of the day-to-day, and they don't have the time to look to the future when solving the problems of today. Not to mention that uncertainty in the direction or growth of most businesses can make it difficult to come up with firm projections. Markets, technology, and a competitive landscape

in constant flux lead to greater difficulty in making future projections.

Regardless of the reasons built-in flexibility is lacking, it's one of the most effective ways to address changing requirements as they emerge, and emerge they will for the only real constant is change.

Flexibility can be built into your material handling system of your distribution facility from the ground up in a number of ways.

Here are four areas to look at:

- For the building, choose the right site, build column bays to provide for multiple layout options, and build to a clear height.
- For the racking, design a structure that allows for flexibility so that you can move from single deep to double deep without changing the structure.
- For the shelving, allow for future levels of shelving units to be added to the original design.
- For the numbering system, design to accommodate item proliferation.

If the original design is done well, then a retrofit down the road is of course much easier. Regardless, it's possible to retrofit your existing distribution facility to build in flexibility.

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KOM International is a supply chain consulting firm of specialists that has implemented some 3000+ projects over a 52 year period in logistics studies and the design and implementation of warehousing and distribution systems and networks in industries including; Food Distribution, Manufacturing, Automotive, US Military, Garment Distribution and Consumer Goods. KOM International head office is in Montreal, Canada, with offices in Toronto and Mexico City. **www.komintl.com**