

Top Ten Tips for Warehouse Design

1. Understand the business requirements

Before drawing the first wall on the plan ensure all the data has been gathered and understood. This data will include volume of receipts, returns, stock turns and, order volumes present and future. This will provide a starting point in determining the overall size of the warehouse, the number of loading and unloading docks and the capacity requirements in key areas – namely storage – both short and long term plus inbound and outbound staging. This will be refined later in the design process.

2. Consider external factors

If the warehouse will be part of a storage and distribution network, then an important consideration is “where should the warehouse be located?” it may be possible to consider extending an existing warehouse rather than building a new one. Adding a warehouse to a network will introduce other options, so consider the “total capacity” available in the network. This will affect the cost of transportation, which in turn affects the “cost-to-serve” a customer base. Computer modeling at the network level is as important as modeling at the warehouse level.

3. Understand the product types

Before storage location types can be determined, the attributes of products (dimensions, weight etc.), their demand levels and the associated receiving unit/picking unit need to be identified. The storage method will impact the cost of running the warehouse including the equipment costs such as: forklift type, efficiency of pick and number of replenishments required. The storage type will also impact warehouse capacity and pick rate, running “What-if Analysis” through a computer simulation model will help to identify the best choices.

4. Know your peak requirements

Daily, weekly, monthly and seasonal patterns determine the peak input/output requirements. Knowing the peak requirements enables pick faces to be sized, shift patterns to be determined, staging capacity and the number of dock doors to be determined.



5. Ensure the yard supports the warehouse

Warehouses require deliveries and collections to be scheduled, usually through gatehouses. Congestion outside the warehouse, caused by parking area constraints, will affect all warehouse activities. It is therefore important to understand the capacity of the yard to ensure that potential bottlenecks will not impact warehouse productivity.

6. Work in 3D

When a two dimensional model has been constructed and the layout looks correct, make use of computer technology to bring the model to life. 3D modeling allows further qualification of plans and enables the designer to perform a “virtual tour” of the new warehouse or layout, stimulating discussion and buy-in from all stakeholders.

7. Prove it

The inter-relationships of storage, access, staging, people, equipment, order profiles, deliveries and collections cannot be optimized on a spreadsheet or CAD package. A simulation application will provide a method of balancing your business requirements within any budget and space restrictions imposed.

A time-based simulation provides better understanding of the impact that peaks of activity have on the operation. They also enable you to make sense of how interactions between various areas of the warehouse that share resource (such as people, equipment, docks or staging space) affect the business.

Today's technology means "hindsight" no longer has an advantage over "foresight"! Get it right the first time and prevent expensive mistakes!

8. Keep it simple

Creating complex material flows within a warehouse and supporting these with mechanical handling equipment can lead to a lack of flexibility and limited opportunities to re-scope the warehouse in the future. Demand profiles always change, so while nothing looks quite as impressive as automation, ensure it has a degree of redundancy and flexibility to change with the order profile, be this seasonal or customer demand.

9. Warehouse Management Systems

Most modern warehouses rely on a warehouse management system (WMS) to drive throughput. It is worth remembering that the WMS can only operate within the restrictions of the warehouse facility, it cannot right the wrongs of a badly designed warehouse. Consideration in warehouse design should be given to the use of RF devices and the installation of a supporting radio network. This may also affect the choice of task driven strategies and consequential throughput. Voice-directed work, for example, can improve the speed and accuracy over traditional scanning methods in tasks such as picking, replenishment, putaway, cross-docking and so on. Whichever method is chosen needs to be considered and built into the simulation model to support the warehouse design.

10. Use a Warehouse Design Tool

Find a tool that is easy to use for logistics professionals and encourages the user to trial different scenarios. The tool should provide both the novice and proficient warehouse designer the ability to bring a 2D plan to life. It should also be specifically designed for warehousing, with libraries of rack and equipment types, the ability to import CAD drawings and run different operating procedures all of which support Warehouse Design Best Practice. This provides for the opportunity to iron out potential and expensive errors that may only become exposed after build.



Discover more

For more information on how warehouse simulation can aid in transforming your supply chain, please visit <https://www.koerber-supplychain.com/supply-chain-solutions/supply-chain-software/warehouse-design>