

The Magazine for the materials handling professional

# EUREKA

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## TIME IS MONEY

**Higher profits  
through advances  
in barcode scanning  
and order picking**

### IN THIS ISSUE

#### **Keep your balance**

Advice on truck and load stability  
for fundamental forklift safety.

#### **Trends for today**

What do the next 12 months  
hold in store for materials handling?

#### **Rise of the drones**

Are they a feasible logistics and  
warehousing solution or just pie in the sky?



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# IN THIS EDITION

In issue 30 of Eureka you will find us predicting the future, highlighting current opportunities and – where necessary – going back to basics. We hope you will find this mix of articles useful.

Looking at the near future, **Gian Schiava** sums up what the European materials handling media and their influential contributors have to say about the coming 12 months. Blockchain, Big Data, automation, plastic pallets, green logistics, pre-owned truck sales and 3D printing are just some of the growing trends.

Casting our minds further ahead, **Ruari McCallion** separates the hype from the reality when it comes to our industry's use of drones. Although we are a long way from seeing skies full of them, they are beginning to fulfil real and practical roles – especially in the warehouse.

Other advances available immediately, today, include improved barcode-reading and order-picking equipment. **Mark Nicholson** discovers the productivity and profitability advantages of image-based scanning and dynamic truck design.

We make no apology for returning time and again to the basic principles of forklift safety, as it affects lives and businesses so fundamentally. We have a graphic article to remind your staff of some of the golden rules, while one particular factor – stability – is examined in more detail by **Mark Nicholson**.

We love to receive feedback on Eureka. Is there an article which you have found especially valuable? What else can we do to help you? Is there another subject you would like us to investigate? You can email [comment@eurekapub.eu](mailto:comment@eurekapub.eu) or message us via our website [www.eurekapub.eu](http://www.eurekapub.eu).

**Monica Escutia**  
Commissioning Editor

Eureka's commissioning editor is Monica Escutia, a Bachelor of Communications – Journalism. She is a Spanish national and fluent also in Dutch, English and Italian. Having previously edited a variety of international media she has spent the last 14 years in the materials handling industry – the first four as a parts sales representative for several European countries, before becoming the EAME Manager Marketing Communications for Cat Lift Trucks, based in the Netherlands.



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# ADVANCED SCANNERS AND ORDER PICKERS BOOST WAREHOUSE EFFICIENCY

Of all the processes in a warehouse operation, order picking is often the most expensive in terms of employee time. **Mark Nicholson** looks at some time-saving advances in scanning technology and order picker truck design which promise improved profits through faster work flow.

For decades, barcode labels have been used to attach essential information to products and packages in warehouses. They make it easy for order picking staff, with the aid of a hand-held scanner, to check they are collecting the correct items. Additional checks of both inbound and outbound goods can be made at any stage via their barcodes. In many cases, scanners mounted above a conveyor belt automatically read each label.

A common problem is that sometimes a scanner fails to read the barcode. The item must then be taken out and scanned again. If this fails, someone may have to type in the information, manually, or create and apply a new label. This all takes time. In a warehouse handling thousands of items per day, it soon multiplies into a serious loss.

Workers face similar repeated drains on their time when operating low-level order pickers. In fact, they typically spend more time walking or driving than they do picking. A key aim for the truck designer is to speed up the operator's movement between picks.

## ADVANCED IMAGE-BASED SCANNING

Until recently, barcode scanners tended to be based on lasers. Now there is the option of image-based scanning, which uses similar technology to that of a digital camera. Unlike a laser reader, a digital scanner actually captures an image of the barcode. With the help of its software, it interprets

that picture and is even able to overcome confusion caused by barcode imperfections.

A laser scanner may fail to read barcodes if they are damaged, distorted, poorly printed, obscured by reflective material or wrongly positioned. An image-based scanner reduces the number of reading failures arising from factors like these.

Occasionally, even an image-based scanner will find a barcode impossible to read. The operator can then look at a real-time image of what the scanner is seeing, and the cause of the problem should be obvious. If it is something like low ink in the printer, it can be quickly corrected. In addition, images may be archived and analysed later, to identify root causes

of problems and improve labelling performance. There is also great scope for wider analysis of collected barcode data to inform business strategy. Compared to their laser-based predecessors, today's most advanced image-based barcode scanners have other important advantages. They can read barcodes from any direction, instead of requiring labels to be in a particular position and orientation. They can read multiple codes on packages simultaneously. As well as one-dimensional barcodes, composed of light and dark lines, they can read two-dimensional information such as Data Matrix and QR codes. These provide much more data and are certain to play an increasing role in future logistics. ►►



Barcode scanning capabilities are growing.



What's in the box?  
Not all barcode scanners are able to read labels in this condition.



*When shopping for any item of warehouse equipment, buyers should consider not just the purchase price but all related lifetime costs.*

#### DYNAMIC ORDER PICKING TECHNOLOGY

Clever software has enabled major leaps in the capabilities of order picking trucks as well as barcode scanners. Innovations on the latest NO-N2 low level order pickers from Cat® Lift Trucks include a unique intelligent curve control system. This reacts rapidly and intelligently to the operator's steering behaviour and travel speed, adjusting sensitivity, cornering speed and angle limitation to meet changing needs. In short, the operator is empowered to drive rapidly between picking points without losing stability.

Operating an order picker involves a lot of starting and stopping. To save vital seconds, the NO-N2's deceleration rate and stopping distance are programmable. This makes the timing and precise positioning of each stop easy to control. Meanwhile, the truck's regenerative braking has been optimised to eliminate swaying effects when it stops.

When distances between picks are relatively small, the most time-efficient approach is 'walk-by-side' operation. In this mode, which also gives an improved view to the fork ends, the truck is still controlled via the steering wheel but with angles safely limited.

From the walk-beside position, the operator can rapidly return to the truck's faster ride-on mode using its 'flying start' feature. This allows acceleration to begin before he or she steps onto the presence-detecting floor mat. Once onboard, full acceleration is permitted.

No order picking time can be gained by crashing a truck, so various automated safety aids have been added to the control functions already mentioned. Steering control characteristics are modified when reversing, to allow for the operator's sideways position and one-handed operation. ECO and PRO driving modes can be chosen according to the operator and application. Advanced traction control keeps acceleration smooth and rapid, even on slippery surfaces, while a hill hold function and anti-lock brakes give extra confidence in all conditions.

Along with electronic control technology, there are structural design features which save further time. Order picking frequently requires walking through the truck to pick from each side of the aisle, so the NO-N2's operator compartment has been designed with wide, unobstructed access, a low step height, a non-slip mat and no tripping hazards.



Cat® NO-N2 low level order pickers: speeding up movement between picks.

#### REDUCED LIFETIME COSTS

When shopping for any item of warehouse equipment, buyers should consider not just the purchase price but all related lifetime costs. They should also look at the potential for cost savings through increased efficiency in picking and other processes. This applies equally to barcode scanners and warehouse trucks.

Image-based barcode scanners were once substantially more expensive than their laser predecessors, but the gap is closing. Depending on the specification required, you might now find image-based and laser-based systems at similar prices.

In contrast to a laser scanner, an image-based scanner has no moving parts – so it lasts longer and

requires less maintenance. Most importantly, it gives a return on investment every day through its superior read rate. Just work out how much time and labour you will save, even if the reduction in barcode reading failure is as little as 1%.

Similar arguments can be made for the NO-N2 order picker, with its durable construction, trouble-free operation, easy maintenance and market-leading energy efficiency. Again, you should particularly consider its time-saving and labour-saving effects on your warehouse operation, which will improve your bottom line. ●

Article feedback is welcome:  
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# KEEP YOUR BALANCE

## HOW TO PREVENT FORKLIFT TRUCK OVERTURNS AND LOAD SPILLAGES

At Eureka, we believe in regularly reviewing and reinforcing the principles of safe forklift operator behaviour, to help embed them in our industry's culture. The following guidelines from **Mark Nicholson** focus on a single factor involved in many materials handling accidents: stability.

At its extreme, loss of balance in a forklift truck can cause it to overturn – sometimes resulting the driver's death, or life-changing injury, and always generating substantial danger and damage. But even a relatively small stability-related incident can be enough to make a forklift shed its load – endangering nearby workers and ruining valuable goods.



HERE ARE  
**TEN TOP TIPS**  
TO KEEP YOUR LOAD ON THE TRUCK,  
AND YOUR TRUCK'S WHEELS ON THE FLOOR... ►



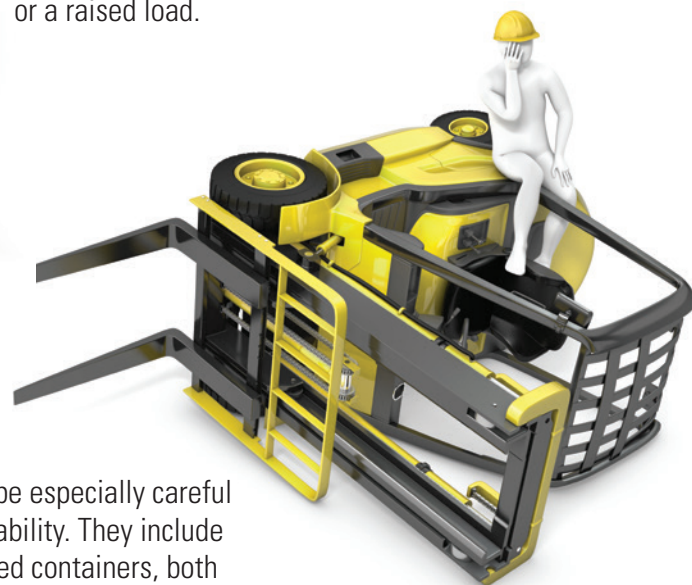


# 1 KNOW YOUR HEIGHTS

Before driving through a doorway or lifting a load inside a building, make sure you know the door and ceiling heights. Your truck and its load could experience a nasty shock if clearance is insufficient.

# 2 CORNER SLOWLY

Slow down when cornering. Excessive speed is one of the commonest causes of forklift truck overturns. The risk is even higher when combined with surface hazards, slopes or a raised load.



# 3 ADJUST TO YOUR LOAD

Most loads are fairly 'inactive', but you should be especially careful with those whose behaviour can affect truck stability. They include freely suspended loads, and liquids in partly filled containers, both of which will rapidly shift their weight from one direction to another if moved abruptly. Insufficiently supported or hastily transported wide loads will similarly 'rock' the truck. Lower your speed, make all driving actions smooth, and carry less than the normal rated capacity.

# 4 LOAD WITH CARE

Spread the load evenly and never lift it with just one fork. It should be set back firmly against the load backrest or the rear of the forks.

# 5 DRIVE SMOOTHLY

Jerky motion or sudden heavy braking may throw the load off your forks. Aim for a smooth take-off, avoid abrupt accelerations and turns, and anticipate stops with gentle deceleration.



# 6 CHECK SURFACE CONDITIONS

Before operating a forklift truck across a work site, make sure you are aware of any surface hazards. Is there oil, grease, ice, water, mud or anything else on which it might slip? Is there a risk of wheels sinking into soft ground? Is the floor bumpy or uneven? Are there kerbs, steps, large bumps or other obstacles to negotiate? Each of these conditions can throw a truck off balance, so slow down and proceed with extra caution. One extra tip: when crossing railway tracks or kerbs, a diagonal approach is best.



# 7 DON'T OVERLOAD

Stay within the truck's load capacity. Bear in mind that the rated capacity will be reduced when making high lifts or when using certain attachments. If in doubt, ask a supervisor.



# 8 LOWER YOUR FORKS

Driving with a raised load makes your truck much less stable, as its centre of gravity becomes dangerously high. Keep your forks and load within 150 mm of the floor when travelling, and tilt the mast fully backwards. It is also best practice to lower forks whenever the truck is parked. When manoeuvring a load into position at height, you should move at creep speed.

# 9 BEWARE OF SLOPES

Avoid steep ramps if you can. If slopes are unavoidable, drive slowly and don't turn the truck on them. When driving up or down a slope, keep your load uphill from you so it doesn't slide off. In other words, your forks should be in front of you while going up and behind you while going down. When travelling without a load, go forward rather than in reverse. Never stack or de-stack loads on an incline.



# 10 WEAR A SEATBELT

This won't actually prevent an overturn, but it can save your life if it happens.





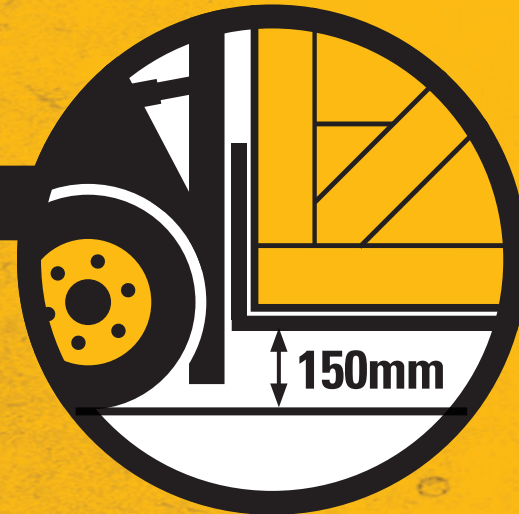
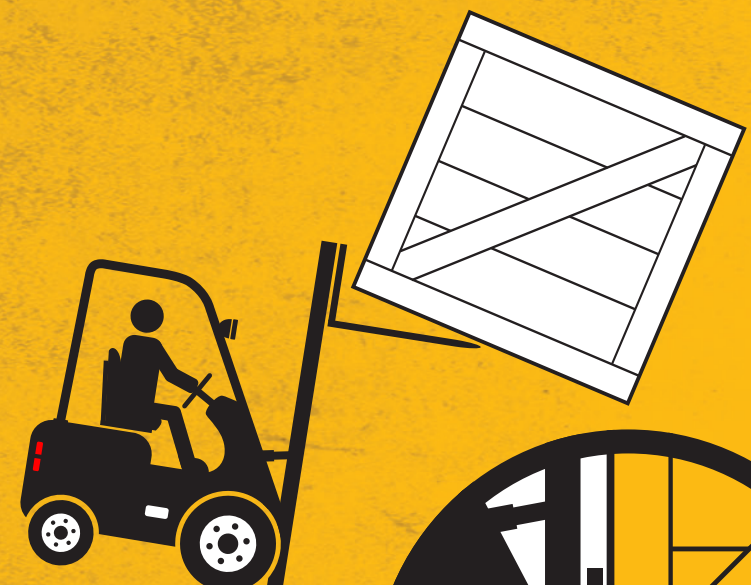
# A pull-out poster guide to LIFT TRUCK MISTAKES

Brought to you by Cat® Lift Trucks.

## OVERTURNING

Don't carry loads at dangerous heights while on the move.

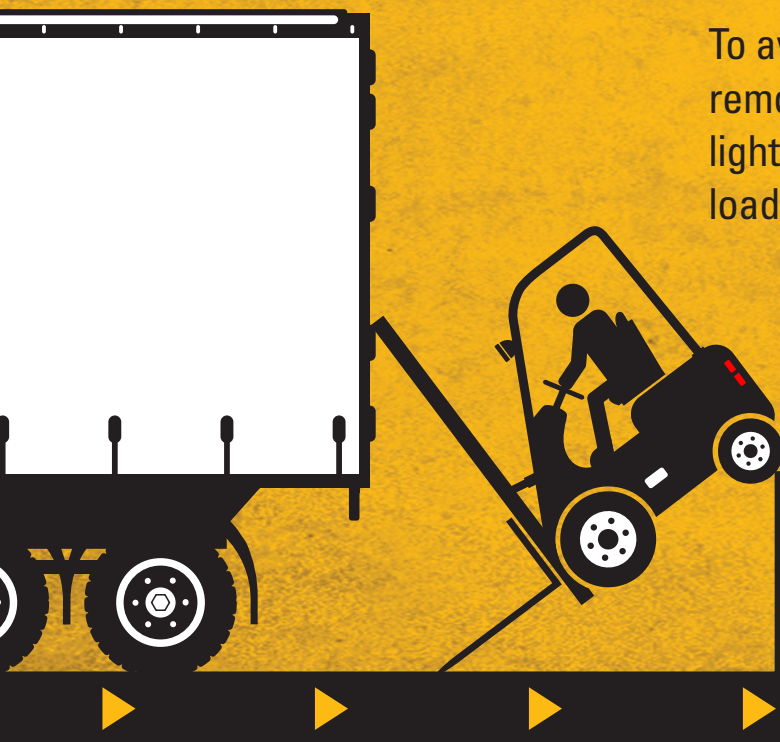
Remember: always keep your load low when travelling at faster speeds.



## FALLING TRUCKS

Not taking care in the loading area can result in a fall from a great height.

To avoid vehicle movements in the dock, remove the driver's keys, install a traffic light system, or simply use a chock until loading is complete.



## SPILLING LOADS

Be careful when going down steep inclines with unusual loads.



Always travel backwards down a steep incline and make sure your load is secure.

## DRIVING TOO FAST

Driving too fast can cause potential dangers for pedestrians and bystanders.



SLOW DOWN and always use your horn to notify people you are coming.

## AVOID LIFT TRUCK DISASTERS. Follow the safety rules.

- Never operate a truck unless you are trained to do so.
- Always operate within the rated capacity of the truck.
- Slow down and sound the horn at all cross aisles and doorways.
- Check the truck at the start of the shift for any defects or condition that could impact its safety. Do not operate a truck that doesn't pass the inspection.
- Always act in accordance with applicable safety regulations and truck manual.



Scan the QR code to see our full simple guide on youtube.

**CAT** Lift Trucks

## NO PASSENGERS

A lift truck isn't a bus. Never transport anything other than yourself and your load.



Carrying passengers is dangerous at any time.



## CABIN SAFETY

Not being aware of your arms and legs when driving could result in serious injury.



Always keep your limbs inside of the truck while moving.





### AUTOMATIC AIDS

As always, good safety training and effective supervision of operations are essential to minimising risks, but design and technology can provide extra reassurance. The award-winning\* NR-N2 reach truck range from Cat® Lift Trucks and the award-nominated\* Cat® NRM20-25N2 multi-way reach trucks, which share many of the same features, illustrate this point.

In addition to a stiffened chassis, which maximises fundamental stability, each truck benefits from electronic control systems designed to make every operator drive more safely and effectively. They include the Cat Responsive Drive System (RDS).

RDS reacts to the speed of accelerator pedal and hydraulic control movement, constantly adjusting parameters to meet the operator's changing needs. It ensures all activities are carried out smoothly, including starts and stops, and maintains an ideal balance between performance and safety.

RDS incorporates S<sup>4</sup> mast handling and other mast-related advances whose combined effect is to make every action fast but smooth, accurate and controlled, with high stability and minimal sway. It allows loads to be manoeuvred quickly, without accidentally dislodging them from the forks.

Advanced intelligent curve control slows the truck down when cornering, with no sensation of tilting or sudden change. Travel speed is also automatically reduced as the mast and forks rise. Another aid to stability is progressive steering, which adjusts according to the rate of travel. Meanwhile, automatic adjustment of drive speed, acceleration and traction ensures slip-free operation, even on wet surfaces.



### \*AWARD-WINNING SAFETY

The Cat NR-N2 reach truck range was a Red Dot Award recipient in 2016. The Cat NRM20-25N2 multi-way reach truck was a Safety Award Finalist in the Fork Lift Truck Association Awards for Excellence 2018. ●

Article feedback is welcome: [editor@eurekapub.eu](mailto:editor@eurekapub.eu)

## EVENTS



### TOC EUROPE

12 - 14 June 2018

Ahoy Rotterdam, Netherlands

TOC Europe is the global meeting place for port authorities, terminal operators, shipping lines, 3pls and shippers. The exhibition and free seminars combine to make a must-attend trade event – long considered to be the AGM for Port & Terminal Professionals. Container, dry bulk, inland and rail terminal operators will converge in Rotterdam to meet over 180 exhibitors and to benefit from insightful seminars.

[www.tocevents-europe.com](http://www.tocevents-europe.com)

### HILLHEAD 2018

26 - 28 June 2018

Hillhead Quarry, Buxton, UK

With over 500 exhibitors, including leading international manufacturers, Hillhead offers the perfect opportunity to meet suppliers and see the latest plant, equipment, products and services from the UK and overseas.

Alongside the exhibition, Hillhead's famous live demonstrations will return in 2018, where over 50 machines, including excavators, dump trucks, loading shovels, conveyors, shredders, crushers and screens, can be seen operating in a real quarry environment.

[www.hillhead.com](http://www.hillhead.com)

### SUPPLY CHAIN EVENT

11 - 12 December 2018

Paris Expo Porte de Versailles, Paris, France

Supply Chain Event is a trade show, conference programme and business forum all rolled into one, and is the perfect opportunity to present your know-how and benchmark business cases, identify project leaders, meet purchasers and connect with future clients.

[www.supplychain-event.com](http://www.supplychain-event.com)

# TRENDS FOR TODAY

## WHAT 2018 HOLDS IN STORE FOR MATERIALS HANDLING

By the time you receive this issue of Eureka, we will already have seen the year's first major logistics exhibitions, like Logimat in Stuttgart and Intralogistics in Paris. But as Eureka's publishing year begins, our editors have taken a look around Europe to discover what other materials handling magazines and influencers have to say about the trends that will have impacts on your business in 2018. **Gian Schiava** summarises.



In the last Eureka, which celebrated our 10th anniversary, we focused on larger developments in materials handling. This time, we will zoom in on what we can expect to see pretty soon. Many trade magazines, opinion leaders and even suppliers of logistic services have given their views on today's hot topics.

We kick off with the United Kingdom, where we have reviewed several leading publications. The magazine **Logistics Business**, which also covers European news, talked to several industry experts and the most noticeable idea that came up was that logistics had definitively shed its old image as 'goods mover'. Today it is perhaps the most vital business activity influencing the bottom line. Both speed and method of delivery are key to customer satisfaction and loyalty.

A new buzzword is 'blockchain,' which simply put is the decentralised storage of data from all the partners within a supply chain. As all parties share access to it, there is great potential for smoothing out transactions.

Gathering data is something that warehouse trucks already do whilst picking products, but with this new technology the data will not only enter the WMS (warehouse management system) but reach cloud environments. It's a very practical and efficient way of giving further insights regarding the whereabouts of a product.

**SHD Logistics**, another leading UK title, talked with a company delivering packaging support services, bringing us another viewpoint on key concepts for the near future. Apparently, the increased level of warehouse automation will have an impact on load carriers such as pallets, and the ►►



## Companies need to rethink their operations as the increasing flow of returned goods creates a whole new wave of waste materials.



Automated systems will tend to favour the uniformity of plastic pallets.

expectation is that we will see a rise in the use of plastic. This is because automated handling systems, along with AGVs, require greater uniformity in the load carrier as there is no human influence to 'correct' the situation.

The other striking trend, which perhaps contrasts with the growth in plastics, is the ever-growing demand for recycling and re-use. Companies need to rethink their operations as the increasing flow of returned goods creates a whole new wave of waste materials.

Re-use even applies to materials handling equipment. Leading manufacturers are upgrading trade-in machines and giving them a new life as pre-owned trucks. Cat® Lift Trucks, for example, now even offers pre-owned trucks on a pan-European level, ensuring that good-quality existing forklifts find their way to new owners rather than ending up too soon in the scrapyard.

A neat article on the **Warehouse & Logistics News** blog focuses on Brexit. It claims that uncertainty over prospects for GDP (gross domestic product) will lead to increased interest in refurbished lift trucks, and players suggest that this market will be running at record highs. For the same reason, they also predict a positive outlook for short-term hire solutions.

The Dutch platform **LogistiekProfs** sees a bright future for logistics with lots of growth opportunities. Its article on major logistics trends for 2018 also highlights opportunities for data collection and sharing – not just on a national scale but at regional or even European levels.

The currently favourable economic climate may suffer a few setbacks. It will certainly be more difficult to find and retain good personnel to keep materials handling activity running properly. Training and personal development plans will become a must-do on the list of every warehouse manager.

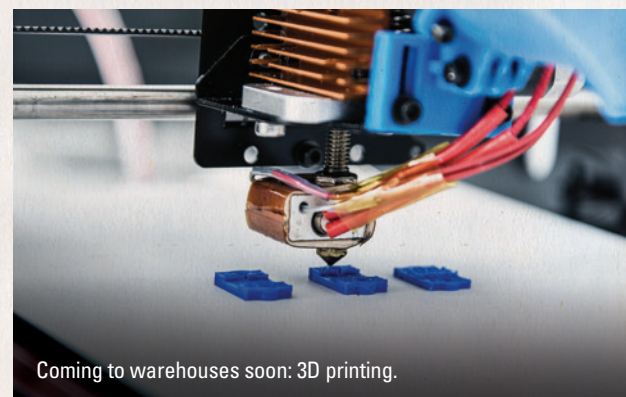
Finally, the article says the key words for 2018 will be scalability, manoeuvrability and flexibility – especially when seeking a balance between operational efficiency and ever-diminishing batch sizes in the shipment department.

Italian magazine **Euromerci** is affiliated to ASSOLOGISTICA, the Italian association for logistics companies, and we noticed some interesting remarks from its President, Mr Andrea Gentile. In a round-table discussion about research conducted amongst key players from the logistics services industry, most attendees stressed that 'change' was the key word for the near future.

In a land that struggles to benefit from macro-economic developments, Mr Gentile warns that the logistics sector must be ready when things begin to pick up in Italy. After the bankruptcy of so many companies, he foresees a lack of resources when businesses seek extra support for their logistics activities.

The driving factors behind the changes are omnichannel development, the focus on green logistics, and increased partnerships with companies upstream or downstream in the supply chain. Gentile concludes by stressing the importance of paying more attention to added value than to the overall selling price.

A Spanish platform, **Blog de la Logística**, sums up five trends for 2018. Besides warehouse automation and the rise of blockchain partnerships, which we mentioned earlier, it foresees a larger share in materials handling for autonomous vehicles. This applies not only to handling palletised loads, using AGVs for example, but to delivering smaller batches via drones. The blog also expects new technologies such as Big Data and artificial intelligence to make their mark in the logistics sector. Finally, 3D printing is expected to enter the warehouse soon. It could be used, for example, when certain components are needed to repair machines.



Coming to warehouses soon: 3D printing.

We conclude with views from an article written by the Italian **Digital4 SupplyChain**. This shares predictions from logistics giant DHL, which from time to time tells colleagues and customers what to expect. Even though this research was conducted in 2017, the trends described are certainly valid for the next five years.

Some of the topics above are reinforced: autonomous driving vehicles (including ParcelCopters in the air!), use of robots, green logistics, multichannel delivery and data exchange. Others identified are logistics aimed at senior citizens (delivery of medication, for instance), speculative shipping (based on accurate forecasts) and 'delivery on the way'.

Even the entry of exoskeletons into warehousing environments is predicted. Eureka dedicated a forward-looking article to this topic in 2015, which you can always read again on our website: [www.eurekapub.eu](http://www.eurekapub.eu) •

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# RISE OF THE DRONES

## UNMANNED VEHICLES EXTENDING THEIR REACH

The potential of unmanned vehicles in logistics and warehouse management has been talked up a lot in recent years but what is the reality? **Ruari McCallion** has sent out scouts. ►►



If the stories had turned out to be true and the reality had matched the enthusiasm, our skies by now would have been filled with low-flying unmanned aerial vehicles (UAVs) or drones, ferrying items the 'last mile' from mobile transport to consumer.

However, our skies are not buzzing with four-propellered flying machines carrying everything from groceries to Amazon books, auto parts and customised components; they are still most likely to be found in the toys section of a department store than waiting at your door.

That is not to say there have been no developments; rather, that enthusiasm collided with reality and some rethinking was necessary before drones – flying or ground-based – started growing into roles that materials handling operations, logistics and warehouse management could usefully invest in.

### TRIALLING THE 'LAST MILE'

UPS and DHL have been actively considering the use of drones in order to extend the reach of delivery vans. Mercedes-Benz undertook a trial using two vans complemented by drones to carry out deliveries in Zurich, Switzerland, to customers who placed orders on Swiss online shopping platform Siroop. Around 100 flights were made without any issues and more are planned for 2018. However, there is a school of thought that says last mile deliveries may turn out to be less useful than originally predicted.

"There are some test cases of drones being used for last mile, such as the Starship Enterprises project trialled in London to deliver fast food, but there are many issues which make this application impractical," said Robert Garbett, founder and Chief Executive (CEO) of Drone Major, an online platform that brings together drone suppliers, customers, software developers and other interested parties. "This application seems to have captured the imagination of the media but this really is the least valuable use of drones and, until smart cities are developed to enable drones to easily access every household, will struggle to take hold."

### STOP LOSS

New and growing roles for drones are to be found in warehouse and inventory management, which is an area in urgent need of significant improvement. Walmart is just one company that has found, to its significant cost, that it is hard to keep an accurate track on stocks in today's huge warehouses. In its case, some storage facilities are nearly the size of 20 football pitches. Walmart reported that, in 2013, it lost US\$3 billion in revenues because of mismatches between inventory records and actual stock. Mismatches can go undiscovered for some time, only being revealed when a customer asks for something that, it turns out, is not actually there – or, at least, cannot be found.

Inventory tracking was supposed to have been revolutionised with RFID (radio frequency identification) tags, which can report their position to a scanner some distance away. While RFID technology is faster and more effective than a barcode-based manual system, it has become clear that it is not perfect. Tags can be obscured; they can be too far away from a hand-held scanner to react properly – or at all. Manual checking is still a necessity in some warehouses and, in a large store, it can take anything up to three months to complete a full inventory review.

### IMPROVED EFFICIENCY, ACCURACY AND PRODUCTIVITY

Necessity is, famously, the mother of invention and drones are being upgraded and equipped to provide better inventory management, cut the time taken for stocktaking and greatly improve accuracy – thus cutting losses. Researchers from MIT (Massachusetts Institute of Technology) have developed a system that enables small aerial drones to read RFID tags from tens of metres away while identifying the tags' locations with an average error of about 19 cm. The researchers envision that the system could be used in large warehouses for both continuous monitoring, to prevent inventory mismatches, and location of individual items, so that employees can rapidly and reliably meet customer requests.

## New and growing roles for drones are to be found in warehouse and inventory management.

Household access issues must be overcome before 'last mile' delivery by drones becomes widely applicable.



If the practical obstacles can be addressed, there is clear scope for drones to boost warehouse efficiency.



French company Hardis is already in the field. Its EyeSee system, which received an Innovation Award at CES 2018, was launched in a logistics version in January 2018. The whole package includes: a flying drone equipped with a system to automatically capture and identify barcode data; a business application for tablets to automatically monitor flights and captured data; and a back-office application using Amazon Web Services (AWS) cloud computing for administration, configuration and simple integration with all the WMS (warehouse management systems) and ERP (enterprise resource planning) software on the market.

In operation, an operator drops off a drone at the entrance to each aisle. The vehicle starts checking the inventory according to a predefined flight plan. The operator can see the captured data on the tablet in real time and can interact with the drone if, for example, it can't find a code to scan. Simple to implement, with no need to adapt infrastructure, Hardis says that EyeSee is at least five times faster than checking with cherry pickers.

### EVOLUTION ACCELERATES

"The use of drones within both warehouse management and logistics is part of a larger evolution within the supply chain to constantly be upping its efficiency and 'tick along nicely' 24 hours a day, 7 days a week, all year long," said Chris Tozer, Territory Manager (UK, Ireland & Italy) at Ivanti Supply Chain, who also believes that the trend is to improve personnel productivity. "The direct implication of technological innovations and evolutions such as the use of drones in the supply chain for warehouse management and materials handling is increased efficiency, as humans are able to perform their jobs faster and more accurately with mechanical help."

Operating systems are taking a 'great leap forward' necessary to improve and extend practicability. Tozer points out that Telnet-connected picking devices are being upgraded from Windows CE (which is due to go end of life in 2020) to Android, leading to increased functionality which can be customised to the users' needs.

### PRODUCTIVITY BOOSTED

Argon Consulting reckons that aerial drones are even more efficient than Hardis claims, and says that two camera-equipped drones could scan and stocktake a warehouse with 25,000 references in two days; a task that would take up to 100 people to accomplish in the same time. Garbett sees drones definitely replacing human beings in a lot of warehouse management activity.

"Warehouse applications for drones are advancing rapidly as there is an obvious cost benefit against using manpower for almost everything from the management of stock to the security of the warehouse," he said. "Warehouse operations is one of the areas where drones could be used extensively to replace rather than complement a human workforce traditionally used to manage and move the stock around. Of course, the workforce would then shift to the manufacture, maintenance and repair of the increasing drone fleet." Garbett also maintains that advantages are not restricted to aerial devices.

"The use of ground-based drone systems in an environment mixed with manned vehicles would seem problematic but advanced 'sense and avoid' systems are now available, which make such operations safe and efficient without the need to change the environment in which they operate, or the manned equipment," he concluded. ●

Article feedback is welcome:  
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A drone with a scanner can save a lot of time in stocktaking.

*The operator can see the captured data on the tablet in real time and can interact with the drone.*



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