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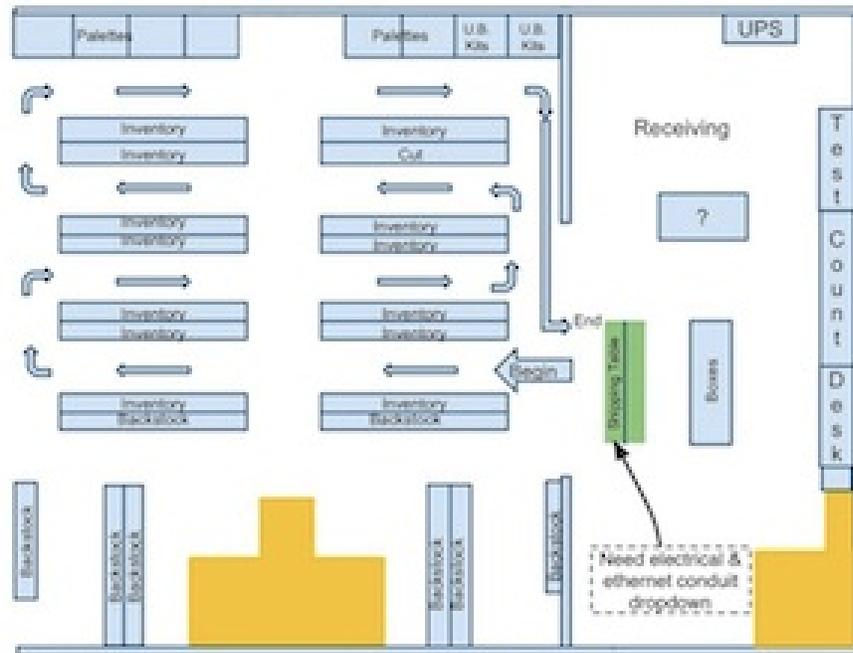
A Lean Warehouse is essential to a smooth supply chain

Businesses understand that controlling inventory, order fulfillment and shipping costs are essential for success. Companies are constantly striving to improve their warehouse operations by increasing agility, visibility and labor efficiency.

A lean supply chain requires the efficient flow of products in and out of the facility. A lean warehouse plays a critical role in the smooth flow in your supply chain. Inbound material logistics and outbound finished goods distribution bring together all the discrepancies and lack of flow in the entire supply chain. An efficient lean warehouse is required by stakeholders on all sides to be more productive, minimize expenses, and maintain a smooth supply chain flow.

100% service delivery is directly related to customer satisfaction while at the same time we are always looking for ways to minimize the need for storage of our products. Good inventory management is risk management in practice. The risk of having the inventory to support top line sales. Do you have stock outs that prevent you from being able to ship products to your customers affecting your monthly sales revenue? At the opposite end, do you have obsolete, slow moving, or excessive amounts of inventory clogging up your operation (slow inventory turns)?

What about your layout? The warehouse layout has a tremendous impact on both how efficient we can pick your outgoing orders and put away incoming materials. A poor layout inhibits stock rotation. Rotating stock reduces the potential for throwing out inventory that expires or perishes. Obsolete inventory is a huge cost for companies and it can impede profits.



This is why a visibly lean warehouse is so important to the successful implementation of a lean supply chain. Warehouse personnel must be knowledgeable about the inbound flow and outbound demand that the warehouse is supporting. Without a visible lean warehouse, operators will simply be reacting to day-to-day activities.

So how does a lean warehouse fit into the overall supply-chain strategy?

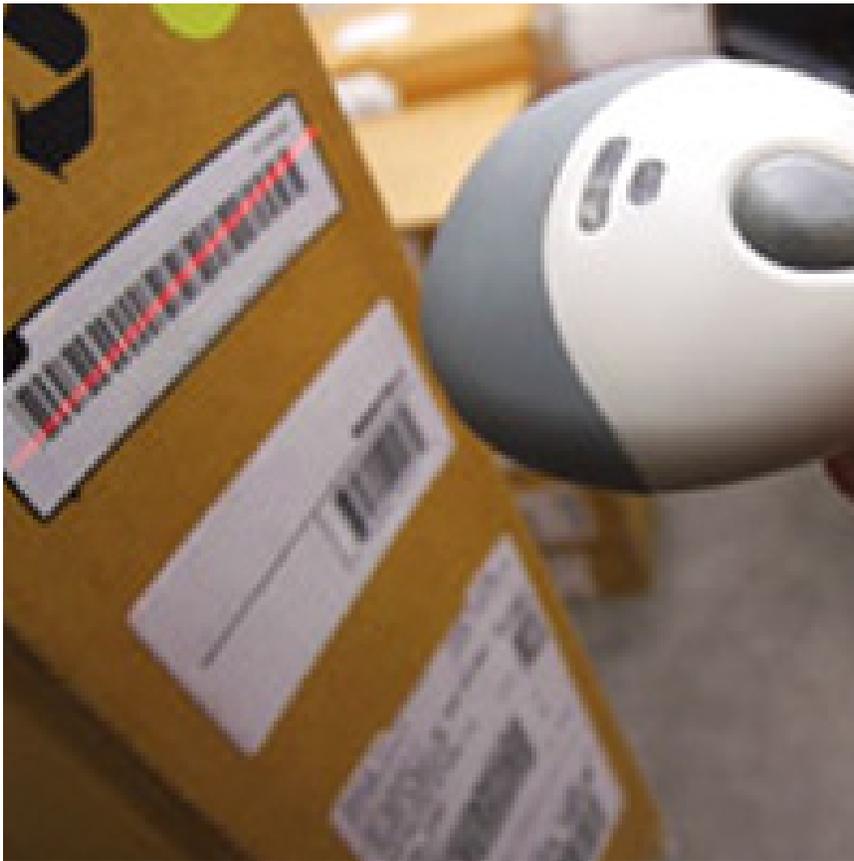
Best Lean Practices for Warehouse Operations

Use automatic data collection.

People writing numbers on pads of paper or keying strings of numbers into a keyboard is a bad sign. The benefits of automatic data collection—via bar code and radio frequency identification—are well-established, including increased productivity and accuracy and lower labor costs.

Use mobile computers with bar code scanners or RFID readers at the receiving dock to immediately identify products on arrival. This helps get product off the dock quickly and eliminates nearly all the errors associated with manual receiving: including identification, counting, and data entry errors. With scanning and RFID technology, you can avoid the mistakes that wreak havoc with inventory accuracy and eat up time and resources to fix. That means your warehouse staff can focus on value added processing of customer orders more quickly.

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Use bin locations and digital pictures to quickly locate products.

Use bin locations and digital pictures to locate your product? This allows for immediate, accurate location of products within your warehouse. Bin locations free you to locate product based on sales volume, (how frequently do we sell this product? Daily, Weekly, Monthly, etc...) thereby reducing the number of footsteps required to pick those key items that tend to appear on a majority of orders. Utilizing bin location with digital pictures at the stock location improves productivity by providing a map to follow and improves quality by providing visual inspection to verify what the product is. A side benefit is that new warehouse team members become productive much faster. Without bin location with digital pictures, you will need someone who is experienced with the product lines that you carry in order to locate the product to fill orders.



Don't mix multiple SKUs in a single bin location.

Mixing multiple SKUs in the same bin location reduces picking productivity.

If a shelf level contains 5 – 10 SKUs, the operator then needs to search through the different SKUs to find the item to be picked. This is a red flag, which often results in picking the wrong SKU. Not only does this reduce accuracy, it also slows the operator thus having a negative effect on order pick efficiency. Each SKU should have its own discrete bin location.

Implement lean warehouse operations practices.

Lean warehouse operations can have a great impact on the total supply chain output.

Top managers need to spend time on the floor and engage in active problem solving with all team members in the operation. A regular top management gemba walk can help identify waste in the warehouse.

Many Lean solutions will reduce lead times in the warehouse:

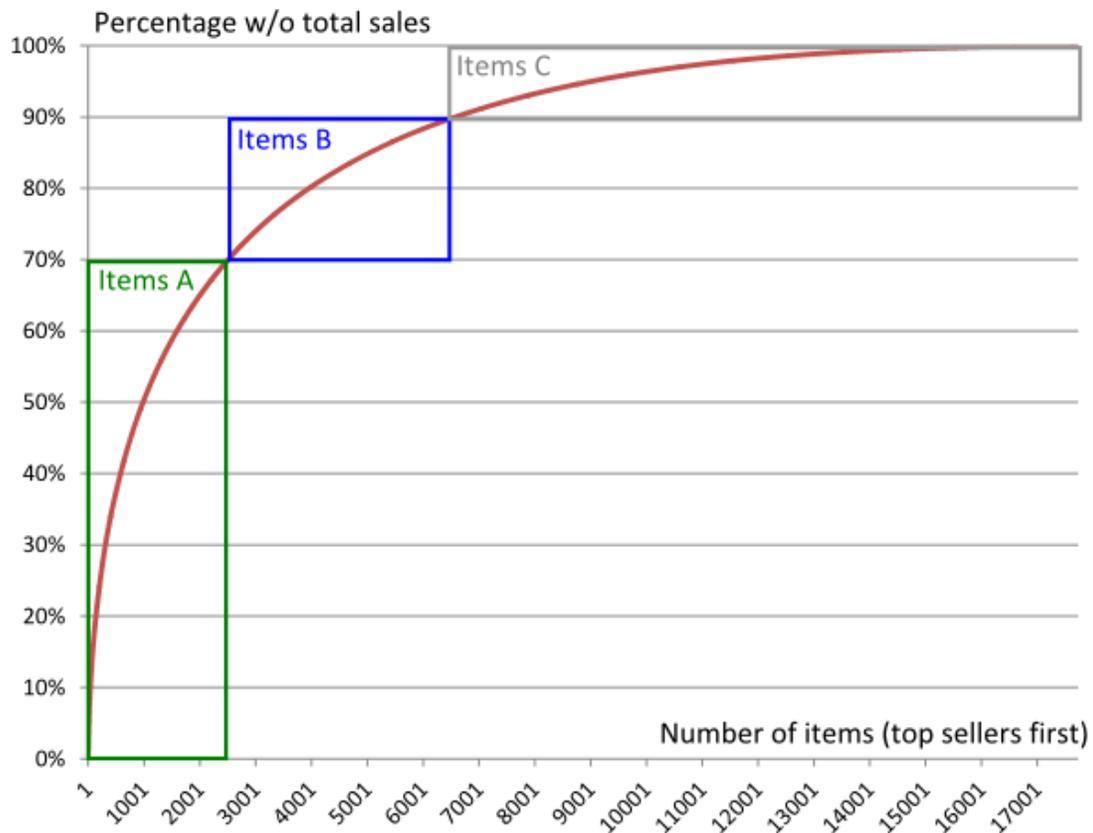
- Reduction in material handling time in order picking, put away and shipping
- Reliability of information to coordinate the rest of the supply chain
- Reduction in truck and containers loading and unloading times
- Reduction in time spent checking and looking for inventory

Conduct Cycle Counting using ABC Analysis

ABC is a hierarchy of the value, volume, frequency of use of your items.

“A” items are big-ticket or priority stock. These goods require tighter controls and monitoring since they are your largest revenue and cost contributors. Due to their costs, you would most likely be carrying smaller volumes on hand. “A” item can be priority stock products that have high frequency of use. “A” items will require more frequent cycle counts, stock reviews and re-ordering. This ensures that you have adequate supply.

“C” items have lower values or low demand frequency, but you may be carrying large volumes of them. For example, if you owned a hardware store, nails in bulk may be considered a C-item. B-items sit right in the middle and are important but less of a priority than “A” items.



Clear aisles make for an efficient flow of inventory.

The movement of inventory throughout the warehouse should be done by experienced materials handlers with certifications or licenses to operate forklifts and boom lifts. These materials handlers should be able to move from one section of the warehouse to another with ease due to the fact that the aisles are not full of inventory.

Inventory that has not been placed in its proper bin or warehouse location can cause problems with inventory systems, especially under a FIFO, or First In, First Out, inventory system. A FIFO system ensures that the inventory that was received yesterday is moved to the shipping dock before the inventory that was received today. This inventory system reduces the chance of obsolete inventory.

Store the most frequently picked items close to the shipping area.

To gain efficiencies, labor time to pick orders needs to be reduced.

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Companies with the most efficient warehouses have the most frequently picked items closest to the shipping areas to minimize picking time. These companies achieve their competitive advantage by constantly reviewing their sales data to ensure that the items stored closest to the shipping area are still the most frequently picked.

Implement efficient dock management practices.

The most valuable square footage in the warehouse is dock space. All material must flow in and out of your docks, and these are limited in number. Dock best practice depends on the type of inbound you receive and for many companies balancing available dock doors, equipment, and labor is difficult, so the receiving dock becomes a choke point in the supply chain. Docks in today's warehouses must be more flexible and must support a variety of receipts that are coming in at a faster rate and in greater frequency and with just in-time and VMI programs, smaller quantities and mixed pallets.

Establish advanced shipping notification.

Many material management warehouses still have not implemented electronically transmitted advanced shipping notifications (ASN). Not receiving the ASN from your supplier can result in not having the proper level of staffing at the receiving dock. This often causes other important warehouse activities to be bumped, causing delays in other parts of the factory. When the purchase order and inventory management functions require electronic advanced shipping notifications, labor can be planned with more certainty. Order fulfillment and transportation activities can be adjusted to ensure that proper service time requirements are met.

Require vendor receiving appointments.

Require all inbound carriers to schedule delivery appointments:

- Simply assign each carrier or delivery a specific time or window of time to deliver.
- Assign either a specific or recurring daily, weekly, or monthly schedule to arrive.

This allows you to schedule staff accordingly and make the best use of your dock. Vendor receiving appointments are absolutely critical if you share a dock or ship both inbound and outbound out of the same area. By requiring appointments and information about incoming loads, surprises are minimized.

Calculate resource and space requirements based on expected orders and current backloads.

Put-away is the process of moving material from the dock and transporting it to a warehouse's storage, replenishment, or pick area. Best-practice companies manage the put-away area by calculating resource and space requirements based on expected orders and current backlogs. Best practice is to put away product the same day it's

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received, because not doing so affects space, causes congestion, increases transaction errors, and makes product more susceptible to damage.

In a busy warehouse, it is easy to let product put-away fall behind other tasks such as picking, replenishment, shipping, and loading. But pulling away resources from put-away tasks can affect fill rates by not having product in pick racks. This can bring about congestion in staging areas that overflow into aisles. Delaying put-away may also result in product damage as the merchandise is moved, again and again, to make way for higher priority receipts. Proper staffing of the put-away team will support downstream processes of picking and shipping, and in the long run lead to better customer order fill rates.

Communicate effectively — and often.

Clearly communicating to workers your organizational goals and the processes to achieve them is one key to effective warehousing operations. Daily stand up meetings for each shift provide visibility to current conditions and learning. When managers fail to create an environment of open and clear communication, employee productivity suffers, resulting in high turnover and wasted resources.



Maximize vertical space.

Where space is limited, it's important to take advantage of every inch of available space (floor to ceiling). Optimize the cubic fill of storage locations to minimize travel time. If a product is in high demand it should be placed closer to its next point of use.

This should be based on the number times the product is required, not on the number of units required. The difficulty of retrieval should also be considered in travel time. Higher-

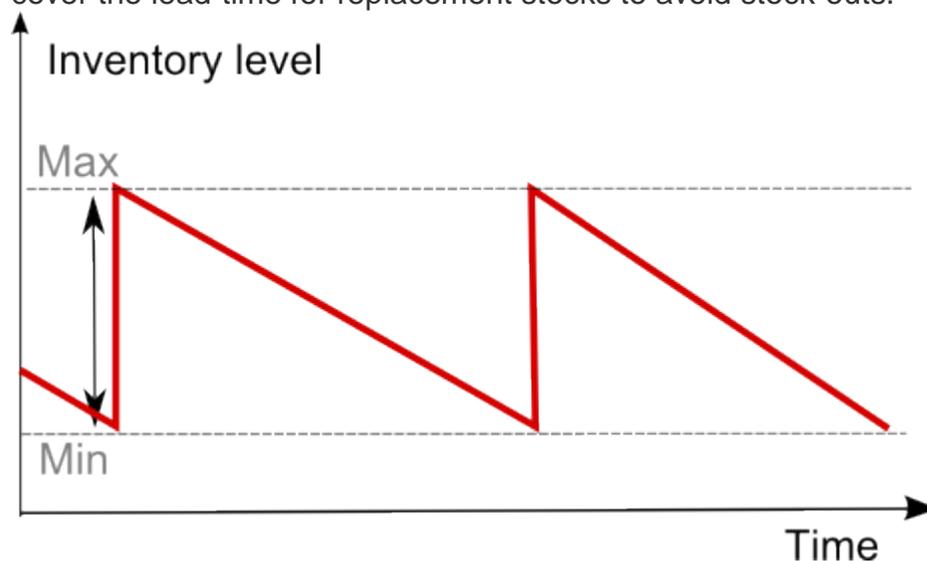
demand product should be placed on the most easily accessed storage space, typically floor level for racking and between waist and shoulder level in hand pick racks.

Improve Inventory Management

Establish minimum holding stocks to cover lead times.

The role of inventory management is to ensure that stock is available to meet the needs of the customer as and when required. Inventory represents a large cost to the supply chain. This is made up of the cost of the inventory itself, plus the cost of transporting the goods, cost of managing the goods and keeping the goods in warehouses. The inventory manager's job is to ensure that inventory is available at the lowest possible cost.

In order to achieve this, the inventory manager must find a balance between supply and demand by establishing minimum holding stocks to cover lead-times. To achieve this, the inventory manager must constantly communicate with the programs to keep abreast of changing needs and priorities. The warehouse must always have sufficient stocks to cover the lead-time for replacement stocks to avoid stock-outs.



When you stock an item you are making a commitment that the product will be available in reasonable quantities for immediate shipment. Or you are stocking long lead items in order to ensure your company can produce and ship custom made products to your customer within the lead time your customer will accept. Many warehouses are filled with two things: 'stock' and 'stuff.' Stock is the material you intend to be in the warehouse. That is, the items necessary to meet or exceed customers' expectations of product availability. Stuff is everything else. You must separate the stock from the stuff in your warehouse. The goal is to liquidate the stuff and arrange the stock items in such a way to minimize the cost of filling customer orders.

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Understand the warning signals.

The easiest way to identify that you have too much—or the wrong inventory:

- Dust settled on the product in storage.
- Significant discrepancies between the book inventory and physical inventory
- Warehouse staff is having trouble locating inventory on a timely basis
- Increased use of outside storage space

For physical count inventory, keep like inventory together in a single location.

Bring like inventory together into a single storage location. The same part shouldn't be in several storage areas unless physical size dictates a limitation.

In that case, keep available quantities to a minimum and move remainder to a location that isn't part of the easily accessible storage (overstock location).

Implement an efficient Returns Goods Authorization (RGA) process.

Customer returns are fundamentally complex. They impact physical inventory and accounting systems. All items must be identified, assigned to a customer, assigned a disposition and then physically sorted for processing.

Since some of the product might be discarded or kept back for vendor chargeback's, not all merchandise is entered into the inventory management system.

Often the merchandise must be repacked and accounted for manually. This is very often a challenging process. A good Return Goods Authorization standard work process must define who does what when. Discipline, aging boards and metrics reporting total number of RGA's active will ensure customers receive timely responses to their RGA status.