

# **FLOW THROUGH & PUSHBACK STORAGE TECHNOLOGY OPTIONS**

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High Density Dynamic Storage “HDDS” systems are unique solutions whose time has come in the distribution and manufacturing industries. The main benefits provided are significantly improved space utilization, a substantial reduction in time and labor costs required to warehouse and distribute packaged goods – from palletized quantities, down to single cases – and an almost automatic organization of the materials movement process.

In concept, the HDDS technologies are relatively simple to understand. However, design and installation of a system requires a thorough knowledge of the products handled, storage needs, distribution methods, and other factors that are unique to the particular facility. The two primary HDDS technologies are “Flow Through” and “Pushback”.

## **Flow Through Details**

In contrast to a conventional drive-in, drive-through, or aisle-type selective pallet rack technologies, which require lift trucks for each and every product movement, a Flow Through storage system makes use of conveyors fitted with wheels or rollers according to the type of technology selected. After a pallet is initially loaded into the system by lift truck or other means, it moves at a controlled speed by gravity towards the discharge end, where it can be removed by the appropriate extraction device such as forklift, stacker, or other types of equipment. Products entering the Flow Through storage system will automatically leave in the same sequence.

Flow Through storage systems are essential to the economical and efficient operation of distribution centers and manufacturing facilities by providing optimum storage density and controlled movement, that can be visually scanned for a quick and easy materials status update. The number of lanes (levels) is generally limited by the amount of ceiling space available. Forklift truck operation is substantially reduced and loading times may be reduced by half or more. Considering costs for land, insurance, taxes, energy, and interest, any system that can improve such space utilization and ease of operation should easily pay for itself.

## **Pushback Details**

Pushback storage systems provide a significant increase in space utilization at minimum cost. These first-in / last-out (FILO) pallet storage systems are found in both indoor and outdoor applications in factories, warehouses, distribution centers, food coolers, and freezers as well as many other commercial and industrial applications.

Pallets of any type or size can generally be stored two-, three-, four-, or more deep without the need for special forklifts or forklift attachments. The number of bays wide are governed by available floor space; the number of lanes high are governed by the ceiling height. The system configurations vary greatly by manufacturer. Both loading and unloading are made from the same aisle and there is no need to access the back of the system.

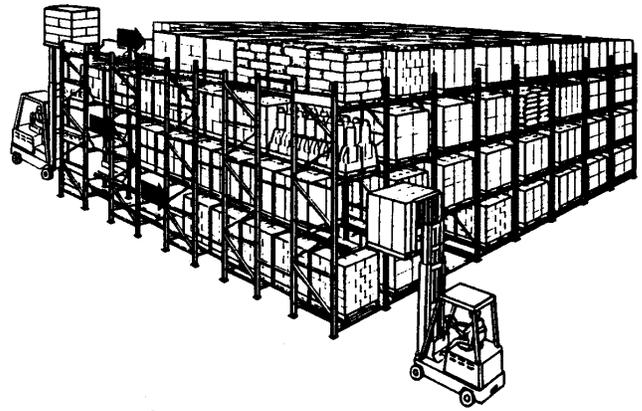
In operation, a forklift operator places the first pallet to be stored in position on the first load position. Upon returning with the second pallet to be stored, he uses it to “Pushback” the first pallet load. When the second pallet is in proper position, he lowers it into place. This sequence is repeated for each additional pallet and is reversed when pallets are unloaded. Pallet speed is fully controlled by the forklift operator during the complete loading/unloading process. It is critical that the operator realizes the importance of controlling this slug movement of pallets. Operator training is imperative!

## Systems in Action

HDDS systems use less floor space than conventional pallet storage systems. When HDDS zones are devoted to specific truckload shipments, forklift usage may be reduced by 30 to 60 percent. Palletized loads are easily handled, on a first-in / first-out (FIFO) basis. The various HDDS technologies can be combined to make hybrid systems.

For example, you can have a five-level combination Pushback and Flow Through storage system. In this system, the top three levels can be Pushback technology and they provide pallet buffer storage. The bottom two Flow Through technology levels provide a pick face for order picking. The upper three level Pushback is used to replace pallet loads in the order picking zone also to fill full pallet load order requirements.

The end result is an well-organized order picking system that eliminates much of the previously required forklift activity. Inventory is off the floor and well organized which allows for fast, cost-effective materials movement.



## Caveats

Even though HDDS is a very powerful productivity tool, it is no different than any other form of process automation. It requires both the owner and seller to be responsible. So the primary caveats are:

**Technology:** Each different HDDS technology exposes forklifts to special forces normally not defined by either the HDDS supplier or forklift supplier. The technologies being applied must be clearly defined to all suppliers knowing up front the complete application details.

**Supplier:** Each technology supplier has a little different product. Not all technologies can address all applications. This is critical! Prior to selecting a technology supplier the facility management should first define the product, define the pallet, and define the application.

**User:** Each HDDS application must have established methods and procedures. These methods and procedures must be enforced. Even with the optimum system design, there is a liability that the owner needs to continually address.

**Operators:** All HDDS systems require special initial and follow up operator training.