

Logistics operators are making major changes to the way they approach the order picking process.

Alex Leonards

explores the influences behind these shifts, and the techniques set to hit the industry.



Picking a new path

The warehouse, where a year seems to move at the pace of a decade, is drifting further and further away from its traditional roots.

A strong shift in the direction of retail from brick and mortar stores to online platforms, along with a range of societal tweaks and adjustments like Brexit, is changing how the industry plans and carries out its logistics.

Although these changes do generate new pressures for the industry, they are arguably prompting the most innovative time period for the warehouse to date – particularly for order picking systems.

“The switch to online shopping continues to grow apace, and of course this has enormous consequences for distribution centres, e-fulfilment centres and third party logistics providers,” says Alexey Tabolkin, chief executive of EiraTech Robotics, the developer of robots for warehouse environments. “From being traditional warehouses just a decade ago, the explosion in online shopping means operators are now having to cope with filling and shipping an exponential growth in ‘single item’ orders, with all the staffing and scalability demands that this involves.”

Jack Peck, president of US-based Fast Fetch, the provider of combined voice, light directed and wireless barcode scanning, predicts that this type of warehouse operation will intensify in the near future.

“As e-commerce continues to grow, the number of items per order will continue to shrink while simultaneously, the number of orders per day will continue to grow,” says Peck. “Fast and accurate piece picking will be the focus of almost all distribution centres servicing the retail market.”

Peck identifies this demand as the industry’s most serious challenge. He thinks it is to impact almost all distributors in the near future.

“To achieve shorter delivery schedules there will be more and smaller distribution centres strategically located near population centres,” he says. “The omni-channel distribution concept supports the idea of more and smaller outlets for distribution.”

A natural symptom of the online shopping model, partnered with omni-channel options, is rising returns. The significance of reverse logistics in omni-channel retail is no better demonstrated than by shopping phenomenon Black Friday. LCP Consulting predicts that five million Black Friday parcels will be returned overall.

“The industry is currently grappling with how to deal with issues such as returns policies and how they impact on customer loyalty, but minimising returns through ensuring order accuracy, using robotics and automation to free up staff resources to deal with returns and to quickly reintegrate returned inventory to the warehouse floor also have roles to play,” says Tabolkin. ▶

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Eric Carter



Peck says that returns will grow at a rate that probably isn't fully anticipated by many distribution centres.

"E-commerce customers will order several items with different styles, colours or sizes and return all but a few of the ordered items," he says. "Handling returns in an efficient and effective manner must be planned at the same time order fulfilment solutions are being planned."

Delivery times will need to be shortened to meet demand, and new technologies will be introduced to facilitate this.

"... the challenge will be managing the conflicting demands arising from having to process single item orders, adjusting to thinner profit margins and an increasing expectation from customers for their goods to be delivered immediately, at a low cost," says Eric Carter, solutions architect at Indigo Software. "Managing these challenges will require greater levels of investment in technology and systems able to provide support for more accurate planning."

But it's not just a challenging retail environment that is putting pressure on the order picking process. According to Matt Hatson,



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business solutions sales director at Dematic Northern Europe, the introduction of the living wage and worries about the future of the UK labour pool due to Brexit have made companies more conscious about maximising productivity and efficiency. He says that there is a significant gap between the UK and a number of western economies when it comes to productivity. Germany, the US and France are miles ahead in terms of output. This is encouraging UK businesses to invest in new technologies and methods.

"Drones will be used for same day (or same hour) delivery and since their range will be limited, one can expect smaller distribution centres to be located reasonably close together," says Peck.

According to him, the use of smaller carrier delivery companies like DHL and FedEx will continue to grow as fewer items are shipped more often.

"The shipping rates now used by these companies are heavily weighted by the dimensions of the shipping containers so the cost of not shipping air will become increasingly

Robotics and automation

TECHNOLOGY "As is usually the case with technological innovation, it was the biggest players who led the way," says EiraTech's Alexey Tabolkin.

He refers to Amazon's investment in the first large scale facilities incorporating goods-to-person robots by Kiva, who the retail giant subsequently bought.

"Since then, a number of robotics companies have entered the market to fill the technology void, using broadly similar systems to Kiva's," he says. "This 'march of technology' means that what was once solely the preserve of only the very biggest players is now also available to the many small and medium sized centres – who must compete with Amazon in terms of costs and efficiency to survive.

"And if terms like 'automation' and 'robotics' once conjured up visions of huge expense, heavy construction, conveyor belts and massive robotic installations, rapid advances towards lighter, more adaptable and scalable robotics technology mean this is no longer the case."

Tabolkin predicts that this will have a knock on effect where smaller more flexible fulfilment operations will become increasingly competitive through automating their operations earlier.

"Larger retailers will retain e-commerce fulfilment ops in-house for greater control and ability to use automated solutions with existing staff," he says. "Major 3pls will take advantage of robotics to change their processes to deal with the unique dynamics

in e-commerce fulfilment v's the traditional fulfilment model."

But according to Fast Fetch's Jack Peck, the use of robot technologies will be difficult to economically justify because of the smaller volume of orders in each distribution centre.

"Consequently, lower cost, effective technologies that extend the capabilities of human pickers will become more pervasive," he says. "We see robotics to be affordable in only a very small part of the distribution industry space.

"We believe more and smaller distribution centres will become pervasive as part of the Omni-channel movement in which some of the distribution operations are moved to multiple locations within the business operation.

"Robotic technologies continue to be expensive and inflexible and will not make any significant increase in order fulfilment technology purchases this year."

Indigo's Carter agrees that robotics won't be the biggest trend hitting the wider industry just yet, but admits interest is rising. "Although this is not likely to be a big trend [this year], it is growing and there is a market segment where these are appropriate, especially for high volume sales of small items with standardised packaging," says Carter. "However, they require a large



Alexey Tabolkin

capital investment, which many companies are not necessarily able to justify in their supply chains.

"Robots will play a part but because we are at bottom of the adoption lifecycle curve, they are currently commanding high prices." Carter says that the adoption of robots will mainly be driven by businesses that are guaranteeing either next or

same day deliveries, as missed deadlines can hit these kind of companies hard.

But not all would agree that robots can deliver a speedier order picking process. Peck says that 'agile' and 'robotics' cannot be used in the same sentence without the use of the word 'not'.

It's fair to say that the introduction of robots in the logistics market is a slow process. But Tabolkin thinks order picking robots are likely to be a significant trend in the foreseeable future. He refers to last year's MHI Report, which found that 74 per cent of companies surveyed said they will be investing in robotics within the supply chain in the next six to ten years.

"The reasons for this trend is becoming obvious – according to analysis of Amazon's deployment of robots by Deutsche Bank reported last June, introducing their robots to just one new warehouse saved the online retailer a whopping \$22 million in fulfilment expenses," he says. ■

Simultaneous strategies

LIVE STORAGE According to Fast Fetch's Jack Peck, the term live storage system is defined differently depending on its context.

"In the context of gravity flow lanes, live storage systems are used extensively in most major distribution centres since they enable picking and replenishment to be conducted simultaneously," he says. "The downside to live storage systems is that they occupy more floor space since aisles must be available for both picking and replenishment. Consequently there is a trade-off between floor space and picking efficiency."

He says that in the context of goods-to-picker methods with complex conveyor systems, the technology is expensive and again economically problematic, particularly for smaller distribution centres.

"At the risk of being redundant, we continue to believe the future of e-commerce points to more and smaller distribution centres that will not readily lend themselves to expensive technologies," he adds.

EiraTech's Alexey Tabolkin thinks that live storage systems can be a very efficient way of both storing and picking fast moving goods in larger volumes within a dynamic warehouse environment.

"Creating a convenient pick face for these items that is being constantly fed on a first in first out basis means that the product flow is optimised," he says. "They will also enable greater use of space as they are fed from the back and picked from the front so there is no requirement for traditional aisle space."

"Like many storage solutions their relative benefit is based on the product profiles of the goods in the system."

He points out that if products are being constantly picked it makes more sense for them to be closer to the picker. On the other hand, for spaces with a less frequent movement of items, the zones they locate may need a different kind of solution.

"If the goods need to be consolidated with other goods after picking this needs to be considered also to minimise repeat handling," he says. "Their functions are not mutually exclusive so if planned correctly can complement other automated systems."

Indigo's Eric Carter agrees that in the right environment, and for the right product range (mainly high volume and high density pick faces) it is definitely worth the investment.

"Although as a one time cost live storage systems are expensive, from experience, where a business has made the investment, the returns are recouped quickly," he says. "Longer term, once the system is paid for, it's essentially free picking for the long term."

"In some cases, where a business might rely heavily on large numbers of seasonal agency workers, a company can see a return on their investment within months."

In his own experience, to achieve the most rapid return on investment with a live storage system, it needs to be integrated with a warehouse management system.

"This means the business always has live visibility of stock and overall warehouse throughput levels," he says. "In addition, having a storage system with built in intelligence allows stock items to be automatically re-located according to demand, with the system constantly monitoring the frequency of orders made and relocating the stock held within it accordingly."



E-commerce is changing the market.

more important," he says. "Machines that make "right sized" boxes coupled with complex algorithms that can determine the dimensions of the "right sized" boxes, based on the dimensions of the order items, will be found in almost all distribution centres.

"The primary emphasis in distribution centres will be to enable their human pickers to become more accurate and more efficient while retaining or reducing the cost per pick."

Indigo Software's Eric Carter says that the use of automated picking systems, and the incorporation of shuttle systems, goods-to-person and pick-by-light systems will increase in use, particularly in omni-channel environments that need a high volume, high-density pick face.

"These systems can be more expensive as an investment so companies unable to make a cost justification for automation



The living wage and Brexit are making companies more conscious about maximising productivity and efficiency.

Matt Hatson

will probably be considering voice directed picking as the next best alternative," he says. "Companies will be looking for ways to streamline operations, for example, optimising delivery costs and packaging materials by avoiding shipping an almost empty big box for a small, single item."

"This trend is also influenced by the need to manage consumer expectations for more ethical use of packaging and less wastage."

Carter says that most businesses will be seeking flexibility and agility from their warehouse management systems, alongside an intelligent picking system that suits their product mix and enables them to cope with demand peaks and troughs.

"Having this in place ensures that resourcing becomes less of a bottleneck during busy times, as increasing staff head-count is not necessary," he adds. "Conversely, in cases where more staff are required, a flexible picking system makes it less of a problem to train new operatives." ■