

Picking to perfection!

Order picking remains one of the most time-consuming and costly tasks in the warehouse. So what are the strategies and equipment types that can help you pick more efficiently?

As usual, Cat has the answer...



1. It might make good sense from the storage density point of view, for example, to rack pallets as high as your building permits

2. Line picking – in which individual pickers pick particular product lines for multiple orders



Picking orders sounds like such a simple task... but where and how you store the items to be picked, the equipment and technologies you use to access them and the order in which you pick different items can all make a huge difference to overall picking efficiency and cost.

Automated handling and storage solutions like **carousels, vertical lifts and miniload systems** are often cited as among the most effective pieces of equipment to deploy, offering high storage density, fast throughputs, computer controlled picking accuracy and a high level of product security.

But automation can be costly and is often inappropriate for all but the highest throughputs. Most operations, therefore, rely on more traditional, lift truck based picking methods.

While lift truck picking can be highly efficient, however, there are many different factors to consider if you want to make a truck-based picking operation as smooth and efficient as possible.

Not least of these, is the type of storage you're using and how it is configured within the overall warehouse space.

Layout principles

Whatever type of racking you're using, however, it's vital to think properly about where you put your goods within it.

In general, it makes sense to keep the pick faces for the fastest-moving items at ground level

and at the near end of your racking to keep travel distances and picking times to a minimum, with slower movers and replenishment stock further away and/or higher up. How much space you devote to pick faces and replenishment areas will depend on various factors, including the overall throughput and capacity of your store.

If you need more pick faces than you have ground-level locations for, you will have to pick some goods from upper levels. Even if you do have sufficient ground-level locations, it might be more efficient because of reduced travel times to range your pick faces across both ground and upper levels at the near end of your racking, rather than to keep all your pick faces at ground level but incur long travel times.

The exact configuration of goods within racking can only sensibly be decided on a case-by-case basis since much of it comes down to how many different products you have, the

quantity of each you're storing and the turnover of individual product lines.

Aisle widths, aisle lengths and racking height are also important factors, however. It might make good sense from the storage density point of view, for example, to rack pallets as high as your building permits, but the lifting and lowering times involved when picking goods or fetching replenishment stock from high levels will obviously not be so welcome and the longer a truck has to stay in one position to pick a pallet, the longer it will be blocking other positions nearby.

As a rule of thumb, the higher the turnover, the lower the racking should ideally be.

If you have very long aisles without any lateral transfer options, meanwhile, a truck's journey from one aisle to the next can be unnecessarily time-consuming. And if your aisles aren't wide enough to allow two different trucks to pass one another safely, that too, can obviously introduce delays as well as limiting your ability to deploy multiple trucks to a given aisle simultaneously. Queuing can be a major source of delay in lift truck operations and there's little point in spending good money on the most efficient lift trucks or on training your operators to work as productively as possible only to waste those skills and resources on badly thought out picking operations.

Strategic issues

Also related to picking efficiency, of course, is how many trucks you use for the job. This is obviously dependent on the quantity of goods to be picked, the time you've got and the pick rates you can achieve using different truck types (and different staff). But there are more strategic issues than just this to think about.

Depending on the complexity and urgency of individual orders, for example, you might be happy for each picker to pick a single order at a time.

Alternatively, it might make more sense for them to pick two or even three different orders simultaneously, assuming their lift truck can handle this.

Picking more goods per cycle effectively makes the most of the travel time around the warehouse, but clearly also raises both the number of stops to be made and the overall time taken per cycle.

Zone picking

Zone picking – in which an order is split among several pickers who each work within a limited area of the warehouse – can also be a useful technique and will usually cut travel times in situations where pickers would otherwise have long distances to travel between one part of the warehouse and another. It's also good for stores with different temperature zones or in cases where you're in a hurry to get a particular order out. Bear in mind, however, that the constituent parts of orders picked in this way still need to be consolidated at some point, which will add to the overall time taken as well as cutting down somewhat on the space available for pure storage in your warehouse.

It can also raise your staff and equipment costs compared to a single picker assembling a whole order.

Line picking

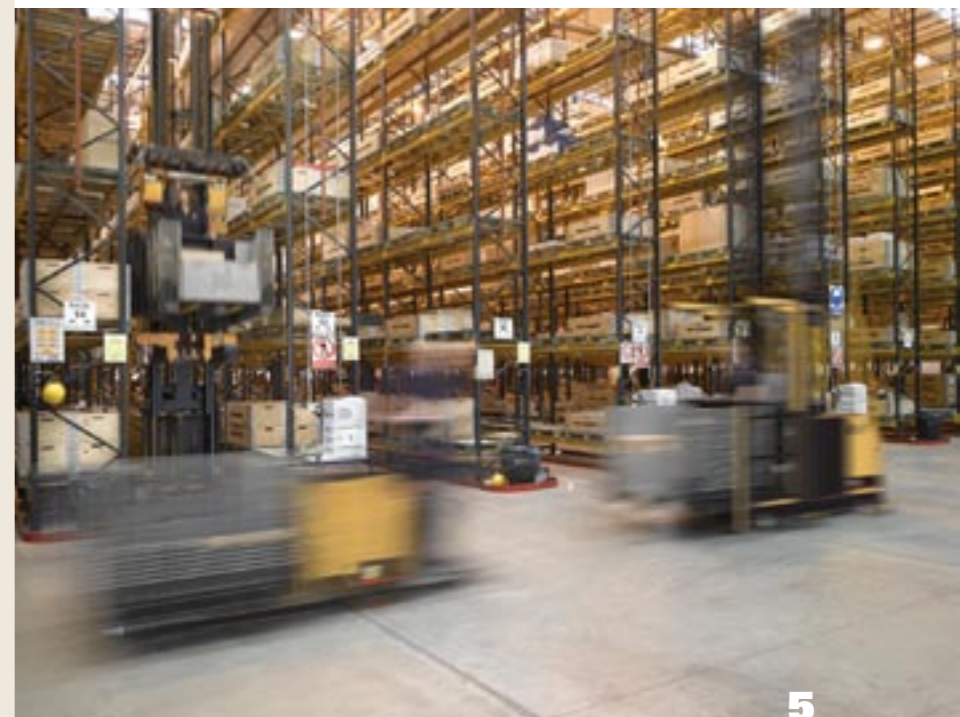
Line picking – in which individual pickers pick particular product lines for multiple orders – is another useful technique to raise productivity where there is sufficient volume to justify it, again helping to cut down on wasted travelling time. Once again, however, it doesn't produce finished customer orders directly so some kind of consolidation process will need to take place. →



3. Medium-level units are designed to carry both picker and unit load

4. High-level order pickers can be used for loads of up to 1.0 tonne to heights of around 9m

5. Picking more goods per cycle makes the most of the travel time around the warehouse



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You also need to remember that if you're filling lots of orders with one line at a time, you can't send any of those orders out until they're all complete. Picking whole orders individually, on the other hand, means orders can be sent out independently and requires fewer trucks and staff to be involved per order.

With both zone picking and line picking the consolidation process is usually done at a separate assembly station, where goods are assembled into their final order.

Station picking

You could also avoid picking individual items from racking altogether and simply deliver unit loads containing the right type of goods to a central picking station, from where they are manually picked as required – usually for multiple orders at once - before being returned to the store. Such station picking is a great way to keep aisles free of slow-moving picking traffic and is particularly useful if you're working with narrow aisles that prevent trucks from passing one another. On the other hand, of course, the amount of travel back and forth between picking station and racking can be very high.

Truck options

If you want your order picking to be as efficient and productive as possible, it's also important to give proper consideration to the lift trucks you employ for the job.

If you're station picking, your regular pallet handling equipment may be all you need and using powered pallet trucks, stacker trucks, reach trucks or even counterbalanced trucks (depending on your aisle widths and storage heights) means you can sweat your existing assets and avoid the cost of special order picking trucks. If you only pick five items a day and the rest of your operation is about moving full pallets, this may well be the best way to go. Those with higher volumes will prefer to invest in extra trucks for the job, however.

Dedicated order pickers come in three basic flavours: low, medium and high-level.

Low-level order pickers are, broadly speaking, similar to powered pallet trucks with the exception that they cost more (around two to three times as much, depending on spec), generally give access to both ground and second-level storage locations and can often be used to carry two pallets or three roll cages at once, making them a lot more efficient than the humble pallet truck. They also frequently feature rising forks to keep the picking surface at an ergonomically acceptable height, which pallet trucks do not. Typical maximum travel speed is around 12-13 kph and operators usually access the second level in racking either by simply stepping up onto a platform on top of the battery compartment or by means of a rising platform.

Medium-level units have proper masts and cabs and are designed to carry both picker and unit load up to heights of 4m or more, again keeping the load at an ergonomically beneficial height. Medium-level order pickers generally cost around 30-50% more than low-level machines and have a typical maximum travel speed of 8-10kph.

High-level order pickers, meanwhile, can be used for loads of up to 1.0 tonne to picking heights of around 9m. Typical cost of high-level units is usually at least 50-80% more than medium-level picking machines but they do provide the maximum number of pick faces per square metre of floor space. Typical maximum travel speeds are around 8-10kph.

The greatest numbers of order pickers sold are low-level variants, partly because they cost less and partly because most operations keep their picking faces at low level.

They're also regarded as the most productive order pickers from the point of view of carrying capacity: typical load capacities for order pickers are 2.5 tonnes at ground level (as low-level machines can carry up to three unit loads at once) and 1.0 tonne higher up (medium and high-level machines generally only carry a single load).



Some high-level **very narrow aisle (VNA)** trucks, usually known as combination trucks, are also suited to order picking as well as full pallet handling in and out of racking. Such trucks can lift pallets to around 14m and their dual functionality can, in the right operations, do away with the need for two separate trucks - but cost can be prohibitive, at around two to three times as much as a high-level order picker.

Handling replenishments

Whatever machines you use for order picking, you'll need to give some thought to how to handle replenishment of the pick faces in your racking. Since this is invariably about full pallet movements, standard warehouse lift trucks like powered pallet trucks, stacker trucks and reach trucks are usually the best bet.

Pedestrian or ride-on powered pallet trucks are low-cost and flexible but can only be used at ground level which obviously restricts their usage if you keep your buffer stock further up in the racking. Pedestrian and ride-on stacker trucks aren't much more expensive and their mast means they can be used for medium height pallet handling – up to 5.5-6.5m, depending on model.

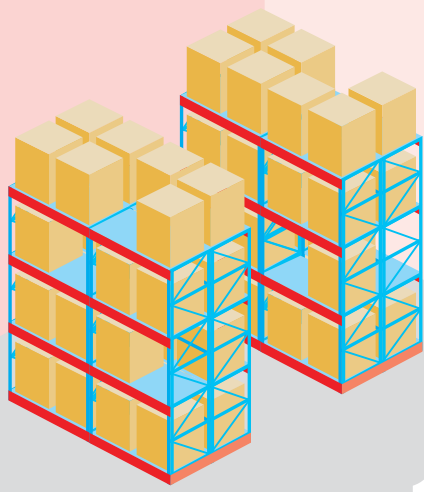
For warehouse operations needing to store buffer stock even higher, reach trucks are the obvious choice:

although their price band usually starts where a typical counterbalanced truck's prices tend to stop, they can often lift up to 11m or more and require only relatively narrow aisle widths (typically 2.3m).

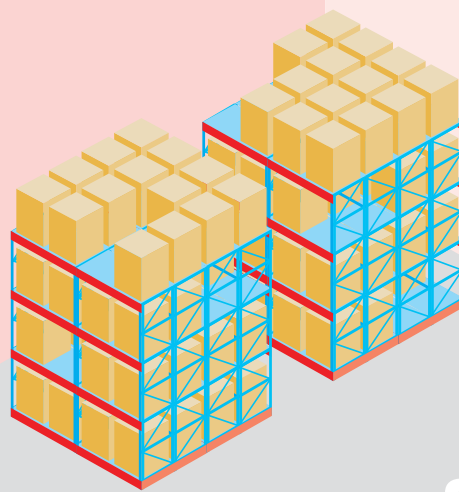
For more information on order picking, talk to your local **Cat Lift Trucks** dealer or see www.catlifttruck.com. ■



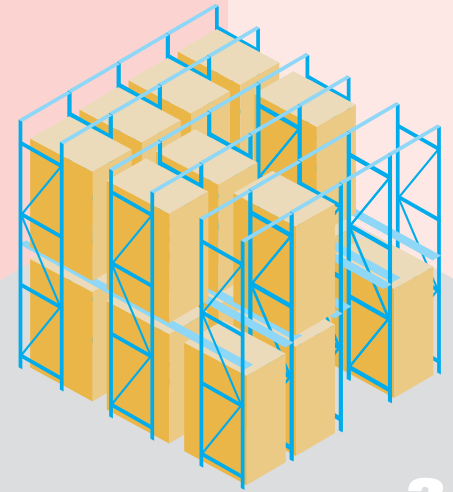
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9. How much space you devote to pick faces and replenishment areas will depend on various factors



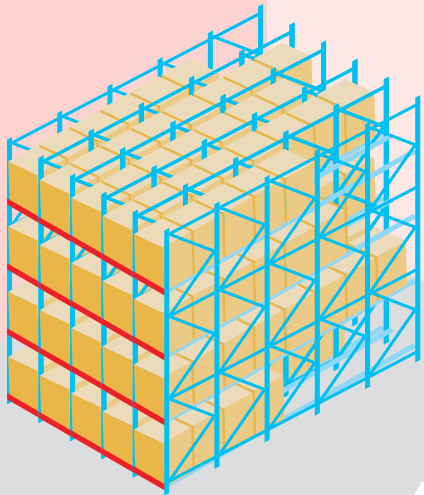
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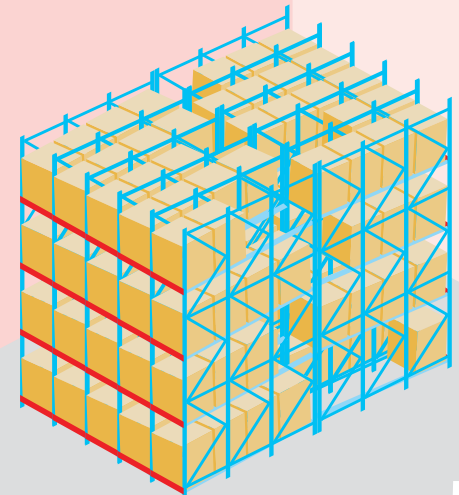
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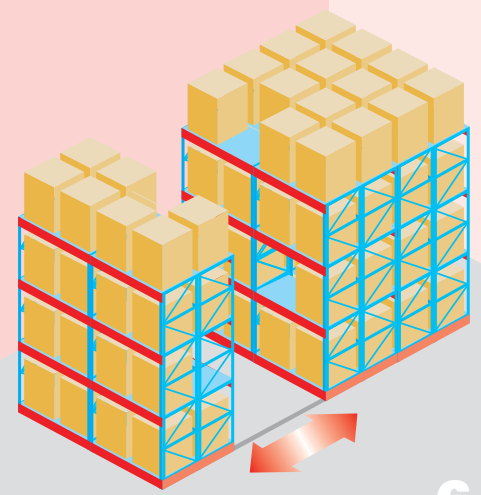
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Racking types

1. Standard adjustable pallet racking

The simple, flexible and most popular form of storage. Individual pallets have their own position and are accessible at any one time – a perfect arrangement for order picking, even if it's not the most space-efficient.

2. Double-deep racking

In which pallets are stored two deep in each location. This forces the removal of the front pallet to gain access to the one behind it, so only half the pallets in your warehouse are easily accessible at any given time. Can be useful for some order picking operations, as two pallets of the same product can be stored in each position and a lift truck can simply bring the rear pallet forward when required, creating longer intervals between pick face replenishments.

3. Drive-in racking

In which pallets are stored on longitudinal beams that forklifts can literally drive into. This does away with the need for conventional aisles and allows storage density levels close to block stacking – great for making the most of your warehouse space, but limiting access to all but the nearest pallets. Accessed from one side only, by certain types of truck – order pickers aren't one of them – forces a first-in, last-out stock rotation that won't suit all cases.

4. Live or gravity storage

Pallets are stored several deep on inclined rollers, so that as the front pallet is removed the others 'glide' forward to take its place. This is a great system for order picking purposes as it achieves high levels of storage density, first-in, first-out stock rotation (such systems are generally loaded from a single lateral aisle at the rear) and automatic replenishment of the pick face as the pallet at the front

is removed. However, live stores usually hold five or more pallets deep of the same product which may not be practical with all product lines.

5. Pushback racking

Similar to live storage but with both picking and putaway from the front to remove the need for a separate loading aisle behind the racking. That means it's a first-in, last-out operation that won't suit picking operations where stock rotation is critical.

6. Mobile racking

Similar to standard APR except that the bays of racking are built on powered rails and slide laterally, allowing racking bays to be closed up for maximum storage density and opened only when needed. This is excellent for space utilisation but as only one or two aisles can typically be opened up at once, probably the least efficient form of storage from the order picking point of view. ■