

**Logistics** Debate rages over whether enough new jobs will be created, says *Michael Pooler*

# Robots gain ground in ecommerce warehouses

For a vision of the warehouses of the future, take a look inside Ocado's facility near Andover, in the south of England. Hundreds of cuboid units with flashing lights and antennas scuttle across a vast grid, accelerating and slowing down with a mechanical grace that prevents collision.

Although the scene resembles a secret industrial installation in a science fiction film, these robots are carrying out the mundane task of selecting groceries.

The online supermarket's state-of-the-art facility is at the forefront of the technological changes taking place in the warehousing sector, which acts as the processing core of the transport and logistics industry that ensures the smooth flow of goods throughout the economy.

As ecommerce booms and consumers expect faster and cheaper delivery, large storage and distribution centres that once relied largely on human labour are being transformed by automation and robotics. The trend has sparked fears that such jobs could eventually vanish.

"Automation has been around for a while, but the intelligence of the automation and its collaborative nature are the two fundamental things that are changing," says Tim Lawrence of PA Consulting.

Advances in artificial intelligence, sensors, vision systems and big data,

coupled with falling costs, are leading companies around the globe to invest hundreds of millions of dollars in equipment to make the movement of goods quicker, as well as more accurate and efficient.

New technologies range from fixed systems of interconnected conveyor belts and chutes that run for miles and sort dozens of postal packages every second, through to articulated robotic arms capable of packing goods such as confectionery or toiletries into boxes.

At one end of the spectrum is the UPS hub in Cologne. Automated sorters process 190,000 packages per hour on a conveyor system covering 40km, with one item taking an average of 15 minutes to move through the hub from entry to final loading point.

"Automation helps us increase the package sorting capacity, reduce human error and alleviate repetitive stress on employees," says UPS.

Other companies have deployed mobile robots, controlled by central computer servers, for retrieving orders and carrying heavy loads. One example is Amazon, which acquired the robotics start-up Kiva for \$775m in 2012.

On the floors of the internet company's huge "fulfilment" centres that dispatch goods to online customers, squat orange machines on wheels whizz around carrying upright shelving units full of goods. Following instructions sent

over WiFi about their speed and next location, they weave backwards, forwards and sideways to the caged perimeter where human workers pick items out through gaps in the fence.

Today, Amazon has 100,000 of the machines globally, while in China similar machines are used in the depots of companies such as Tmall, part of the online retail behemoth Alibaba.

Developments in software have been a key enabler in robotics for logistics. At Ocado's warehouse, a centralised computer system that uses a planning algorithm communicates with the robots across a 4G network.

They are sent to a specific square and grab a crate containing a category of food, which they deliver to human "personal shoppers" around the edge. Collaboration among the robot swarm





allows the completion of a 50-item order within minutes, compared with around two hours in Ocado's older automated warehouses.

Adopters of robots in logistics say the move can alleviate menial or potentially harmful tasks, such as lifting heavy loads. DHL Supply Chain is installing "collaborative robots", or cobots: machines that work safely alongside humans, rather than behind a cage.

Made by Rethink Robotics and equipped with an articulated arm and suction grabbers, "Sawyer" can perform repetitive tasks requiring movements that could injure a human worker, such as twisting.

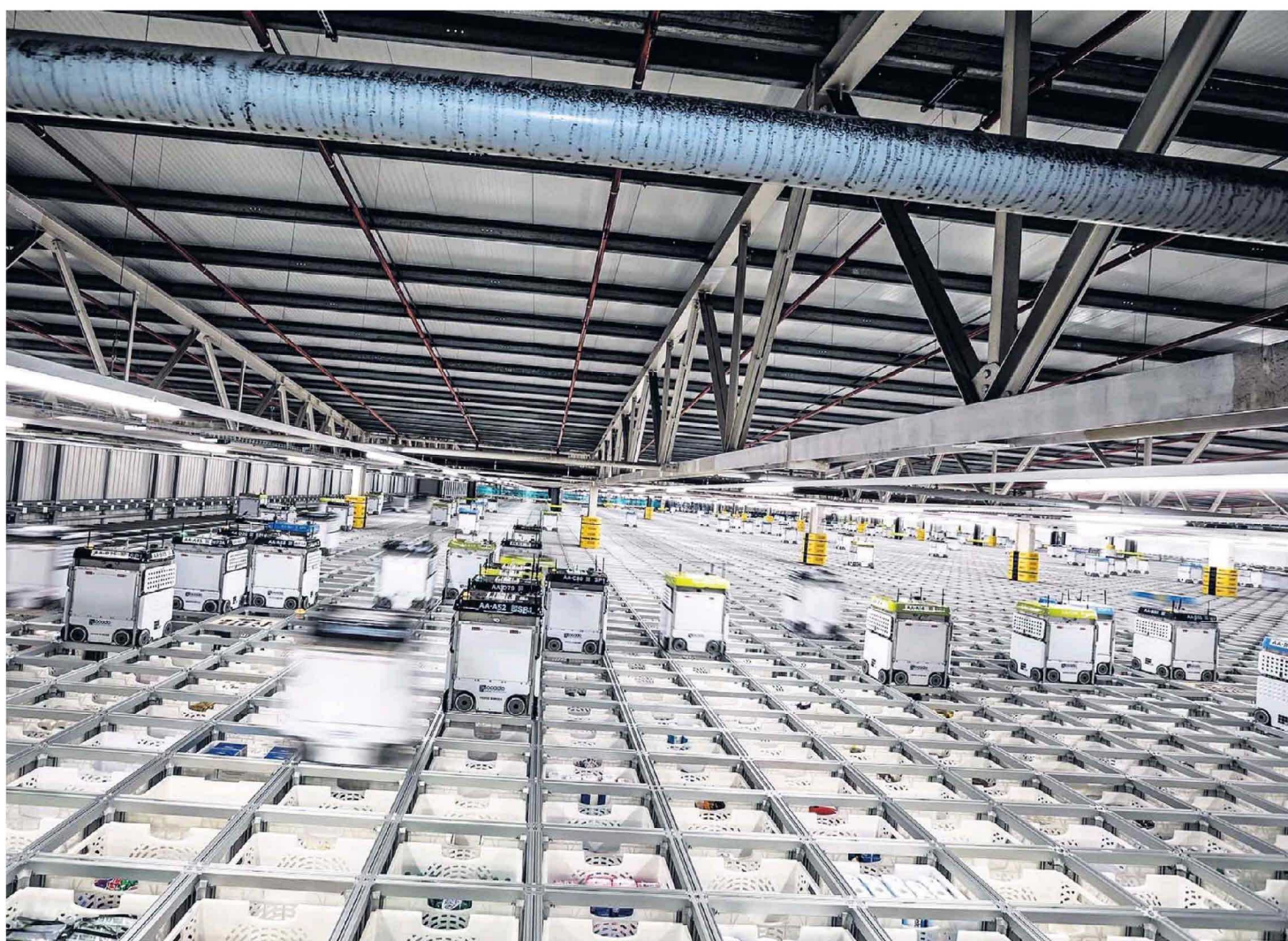
At DHL's Liverpool warehouse, Sawyers help humans pack deodorant spray cans or chocolate biscuits into boxes and have improved productivity by 15 to 20

'Automation helps us increase the sorting capacity, reduce human error and alleviate repetitive stress'

per cent. The machines are responsive to touch and can be shown tasks without the need for programming.

Despite fears that increased use of robotics will lead to job losses, many logistics and ecommerce companies insist they are in fact creating jobs as they open new warehouses to meet rising demand. However, some experts are sceptical about such claims.

"There will definitely be less employment in the warehouse logistics sector through automation. Everyone says there will just be different types of jobs – I'm not 100 per cent that will be the case," says Mr Lawrence. "There clearly will be growth in people who can programme robots and develop artificial intelligence solutions, but [for] people in logistics doing manual tasks the impact will be quite significant."



**No humans:  
Ocado's  
warehouse  
in Andover**

Burlison Photography