

# The future of warehouse automation

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Commerce has been moving more and more online for years, the COVID-19 pandemic has sped this up massively with a huge number of people either unable or unwilling to risk going to a physical shop. The demands on distribution centres and warehouses to cope with the massive increase in throughputs is being felt across many industries, with an increasing number of businesses turning to warehouse automation to help cope with the increasing demands.



The requirement for social distancing measures within warehouses to keep them running efficiently and keep employees safe has also led to an increased demand to automate tasks and transportation of product.

Businesses in all industries face increasing pressure to do more with less, efficiency is key. This is especially true in the warehousing and distribution industry, quite often a critical component of the supply chain. The technology available to the modern warehouse or distribution centre is growing more and more sophisticated all the time.

So what does the future hold for the automated warehouse? What technologies are going to impact and disrupt the industry?

We'll be taking a look at some of the technologies that are already here and some things to keep an eye out for over the next few years.

## The Future of Warehouse Automation

We have asked experts from all over the globe and from a wide range of backgrounds to give their opinions on what the future holds for warehouse automation.

Gavin Harrison – Sales Manager at Element Logic. ***“I think automation growth over the next 5 – 10 years will be key to the world we live in and how we as consumers interact with that world, from how & where we buy products to how they end up in our hands.”***

David Marler – VP of Sales and Marketing for LightSpeed Automation. ***“The gig economy is coming to your warehouse. Are you ready?”***

Darren Parkinson – eCommerce Fulfilment Centre Manager for Electrolve. ***“The reality is, as with lean manufacturing processes, what manufacturing does warehousing and logistics will follow and humans will make the final decision.”***

Pavani Katuboyina – Chief Marketing Manager at Addverb. ***“COVID-19 has profoundly accelerated the adoption of automation across all spheres of warehouse activities.”***

Shaun Graham – Marketing Director at 4Automation. ***“Automated sortation systems, goods to person picking systems and AMR/robotic systems are going to be more and more the norm in warehouses of the future.”***

**Gavin Harrison – Element Logic – UK**

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**I think automation growth over the next 5 – 10 years will be key to the world we live in and how we as consumers interact with that world, from how & where we buy products to how they end up in our hands.**

If we take black Friday for example, originally a single peak shopping day for retailers. However, due to the unprecedented pressure that put on business’ supply chains & fulfilment networks it was un-supportable. We have seen businesses adapt this and now, in most cases black Friday will be stretched out over a week or even a month to break up bottle necks within their fulfilment operations. They are doing this because many businesses are still operating from manual pick walks & have a lack of suitable automation to help them deliver the throughputs required. This has only been made worse by the strike of COVID-19 where we have seen large, manual operations be disrupted by rules around social distancing and infection control combined with the rise in ecommerce orders vs the traditional store replenish picking. This has shown businesses cannot just rely on the human flexibility and need to implement automation solutions instead.



The future of warehouse automation in my opinion will be defined & driven by 4 key factors.

The first being that any kind of automation needs to be as flexible as possible to mimic that of a human being, adapting to any changes, be it profile of orders, increases in demand or a complete shift in fulfilment style (retail picking to ecommerce) dynamically in real time without large amount of manual reconfiguring.

The second key factor is going to be automation that allows consumers to get their items, how they want, where they want & when they want. This in my mind will mean an increase in same day service demand whether it be to stores for click & collect / drive through pickup or it is same day delivery seen currently in certain parts of London. This demand will force businesses to reevaluate their whole supply chain and think about the shift away from the traditional Regional & Central warehouses / fulfilment centres to a smaller micro-fulfilment centre operation supported by a dark store main warehouse. This will allow retailers to be right on consumer's doorsteps in city centre locations, in some case in the back of their local stores. The only way this can be fulfilled successfully is by harnessing automation that can allow them to efficiently store & deliver the vast number of products consumers will want.

Third on the list and very much connected to the above point is going to be that automation will need to streamline business operations. Currently I see a lot of automation that is implemented to replace a human movement with a mechanical one, for example conveyors to take goods from the picker to a separate pack area, pouch sorters to sequence orders that have been batch picked & so forth. Well currently all of these are to increase the speed of that otherwise manual process of walking goods to another area, a person manual sorting items into the relevant piles. Well automation of the future should not be limited by sticking to these processes, it should eliminate as many of them as possible. In an ideal world surely when goods reach the warehouse they are inbounded directly to an automated solution which will store them, sequence them & generally keep them available so the next time they are touched is as they are being picked & packed by an operator (or by robot) to the despatch medium, which can then be sealed, sorted and dispatched without any more involvement from humans.

The final key factor of automation, and this one is an absolute pillar requirement, is that any automated solutions need to be available 24 hours a day, 7 days a week, 365 days a year. Retailers & businesses cannot have a system that is only available 70% of the time and having a system where if something goes wrong you lose access to a large portion of your stock for an extended period of time is not an option. That is why a single point of failure which causes the whole system to fail & requires a blue light service from either onsite maintenance or a service company that has to respond, arrive on site, diagnose the issue, fix the issue and then re-start the system is not an option, the time lost would be too great.

**David Marler – LightSpeed Automation – USA**

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## **The Gig Warehouse**

As we have seen over the past 10 years with Uber, Door Dash, Task Rabbit, etc. the

worldwide labor pool is changing. Combine this with the pay everyday concept and it's easy to see that individuals have discovered the ability to work when and for how long they want. It's only a matter of time before this concept moves into the industrial side of commerce and the industry needs to be ready.

I doubt you'll see this trend in highly skilled manufacturing jobs but for any company that is looking for pick and pack help they better get ready. Paying someone \$15 – \$17 an hour to walk through a warehouse and pick orders is not as attractive as making \$17 – \$20 driving people around in your car or delivering their favorite lunch.

The gig economy is coming to your warehouse. Are you ready?



There is a segment of the industry that will be able to afford the high-tech automation that robotics will bring. When you are doing billions in revenue each year you have the budget to invest millions to be more efficient. But what about the company that is not doing billions? How do they automate?

There are many affordable warehouse automation products for business of any size. Pick to light, mobile pick and voice pick are just a few. Having the ability to bring in a contract employee, give them a tool that eliminates the need to know where everything is in the warehouse, let them choose the number of days they want to work and then pay them at the end of the day is going to give you a huge advantage on the quality of employee/contractor that you can attract.

While old school principles can still apply – warehouse employee is an entry level position, they work their butt off and get promoted over the years and one day one winds up as President/CEO – the chances of you finding that individual who has that type of vision is going to evaporate. The “I want it now” generation is the work force of today.

According to Forbes, by 2025 75% of the global workforce will be Millennials and much of an organization's culture will centre around this generation's habits and expectations. Either you change your culture to appease the “Everybody gets a trophy” generation or you change the operational structure to still get the work done by appealing to their version of a work ethic.

I'm not saying that you have to change your operation to fit this coming narrative. I'm simply pointing out this trend is coming and making the point that warehouse automation will make you a leaner, more profitable company no matter who is picking orders.

**Darren Parkinson – UK**

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As warehouse operations continue to follow and adopt manufacturing trends firstly lean methodologies, then automated conveyors, so the future will lay with robotics and A.I to push the envelope of how fast can the product arrive to the customer from first order click to end delivery at the lowest variable cost per shipment.

The leader challenge will be “What part of the operation will gain the biggest business benefit for least financial outlay?” as there will be an automated solution for all operational functions of warehousing and logistics.

Businesses’ will undoubtedly see a lower site headcount, due to lower graded roles having supportive automated solutions that work to enhance employee productivity. There would be labour savings in underlying labour costs such as absence and holiday due to the lower headcount though the overall wage outlay would be the same or higher due to the increase in technical skilled roles (engineers). However the increase in higher paid on site technical roles and the wider support industry would outweigh any wider economic loss.

Operationally a lower headcount and for instance supported manual handling such as A.I counter balance operations, pallet moving conveyors or bots, robotic pick, automated pack will reduce incident rates and lower work related absence improving operational safety metrics and counter acting higher skilled labour costs. Whilst technologies such as laser space modelling, A.I catalogue management, automated sort, drone counting, will all improve space management and availability all allowing the logistics client real time availability data. The business benefit may be in adding solutions to the final mile logistics such as A.I live vehicle route planning, road or air drones, semi or fully automated vehicles, 3D and 4D printing will all aim to speed the final mile delivery .

Whichever technology the business chooses, a consideration will be “How easy will it be to integrate into the operating model and will it be easy to operate?” as 24/7 operation and maintenance will all be an expected given and lowing the higher skills cost will be a future variable cost challenge.

The reality is, as with lean manufacturing processes, what manufacturing does warehousing and logistics will follow and humans will make the final decision.



**Pavani Katuboyina – Addverb – India**

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## Current Picture

COVID-19 will have a profound impact on the warehouse automation market. The accelerated adoption of e-commerce and the inception of social distancing norms within warehouses & factories has led to increased investments in warehouse automation from the retail sectors. Furthermore, the near shoring of manufacturing and re-networking of global supply chains will have a significant impact on the adoption of warehouse automation within manufacturing sector.

The global pandemic has led to a short-term decline in the revenues of warehouse automation providers, as project commissioning for several of them has been pushed to 2021 due to regional lockdown restrictions. In long-term, however, we are looking at a bright future for warehouse automation as retailers and manufacturers are planning to expedite automation plans in order to avoid future supply chain disruptions. Now there is the need of automation more than ever – AMRs (Autonomous Mobile Robots) that move material from one place to other, driverless forklifts, Goods to Person technologies such as shuttles, ASRS (Automated Storage and Retrieval System) systems & the respective software's, IoT (Internet of Things) that provide visibility etc, as it is essential to maintain minimum no. of touches on the product while it is inside the warehouses.



## Some Industry trends

Warehouse Automation is experiencing an increase in e-commerce that equates to a greater demand for faster but cheaper delivery which puts extra pressure on the supply chain. There is a boom in some sectors as evidenced by the increase in capacity and increase in hiring which implies market growth will be limited by supply rather than demand.

The rise of ecommerce especially for essentials such as grocery, and medicines necessitated the warehouses to be located near to the customer that is inside the cities, which led to the rise of micro fulfilment centres. These MFCs (Micro Fulfilment Centres) are mini distribution centres, enclosed in an area of 2k to 10k sq.ft., and can help deliver the orders to customers within 2 hours of order placement. To minimize the operational expenses of these MFCs (Micro Fulfilment Centres) and to fulfil the customer expectations of < 2-hour delivery, MFC (Micro Fulfilment Centre) need to use automation & that is a big boost to the automation industry in the post-covid world.

Another trend that we observe is the emergence of players that offer both flexible and

rigid automation such as the mobile devices like AMRs (Autonomous Mobile Robots), AGVs (Automated Guided Vehicles) and the sortation robots that can be deployed with minimal existing layout changes and as per the seasonal demand fluctuations & throughput requirements; rigid automation systems such as ASRS (Automated Storage and Retrieval System), and the traditional conveyor & sorter belts wherein they offer some amount of standardized throughput rates and are aptly suitable for the regular storage and retrieval operations of the inventory. This kind of portfolio offers end to end solution to the customer under one umbrella and is easy to maintain post implementation.

## **Future Expectation**

There is explosive growth of demand for automated equipment with an increase of as much as 28.6% due to online shopping. The overall CAGR (Compound Annual Growth Rate) of the global warehouse automation market will increase by 11.9% in the period 2019-2024. While some industries had an adverse blow due to the shutdown of the economy & the lockdown, some other industries flourished, especially the groceries, F&B, Pharma & FMCG (Fast Moving Consumer Goods) industries. To meet out the increased demand & the handicapped supply chain, automation is the levelling point. Other sectors, such as durable and non-durable manufacturing, and the fashion and apparel industry, saw a decline of demand for warehouse automation equipment in 2020, as COVID hit the shop floor, and factories closed down due to lockdowns. The situation is particularly challenging for retailers who have nascent omni-channel strategies and may not have full visibility to track for exactly where their stock is at any given point of time. But these sectors are showing steady increase as they recover.

## **Shaun Graham – 4Automation – UK**

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I think there are a number of factors that are going to push for increasing levels of automation in the warehousing and logistics industry. They are:

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  1. Rising levels of e-commerce. Even before Covid-19 the world was increasingly shopping online, the restrictions we now all face have only sped up the increase of online shopping and warehouse and distribution facilities need to be able to cope with the increase in demand.
  2. The struggle, and cost, to find and retain staff to fill positions within a warehouse is only going to make automation more appealing.
  3. Smaller retailers, without the capital to setup their own DC's, will turn to third party providers for a distribution service. The more efficient and streamlined the third party is, the more appealing it will be to retailers.
  4. To cope with the increases in throughputs and the organisational challenges it brings, businesses will need robust and efficient automation.

From our point of view we firmly believe that automated warehouse solutions need to be as modular and flexible as possible going forward. The ability to move equipment to other areas of the warehouse as operations grow and change is key, the option of extending and adding to systems as well as cutting systems back to suit new requirements without having to rip everything out and starting over is a big advantage.

More and more of what we do and buy is going online, away from the traditional high street, and retailers need to be prepared for this shift. Consumer expectations continue to rise and distribution centres and warehouse need to rise to meet these expectations or risk losing brand reputation and customers.



Any automation needs to be flexible enough to cope with changes to product ranges, throughputs and consumer demands. With the levels of orders we are now seeing being processed on a daily basis in warehouses up and down the UK it is no longer feasible in a lot of situations to rely on human workers to do all of the work.

One of the biggest changes over the coming years may be the change from large distribution centres to smaller, more localised distribution hubs.

Automated sortation systems, goods to person picking systems and AMR/robotic systems are going to be more and more the norm in warehouses of the future.