How to Explain to Purchasing the Importance of Standardization

White Paper Series

From

Rack Talk

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Introduction

Despite the best of intentions, purchasing departments often cause unintentional chaos to warehouses and distribution centers, by affecting the configuration of pallet racking and storage systems. Pallet racks should not be considered a simple commodity to be bought at the lowest price available; there are significant lifecycle costs and externalities to take into account when selecting these Racks. They should instead be treated as a significant capital investment that will contribute towards the future productivity and profitability of the company. This White Paper explains the pitfalls that warehouse rack systems pose to unsuspecting buyers, and the ramifications of this buying philosophy, and explains the five rack systems lifecycle concerns that materials handling managers and purchasing managers should be aware of when making purchasing decisions:

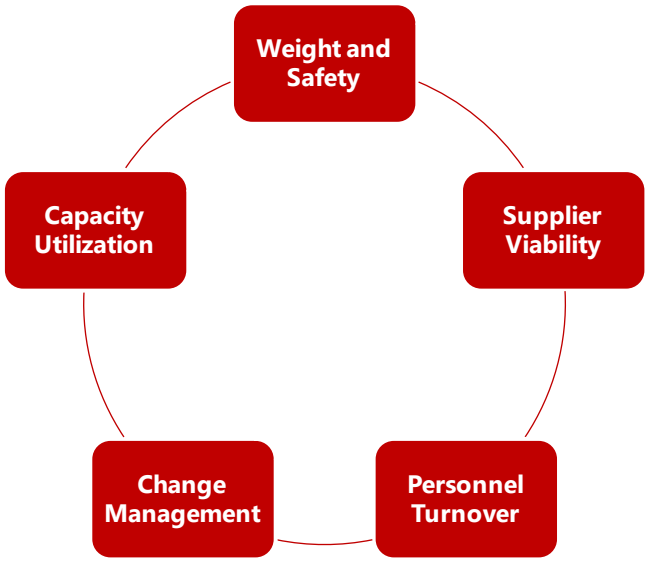

Figure 1 – Rack Systems Lifecycle Concerns

Goal and Knowledge Gaps Naturally Exist

To understand where breakdowns can occur, it's important to first consider where the goals of purchasing and the goals of material handlers are aligned. Purchasing's goals often are often linked exclusively to price savings, volume discounting, and vendor consolidation. Materials handling Managers goals are often linked to cost savings as well, but also future-proofing, the running of a smooth operation, and efficiency of product flow from receiving to shipping.

The goals overlap with cost savings and vendor consolidation; they don't overlap in the areas of running a smooth operation, product flow efficiency.

Mixing and matching various brands of storage pallet rack manufacturers may appear to be a cost-saving alternative, even from the perspective of both departments; however, because of these additional considerations making purchasing decisions based primarily on price can turn into a cringe-worthy nightmare for any warehouse or operations facility once the decision is implemented

It is important to note (and entirely understandable) that purchasing personnel are typically not trained in understanding these concerns, and are typically very busy serving a wide variety of departments. It would be unreasonable to expect them to have the knowledge of the issues necessary to make the optimal purchasing decision without some background.

Rack System Lifecycle Issues

Lifecycle Issue	Description
Weight and Safety	• Individual racks, frames, and beams are often designed for specific weight capacities. • Loading an individual element beyond its capability can result in element damage, or even warehouse personnel accidents. • Safety concerns therefore call for labeling, tracking, and auditing individual racks, frames, and beams.
Supplier Viability	• Mixing and matching elements from different manufacturers makes the process a very difficult challenge, and in the worst case scenario, manufacturers go out of business, leaving no means to determine the correct capacities after the fact.
Personnel Turnover	• Warehouse managers often move to other companies and are replaced by new employees who are unfamiliar with the rack system histories, the products they have previously stored, and zones in the warehouse.
Change Management	• When implementing changes in a warehouse, having incompatible racks from different manufacturers makes the process of moves, adds, and changes a more complex and challenging process to get right.
Capacity Utilization	• Incompatible rack systems create, in effect, a "warehouse within the warehouse" – separate zones where capacity can no longer be leveraged across the zones. This makes for an inefficient warehouse. For instance, a warehouse with equal amounts of racking from two vendors may have one entire set fully loaded – but the other 50% of the warehouse cannot be leveraged because the racks are of the wrong type.

Figure 2 – Rack System Lifecycle Concerns

Lifecycle Issue #1: Weight and Safety

Most Rack systems are designed to accommodate a specific load weight and height and size of Pallet. When designing the capacity's it's important to talk to the management team about their max loads per pallet position. Will there product capacities change in the future, design for the worst case situation and cover all options. Look at heights and see if they are utilizing the full height of their warehouse. They may have 40' in height but may have only fork trucks that can reach 25' high. Discuss future plans to utilize that wasted space at a later date where they could add an additional 2 more levels of Racking. This is an opportunity to design the Frames to be able to add these extra capacities at a later date for very little money now rather than replacing all the rack at a later date. This is wasted dollars for the company. It's important to put labels on all beams marking the capacities for operators to see.

Lifecycle Issue #2: Supplier Viability

It's very important to select a manufacturer that is financially strong and has been around for a long period of time. It's important to standardize your products so that you are dealing with one company and you and your people can get familiar with the product. It also eliminates the mixing and matching of different manufactured Products. Make sure the manufacture put his identification markers on all products for future communication.

Lifecycle Issue #3: Personnel Turnover

As a result of warehouse turnover new managers are often frustration where do we purchase additional rack for this existing warehouse. They have no history or experience of this Rack system that is why Supplier Viability is important to make sure all racking systems are marked with a phone number and address by either the System Integrator or the manufacturer.

Lifecycle Concern #4: Change Management

When implementing change or moving to a larger warehouse in your warehouse it's always much easier when you have a warehouse full of the same manufacturers product rather then 5-6 different types of Rack from different manufacturers. You always want the flexibility to be able to add and extend the products easier. This will be difficult with 5 different racking systems designed in many cases for 5 different products. This becomes a nightmare for the transition.

Lifecycle Concern #5: Capacity Utilization

Incompatible Rack systems within a warehouse often create multiple warehouses within one large warehouse. Separate zones where capacities can no longer be leveraged across the zones. Think long term and look at all options. In many cases companies purchase Fork Trucks and often purchase pallet racking from the same people. In many cases they are experts in Fork Trucks but not experts in Rack systems and only sell the rack in order to get the truck business. When developing your warehouse whether building it or purchasing call you system integrator to work with you on the layout and where columns should be located and you will save a lot of money and time and aggravation long term

Conclusion

Pallet racking systems are integral capital investments directly relating to the overall profitability of any company. Simply buying the cheapest racks on the market will not be cost effective once they break down, or injure an employee. While the purchasing department may have all the best intentions, the quality, specifications, and compatibility of the products purchased should be seriously considered. Keeping records of all the rack manufacturers, capacity, part numbers and installation services will greatly benefit you in the future. For more complicated safety issues calling a pallet rack systems integrator is advisable, as they can help you create and maintain a working relationship with warehouse and operations personnel, ensuring consistent products, pricing, and standardization as much as possible. Small acquisition cost differences are dwarfed when taking into consideration total cost of ownership issues. Having a long-term strategy to efficiently utilize warehouse storage capacity, from a planning standpoint, can provide immediate returns and also the future success of your business.

Example of a customer's Audit

At a recent safety inspection audit for a Fortune 100 company, numerous safety concerns were found which should never be seen or practiced in any warehouse.

- **5 Different Manufacturers Products –**
  Not having standardization of pallet racking products is a recipe for disaster. Purchasing departments should never be given the opportunity to mix and match products. This is especially troubling when the capabilities and capacities of the products are not explicitly understood.

- **No Markings or Identifications Tags on 70% of Rack Products –**
  Each pallet rack beam must have safety caution labels. These labels must clearly show, in large print, the capacity of each pair of beams. Not having labels on every beam raises the risk for an operator to overload the system with a heavier pallet. Overtime this causes weakening of the racking and could easily lead to disasters such as a failure of the beam or a full system collapse.

- **Safety Inspections from a Non-Systems Integrator -**
  Previously they had an online catalogue house come in and do inspections. This resulted in having white mailing labels with identical capacities placed on every beam, regardless of its length and face dimensions. Hiring an online catalogue house to do an audit should be avoided at all costs. It is not their area of expertise. Their job is to sell products from a catalogue and not to understand pallet rack engineering concepts and design. For someone to put the same label and capacity on every beam without checking the size and dimensions for verification shows no personal responsibility and reflects poorly on the manager who signed-off on these services. These practices are so dangerous. If the rack was loaded to the incorrect pallet capacity, there could have easily been a major collapse with the potential for injuries.

- **Mixed Manufacturer's Frames with Another's Beams –**
  We found different manufacturers 'racking mixed together. This is not an accepted procedure as manufacturers do not have the same capacities or tolerances. Mixing these different manufacturers is not effective warehouse planning or design. Instead of having a complete, warehouse wide storage system; you are left with clusters of different racking. To service a warehouse that is designed in this manner, several companies have to be consulted and perhaps involved in site visits. It ends up being tiring, frustrating and way more complicated than it needs to be. Keep one style, one manufacturer and eliminate headaches. *You are building a group of different warehouse within one large warehouse requiring different vendors to service one large warehouse which is very confusing for both managers and operators*.

- **Damaged Frames and Beams –**
  Discovered damaged frames and beams that needed to be addressed. In some places the damage was so extensive the bays were marked, "Do Not Load Rack – Replacements needed." It is of the utmost importance for warehouses to conduct regular inspections of their rack to visually examine anything that could be considered dangerous in terms of a potential rack collapse. This practice is recommended to be done on a monthly basis or at the very least twice a year.

- **Missing Bolts on Structural Beams –**
  Located missing bolts in structural beams as well as incorrectly sized bolts that dangled from the beam holes. This issue should be observed by operators who are loading the beam levels every day. It is especially helpful to teach operators how to assess this as part of good training measures.

- **No Column Protection –**
  Discovered lots of low frame column damages mostly caused by forklift bumps or collisions. Column protection should be supplied when rack vendor is initially providing the product, especially for rolled-formed upright frames. Column protection products may be overlooked due to cost saving measures.

- **Frames Not Bolted to the Floor -**
  We observed frames that were not bolted to floor which is an unacceptable practice. Sometimes racks are moved within the warehouse by inside personnel as some managers are offering them some additional overtime but they are not aware of the safety requirements. It is very dangerous if a fork truck hits a rack

upright that has not been bolted to the floor. The whole row of racking could potentially topple over destroying all the stored products.

What is wrong with these findings?

The above method of ordering and maintaining pallet racking systems within a highly trafficked warehouse is easily avoidable, highly dangerous situation. These findings were so incredibly dangerous. Without a pallet rack safety audit, they could have easily loaded their pallet racking with the wrong pallet capacities which could have resulted in a major collapse and unwelcome injuries.

Buyers should be aware of this situation and understand that it is very important to hire knowledgeable racking companies for both servicing and ordering products within warehouse facilities. All personnel must be protected from injury or harm by purchasing quality products that are specially engineered and designed to meet the rugged abuse of such busy industrial environments. The purchasing department may save a few dollars up front; but when looking at the big picture, this becomes completely irrelevant when an injury or casualty would cost massive amounts in dollars, fines and litigation fees.

How do we fix these issues?

Management and corporate offices should play a larger role in getting the message out to all the plants and warehouses around the country. Set some tight standards and parameters to work within. Select experienced rack integrators who have a good reputation and stop looking for the cheapest price. Poor purchasing decisions, in the long-run, cost any company so much more money. Racking systems are a long term investment, not a quick fix, for your business as well as for the protection and safety of all personnel.

Guidelines for Warehouse Rack Inspections:

- Schedule regular visual inspections of racking for anything that could be considered dangerous or leading to a potential rack collapse.
- Monthly inspections are recommended or at least a minimum twice a year.
- Inspect all frames for low column damages, as most damage happens in the first 24” from the ground from impact. Check for bends, crushing, pushing in, or busted anchors.

- If you have a high level of damage you should consider column protection to help lessen the constant replacement of frames which can become very expensive.
- Check horizontal and diagonal braces in the frames to ensure they are not broken, bent or twisted.
- Check to ensure all frames are bolted to the floor, and that no bolts are busted. There will be different bolting arrangements depending on any seismic zones.
- Check beams for frontal damage or any downward force impacts.
- Check for any beam disengagement, load locks sticking out, or any missing or loose bolts.
- For roll formed beams, the safety fastening mechanism are functioning and all in place.
- No bolts should be missing or loose on structural beams.
- Ensure that your beams are not bowing or deflecting as this is a sign you are putting too much weight on the level. Beam ties can also be utilized in this situation.
- Beam end plate connectors. Please check to make sure there is no erosion on the welds due to constant wear and tear.
- Examine cross bars are properly located evenly underneath the pallet load.
- If you are using flanged cross bars, ensure that they are tek screwed or bolted in. For roll-in or snap-in style ensure they are actually engaged or locked into the beam slot that keeps them in place
- All wire decks are stated for uniformly distributed loads. If you have pallets that are fully resting on the wire deck its recommended to have heavier wire deck with additional channels to support the load
- Check end of aisle barrier rails for any damage.
- Check for capacities, if frames and beams are labeled for appropriate capacities per OSHA regulations. If your rack is not labeled, highly recommend hiring a company to do a full evaluation and survey of your complete racking system as this needs to be done for audits.
- Assess and properly document any and all damages. You should label with tiers of damage importance (immediate replacement vs. standard replacement).
- Any damages that have been identified as needing immediate replacements should be properly marked to ensure the bay or aisle of rack not be loaded until replacements are completed.

Misc. points regarding the Dangers of Mixing Manufacturers

- It is extremely important to standardize and purchase storage racking from the same company for the same warehouse or operations facility.

- The customer that has numerous different racking manufacturers within one large warehouse is not purchasing in the best interest of its company.
- Each of these rack systems could be designed for a specific product and weight capacity and who knows 10 years later what this is.
- In many cases these racks have no identification markings to explain the capacities of the frames and beams from different suppliers. And in the worst case scenario, the manufacturers have gone out of business leaving no means to determine the correct capacities.
- Should a company that has mixed and matched pallet rack brands require to move, relocate or reconfigure existing pallet rack it will be an absolute dreadful experience trying to inventory and label for another storage area or facility.
- Figuring out existing capacities and interchangeability of rack when reconfiguring at all can be a daunting task that can only lead to unsafe rack systems with a high potential for failure or even collapse situations.
- Also understand that warehouse managers move to other companies and are replaced by new employees who are not familiar with the rack system's history or the products it has previously stored.
- Many warehouses are reaching out to racking systems integrators looking for audits on existing rack systems to compile load rating capacities in order to meet evolving safety requirements.
- During recent known surveys, it has been observed that many warehouses have practiced disgraceful and dangerous methods when it comes to purchasing and deploying racking systems.
- Mixing different manufacturers' racking products together is very problematic as in most cases few warehouse personnel know the capacities of the frames and beams from these different rack manufacturers unless it is was properly labeled during the initial installation.

So what is the answer to this, it is simple. Purchase storage pallet racking from one source, purchase product from the same manufacturer, and make sure to adhere safety capacity labels on all load beams. It is also recommended to document the supplier of the pallet rack systems with complete company identification to be readily available for all warehouse management and personnel so that if a warehouse manager leaves a new person coming on board will clearly know who to contact should a problem arise with the rack system.

The alternative to not adhering to these up front measures is a costly option, as in most cases it will be required to hire a structural engineer to conduct a structural analysis of the existing pallet rack systems within a warehouse in order to meet these evolving safety and OSHA requirements.