

eureka

Issue 23

Autumn
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THE MAGAZINE FOR THE MATERIALS HANDLING PROFESSIONAL

Seeking the perfect fit

Forklift truck fleet replacement - how Harsco made those crucial decisions



RFID's growth spurt

What do American footballers, ladies fashion and beef mince have in common?



IT for stock control

Choosing the right stock control system to deliver financial success



eureka issue 23

"It was Archimedes who observed that the power of levers could be used to move the entire world." This publication is named after his famous exclamation of 'eureka!', literally, 'I've found it.'



The magazine for the materials handling professional

Autumn is now firmly upon us, and as the year draws to a close we would like to welcome you to the final edition of **eureka** magazine for 2014. In this issue we focus closely on the warehouse and some exciting new developments for 2015.

Sports are usually at the cutting edge of new materials and performance research - just consider the enormous strides in sportswear clothing, performance materials for cycling and skiing equipment and so on. It's not often that we see products emerge from this environment that can be applied to the warehouse. However the latest developments in RFID have been pioneered in the fast moving and impact ridden environment of the American NFL. **Ruari McCallion** reveals how these developments could solve many of the problems that have limited the use of this technology in the warehouse.

Often changing on a daily basis, the warehouse is undoubtedly a fluid environment. So there are many considerations to take into account when replacing a forklift truck fleet. **Mark Nicholson** looks behind the scenes at Harsco Infrastructure UK, to find out how the company has balanced improvements in technology with current and future needs of the warehouse to arrive at the best replacement fleet of lift trucks.

Remaining in the warehouse, **Gian Schiava** discusses the often conflicting needs of stock control, and how choosing the most appropriate IT tool can determine the financial success of the business as a whole.

Finally, we round off this issue with a review of safety in one of the most dangerous areas of the warehouse - the loading dock. **Mark Nicholson** analyses the key hazards and sums up the best solutions.

We hope you enjoy reading **eureka**. Let us know what you think, and what topics you would like us to cover. Visit www.eurekapub.eu or e-mail us at comment@eurekapub.eu.

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Commissioning Editor

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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 ten years in the materials handling industry – the first four as a parts sales representative for several European countries, before becoming the EAME Senior Marketing Communications Coordinator for Cat Lift Trucks, based in the Netherlands.

Don't forget to visit the **eureka** website www.eurekapub.eu where you have access to the archive of useful articles and features. You can also post comments and suggestions about the magazine and future articles you'd like to see covered.



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Case Study - Harsco Finding the perfect fit

With 11 depots between Southampton and Edinburgh, Harsco chose to replace its entire fleet of 40 lift trucks in one fell swoop. Mark Nicholson talks us through the company's decision making process, to show how the replacement trucks have been identified and chosen to deliver on a range of very specific requirements.

RFID Changing the game

Ruari McCallion looks behind the scenes at America's NFL, and finds out how RFID tagging has taken some big strides in performance. Faster, stronger and capable of withstanding the enormous impacts of the football game, the technology has come a long way. But does this amount to a game changer for warehouse management?

Stock Control Stock control: IT tool determines financial success

There are two options open to the warehouse manager looking for a good system for stock control: a standard module within an ERP System, or a fully blown warehouse management system. What do you need to consider when making the choice, and is there likely to be a best option? Gian Shiava reports on the issues.

Health & Safety The most dangerous of places

It's not hard to see why loading docks are the source of accidents. But what are the most common hazards, and how can you tackle them efficiently and cost effectively? Mark Nicholson summarises the key issues in this challenging environment and the combination of good working practices and technology that can overcome them.

Events Calendar

Date, Event, Location, Website	Overview
10 - 12 February 2015 LogiMAT 2015 New Stuttgart Trade Fair Centre, Germany www.logimat-messe.de	<i>LogiMAT</i> , the International Trade Fair for Distribution, Materials Handling and Information Flow, sets new standards as the biggest annual intralogistics exhibition in Europe. Between 10 and 12 February 2015 international exhibitors and decision-makers from industry, trade and the service sector will be coming together at the new exhibition centre at Stuttgart Airport to find new business partners. The focus will be on innovative products, solutions and systems for procurement, warehouse, production and distribution logistics.
28 February 2015 THE FLTA ANNUAL AWARDS FOR EXCELLENCE The International Centre, Shropshire, United Kingdom www.fork-truck.org.uk/flta-awards	Now in its 21st anniversary year, the <i>FLTA's Awards for Excellence</i> is the biggest and most prestigious annual event in the Materials Handling industry calendar bar none, and will take place on Saturday, 28th February, 2015 at The International Centre in Shropshire.
31 March - 02 April 2015 INTRALOGISTICS EUROPE Paris Expo Porte de Versailles, Paris, France www.intralogistics-paris.com	<i>Intralogistics Europe</i> brings together all handling equipment and automated systems which process and rationalise the physical movements of supply, production and distribution. Whether it is optimising processes and costs, security or sustainable development, all the latest innovations can be found at <i>Intralogistics Europe</i> . An innovative event with business-led content, Intralogistics Europe is totally focused on the needs of professionals in manufacturing and distribution.

A lesson in materials handling decision-making

Finding the perfect fit

When it comes to replacing your forklift truck fleet, finding the best solution means being open to the advice of a supplier you can trust – and being very clear on what you want the lift trucks and the dealer to do.

Mark Nicholson discovers how one major provider of products and services to the industrial and construction sectors got it right.

When the materials handling contract for Harsco Infrastructure UK last became due for renewal, the company initiated a competitive tender process which would see its fleet of more than 40 diesel forklift trucks completely replaced.

Since signing the contract and taking delivery of its new fleet, Harsco Infrastructure has changed its name. Following an international merger deal it is now a division of Brand Energy, which services the global energy, industrial and infrastructure markets, and is known as Brand Energy and Infrastructure Services UK.

The company's specialisms include scaffolding, mechanical access equipment, construction formwork, shoring materials and industrial maintenance services. To meet the materials handling needs of its 11 depots, stretching from Southampton to Edinburgh, it has turned to Cat® Lift Trucks for 40 new DP30N 3 tonne diesel counterbalance trucks and three DP50N 5 tonne diesel models.

Matching specifications

For Harsco Procurement Manager Ian Sheppard, one of the first steps in the decision-making process was to draw up a detailed specification of the company's forklift truck requirements, in terms of capabilities and qualities, and check that the suppliers' detailed specifications met every need.

"We looked very closely to ensure that the forklift trucks proposed addressed concerns such as stability, reliability and resistance to damage, and would give improved performance in the areas most important to us," says Ian. "We then tried the trucks out in a demonstration session and co-operated closely with the suppliers to work out the best all-round solution." →

"We looked very closely to ensure that the forklift trucks proposed addressed concerns such as stability, reliability and resistance to damage."



Visit:
Brand Energy &
Infrastructure Services

BRAND
ENERGY & INFRASTRUCTURE SERVICES





1. Paul Grady,
Major Account Manager,
Impact Handling.

→ In the end, Harsco chose UK Cat® lift truck distributor Impact Handling to supply and support its fleet. Impact's Major Accounts Manager Paul Grady says: "Harsco was impressed by our overall package, including the Cat product portfolio and flexible finance options, along with the expertise and aftersales support that we could offer. They particularly mentioned the solid reputation of the Cat brand for heavy duty industrial products."

The forklift trucks needed to be strong and durable enough to lift large, heavy items in an intensive application that involved around 1,000 hours of work per year in warehouse sites of up to three acres in size.

Diesel power

Although the company does have one 3 tonne electric Cat lift truck, and recognises that electric and LPG powered forklift trucks have much to offer, it feels that its needs are best met by diesel power.

"We need the trucks to be constantly available, so recharging times could possibly be an issue with electrics," says Ian Sheppard. "There is also the additional need for battery maintenance facilities and services, as well as the fact that our trucks are used mostly outdoors."

He adds: "While LPG looks cleaner than diesel, we feel that its emissions are actually more harmful to the forklift truck operators. Also, LPG trucks tend to run hotter than diesel machines, and in dusty workplaces like ours this can cause them to overheat."

The diesel engines of the forklift truck models selected have been optimised to reduce emissions, and Harsco is happy for them to work inside its sheds as well as outside. The buildings

are large and well ventilated, with roller shutter doors remaining open throughout working hours, and are unheated. To prevent damage from dust in the sheds, the trucks are fitted with enhanced filters.

"The trucks have shown a higher residual lifting capacity than their equivalent competitors and have given us added stability."

As well as lowering emissions, the latest diesel engines maximise fuel economy. To reduce consumption further, Harsco encourages drivers not to leave the trucks idling – and in fact they are programmed to cut out automatically if left to stand with the engine running.

Measuring up to the application

Working in a wide variety of environments, and often faced with sloping or slippery surfaces, Harsco's forklift trucks need to deliver high levels of traction. Maximum lift heights are usually no more than 4,000 mm, but residual capacity is very important – particularly when handling items with a large load centre, such as scaffolding. In this respect, Ian Sheppard and his colleagues have been particularly pleased with the new fleet's performance over their first nine months in operation.

"The trucks have shown a higher residual lifting capacity than their equivalent competitors and have given us added stability. Our drivers have also noticed a better tilting range on the masts. Although



2. The CAT® DP50N 5 tonne diesel
3. The CAT® DP30N 3 tonne
diesel counterbalance truck

it's difficult to put a figure on it at this stage, the drivers do feel that the new models perform better than our previous trucks. They have also been very reliable."

Harsco has added an accessory of its own to 35 of the DP30N models, in the form of a box to hold scaffolding tools. Thanks to the flat surface of the counterbalance weight, the container measuring 550 mm wide by 350 mm high by 250 mm deep rests neatly against it. Legs on the box drop into the two lifting eyes at the back of the forklift truck and are fastened with safety clips. Fitting the box requires no modification of the truck itself but provides safe storage for items such as hammers and spanners that would otherwise have been loose in the operator compartment.

Support services

When agreeing a new materials handling contract there is much more to consider than just the suitability of the forklift trucks. In Harsco's case, the support services needed to include rapid, on-call, 24/7 support for all of its depots – as well as routine on-site servicing and maintenance. Impact was able to offer the services of 150 mobile engineers, with an average response time of less than two hours, to meet this need. Ian Sheppard confirms that the few callouts necessary to

date have been answered with good response times and efficient repairs.

Impact has provided all operators with induction training on the new forklift trucks, ensuring that each one holds the full relevant certification.

Fleet management systems were another element of support that Harsco required. Supplied via Impact, they have been fitted to trucks at two of the company's formwork sites to manage information on each truck's uptime, location, collisions and other relevant factors. The company hopes that this approach will substantially reduce damages and increase safety.

Last but not least, Impact has provided all operators with induction training on the new forklift trucks, ensuring that each one holds the full relevant certification. Harsco has also appointed Impact as its preferred supplier for any additional forklift truck training required. Together, it seems that Harsco and Impact have presented a fine example of how a comprehensive materials handling solution should be created. ■

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Visit:
impact-handling.com

Just when it seemed that RFID progress had ground to a halt, along comes America's NFL with a game-changer.

Ruari McCallion checks the playbook.

The sight of two 100kg-plus helmeted and armoured men smashing into each other is a sensation for the eyes and ears. The impact is loud and it looks so violent, almost terminal, that it is amazing to see the combatants get up unassisted – rather than being carried off by an ambulance – and do it all again a few minutes later. The physical contact is very much part of American football – and it will, from September 2014, be providing information that materials handling professionals should sit up and take note of.

From the start of the 2014 season, the NFL – the National Football League, the governing body of American football – has authorised the use of RFID tags, which will be fitted to players' shoulder pads. The tags are of the 'active' variety, which means that they actively broadcast information to a network of 20 receivers that have been installed in 17 of the game's stadiums across the USA. They will be used in Thursday night matches.

A new page in the playbook

The tags will track players' position, speed and distance and will create a new category of statistics to track and for commentators to discuss – not that they were short of information in the first place. TV viewers will also be able to join in, as data will be displayed on the screen. But why should this be of interest to materials handling professionals?

As pointed out at the beginning of this article, American football players smash into each other with bone-crunching force. They also run and they accelerate at phenomenal rates. Speed is one of the factors that is worthy of note. When *eureka* last looked at RFID last, three years ago, a major handicap to its widespread adoption was the fact that receiving devices could not reliably track tags that were moving at 16.09kmh or more – just over 10mph. That is faster than walking speed but somewhat slower than the normal operating speed of a forklift truck, and not even as fast as quite a few conveyor belts.

Faster and stronger

However, American footballers regularly reach speeds approaching 30kmh, or just over 18mph. They may not sustain that speed for long periods, but they are doing it – and if the RFID tagging is to work on the football field and transmit the data expected, it has to be able to track the tags reliably. The tags themselves cannot be shrinking violets, either; they have to be able to survive the impacts and rough and tumble that is an essential part of American Football. It is quite a challenge for Zebra Technologies, its equipment and technology. Witold Bahr, research assistant in the School of Engineering and Applied Science at Aston University, Birmingham, England, has been working in the RFID field for a number of years and has taken an interest in this project.

The tags are of the 'active' variety, which means that they actively broadcast information to a network of 20 receivers.

"The tags are about the size of a 50p coin and are powered by batteries, similar to those used in wristwatches," he said. "Zebra claims quite a high level of accuracy – within 30cm basic – but that can be improved to just 10cm with specific mathematical formulae. It's a very exciting application." Surprisingly, however, this does not actually represent a recent breakthrough.



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Evolution and incrementation

"It doesn't indicate progress as such; it is using existing technology in a new area," he said. But the movement challenge seems to have been quite comprehensively overcome. "That's because of the use of active technology, which can track higher speeds. The key is the use of active RFID tags. With power from a battery they can transmit a strong signal, over greater distances." Turning to RFID applications in materials handling, he said that even less sophisticated technology is improving in terms of practical application.

"We are seeing increasing use of RFID to improve inventory control accuracy, and to boost replenishment and availability."

"Performance of passive RFID tags at slower speeds is improving," Bahr explained. "They need to meet certain conditions in order to get the best performance. They need to have correct orientation and no interference from metals or liquids – although even those problems can be reduced by using larger antennae. The tags have to be within the operating range of the readers, as well." That last point should seem obvious but it does serve to emphasise the importance of planning and taking expert advice, from vendors themselves or from research groups, such as Aston University's School of Engineering and Applied Science.

Although there have been no earthshaking or headline-grabbing leaps forward, the past few years have seen evolutionary and incremental improvements in RFID technology and increasing awareness and implementation of projects, especially in retail and food. RFID has characteristics that could be particularly helpful in controlling high added-value clothing and in improving track-and-trace in food retailing.

Clearer, more accurate

"We are seeing increasing use of RFID to improve inventory control accuracy, and to boost replenishment and availability," said Bahr. "Patrizia Pepe, the Italian fashion house, more than doubled the amount of products that each distribution centre can handle. Charles Vögele, an Austrian retailer, tracks goods all the way from Asia to its stores in Europe. Gerry Weber, a German manufacturer of women's clothing, is using RFID to reduce theft and improve inventory visibility. We are seeing applications in healthcare, manufacturing, aerospace and other sectors. Aldi and Lidl, the European supermarkets, are using the technology in tracking and tracing food, such as chicken breasts." Rather timely, given the recent concerns about the actual composition of meat dishes such as burgers. So – what is the connection between 200kg of American footballers, a truckload of ladies fashions and a kilo of minced beef? RFID tags. Obviously. ■

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Case study: Marks & Spencer (M&S)

Marks & Spencer, the international retailer headquartered in the UK, has a £10bn turnover almost equally split between food (51%) and 'general merchandise' (49%) – primarily clothing. It has been using RFID on food since 2000, started trials on clothing RFID in 2003 and decided to go ahead with the technology in 2005. It is not a simple process, however; the company has 1180 stores in 53 territories, along with 2000 suppliers. A decision to extend the technology to all its stock was agreed in 2012.

The business objectives were:

- *To obtain and maintain accurate information on the stock position in each store*
- *Improve the true availability of sizes and colours to the customer*
- *Increase customer satisfaction and reduce manual stock checking by staff*
- *Deliver increased sales and a rapid return on investment (ROI)*

Clothing garments arrive in-store with RFID tags applied at source – over 200 factories in 20 countries. In-store scanning is by hand-held Gen 2 HHT readers. Completed counts are transmitted to the central M&S RFID database and replenishment automatically prompted.

M&S reports that RFID tagging enables more accurate replenishment and improves availability of goods across all sizes and colours, leading to increased sales. The company says that RFID delivers the stock accuracy needed for multi-channel retailing – and emphasises that good change management and compliance reporting is essential.

With thanks to Witold Bahr, University of Aston, Birmingham.

1. Software interprets movements and displays them in real time.



Changing the game?

Stock control; IT tool determines financial success

A warehouse is organic. The forklift trucks, the people, the goods... It is a wasps' nest that is continuously mutating, with goods flows constantly arriving and leaving again. The logistics manager must ensure optimum control and guidance. This means an invisible system is indispensable. Without the right IT resources this simply cannot be achieved.

Gian Schiava researches the options.

What is stock control?

Is this a simple question with a simple answer? Not really. Stock control is actually the search for a balance between what the customer wants and what the financial department wants. After all, too much stock also means too many costs. For reasons including the emergence of e-commerce, the modern customer requires extremely short delivery periods and plenty of choice. No stock? Too much waiting? We'll just surf to the next web shop and buy the article there.

Not so long ago the warehouse was simply a balancing item, but those times are behind us. Good stock control is crucial and contributes to the bottom line. This is why the activity forms a part of the IT infrastructure, and the activities in the warehouse are aligned to market demand.

Total control

So, the dilemma is therefore the level of service in relation to stock costs. On top of this, the supply chain is becoming increasingly complex. There are more and more channels (multi-channel/omnichannel), while the company is simultaneously serving different types of customer such as wholesalers, intermediary traders and the end consumer.

Not so long ago the warehouse was simply a balancing item, but those times are behind us. Good stock control is crucial and contributes to the bottom line.

The need to keep a firm grip on stock control can only actually be achieved with a good IT system. In essence the Logistics Manager has two choices. He can opt for a standard stock module within a complete ERP system or implement specialist software and link it to the central system. In the latter case one chooses a Warehouse Management System (WMS).

The ERP system stands for "enterprise resource planning" and is simply software with which organisations support the processes within the company. The ERP often consists of modules each supporting a specific task. Obviously the advantage is mainly down to the integration and the overview. All stock systems, business administration and logistics are interconnected and everyone can use the information.

Yet it appears that some sectors need more supplementary tools than others. Consultants will maintain that, for example, production companies with simple forecasting can work

well with an ERP. Problems are also minimal if the stock is of relatively low value. ERP does sometimes fall short for complex stock management, however. Stock optimisation (reducing the stock and therefore the costs) in particular is often only possible with a WMS. But suppliers of ERP systems are obviously not sitting on their hands. Improved modules will become available, always making it difficult for the Logistics Manager to choose between ERP or WMS. It always comes down to homework. Write down what you do and do not need and keep consulting with suppliers of both solutions.

Is the WMS a miracle cure?

So the needs have been established and the logistics manager comes to the conclusion that a full WMS is the preferred option. The decisive factor is often the lack of a real-time overview or the absence of a clear impression of what quantities of articles are actually in stock, with a too full warehouse as the result. The manager would also like tracking and tracing functionality along the chain, sufficient reporting tools, and expansion possibilities for the near future. In the case of a (partly) automated warehouse one also wants a warehouse control system (WCS) with which the machines can be controlled.

An awkward dilemma is whether to start big or small. Costs can indeed be saved with an inexpensive system, but a necessary quick upgrade is awaiting around the corner. The added value compared to the ERP module is also limited. Here also, homework must be done and the current and future expenses must be calculated. A supplementary WMS must (partly) be able to pay for itself by reducing or limiting the required working capital, increasing the productivity of the warehouse personnel and reducing orderpicking errors. →



1. Warehouse trucks could be equipped with the latest technology that's essential in the everyday management of stock.
2. Tracking all elements of stock information is a key factor in the selection of a good IT system.

ERP and WMS cooperation

With the implementation of the WMS, how the ERP and WMS are going to communicate with each other must also be clearly defined. The roles of each IT system will have to be clearly set out on paper. What are we going to register in which system, for example? Here are some possibilities (source: Jeroen van den Berg Consulting) to think about:

- Record all data in only one system. This system must supply the other systems.
- Only create storage locations within the WMS. ERP records the stock level and does not need to know where the items actually are.
- Initiate stock corrections in the WMS, never in the ERP.
- Record master data on articles - such as article description, colour or price - in the ERP. These are communicated to the WMS at a later stage. Master data only relevant to the WMS such as length, width, height and weight can be immediately recorded in the WMS.

Will the warehouse truck become a Christmas tree?

If the correct IT system is introduced, this also has its effect on the rest of the warehouse. Obviously employees will have to be fully trained. New tools also have their impact and they accelerate the processes of storage, order picking and delivery preparation.

Work methods can be completely changed around. Printing lists and manual picking are enhanced by a hand terminal or headset, or in the near future even by pick-by-vision. Order pickers then receive their pick orders through glasses with built-in camera. The pick-by-vision glasses are for that matter not only restricted to order picking. They can also be used for checking incoming goods, giving instructions for value-adding activities (value add logistics) or offering support for packing and dispatch processes.

The modern reach truck or orderpicker integrates devices like cameras or offers intelligent storage possibilities to continue working in an organised manner.

These new techniques will be increasingly integrated with the lift trucks used in the orderpicking process. Many forklift trucks will drive around like Christmas trees with all sorts of separate appliances and resources, but the modern reach truck or orderpicker integrates devices like cameras or offers intelligent

storage possibilities to continue working in an organised manner. Manufacturers of forklift and warehouse trucks are already working on applications where orderpicker trucks, provided with AGV technology, can drive from one picking location to another. Obviously the desired situation will be that this is then controlled by the WMS.

Manufacturers of forklift and warehouse trucks are already working on applications where orderpickers trucks, provided with AGV technology, can drive from the one picking location to the other.

The challenge remains to combine the best of all these technological developments in one fully integrated application. ERP and WMS could merge to form a new application. This is an application whereby orderpickers, provided with glasses and headset, look into the warehouse enriched with visual information and talk to warehouse trucks. The logistics manager follows all transactions in real-time and watches over his operations with satisfaction... ■

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3. While hand terminals and headsets enhance order picking, new developments in technology such as pick-by-vision glasses could be the future of stock control.



Safety in the loading dock

The most dangerous of places

In the world of materials handling and logistics, loading docks are often considered the most dangerous of places. Investment in technological solutions can reduce the risks but a firm understanding – and regular reminding – of the hazards and essential safety measures is needed too.

Mark Nicholson sums up the key issues and options.

A recipe for disaster

It's not hard to see why the loading dock is such a source of accidents. For a start, there is usually a substantial drop from the loading dock platform to the yard below. This immediately creates the potential for personnel, materials handling equipment and, worse still, forklift trucks containing drivers, to fall from a height.

A forklift truck is a heavy, powerful machine which can cause great damage to goods, equipment, facilities and people if used incorrectly. The same is true for heavy goods vehicles. And when you bring the two of them together you multiply the number of possible risks.

In fact, interactions of any kind can generate multiple possibilities for different accidents. In the loading dock there is a lot of interaction, not just between forklift trucks, other materials handling equipment and lorries but between these machines and the forklift truck operators, co-workers and lorry drivers.

Bear in mind, too, that lorry drivers may not be familiar with the working practices and safety procedures at the site – and that some may not even speak the same language as the warehouse staff.

We should also add goods and containers to the list of interacting factors. Sudden movements of a heavy goods vehicle or its trailer can cause items to fall from a height, while any slope created during the loading or unloading process may result in containers sliding or rolling. →



1
Gradient between vehicle loading floor and dock



- Main risks:**
Staff struck by runaway wheeled containers
- Solutions include:**
- Compatible vehicle and dock design
 - Hydraulic dock levellers



Stop or go?

It might sound crazy, but loading dock accidents are frequently caused by lorries driving away before the loading or unloading is finished. Forklift trucks, personnel and goods standing on the platform between the dock and vehicle, or near the back of the vehicle, are then thrown to the ground. There is also a danger to staff carrying out duties at ground level if vehicles move away without warning.

The simplest solutions include taking away the lorry driver's keys and not returning them until it is safe for the vehicle to leave – although sometimes a driver has a spare set. Traffic lights, signals or signs are commonly used to tell drivers when it is safe to leave and warehouse staff when it is safe to load or unload. Another simple aid is to place a cover on the steering wheel and only remove it when the driver has clearance to depart.

The simplest solutions include taking away the lorry driver's keys and not returning them until it is safe for the vehicle to leave.

2
Vehicle driving away prematurely



- Main risks:**
Lifting machinery, goods and staff thrown from vehicle and platform – and crushed or struck by falling objects
- Solutions include:**
- Removing driver's keys
 - Traffic lights, signals, signs
 - Steering wheel cover
 - Vehicle restraint and interlock technology



Recent technological solutions have included interlock systems which prevent opening of the loading dock doors until a restraint mechanism has been applied to the lorry, and which block operation of the lorry while the loading dock door is open. The technology available today can also be used to avoid the unintentional, relatively small movements of the vehicle which form our next set of risks.

Don't move an inch

Once the vehicle has been reversed into the correct position for loading or unloading, some sort of platform – such as a dock plate or a leveller – is used to fill the gap between it and the dock. If the vehicle moves even slightly, this gap may widen and the platform may suddenly drop. The effects are similar to those caused by prematurely driving away.

A number of factors can produce such movement. For example, a heavy forklift truck may push down so hard on the lorry's suspension that the vehicle rocks. If the surface of the yard is uneven, the landing legs of the trailer may be unable to perform their stabilising function and there will be a rocking motion as loads are moved in and out.

Even on a perfect surface there is another potential cause of 'see-saw' action in the trailer if it is uncoupled from the tractor unit,

as driving forklift trucks or placing heavy loads towards its front end can make it tip forward from its landing legs.

Today's technology offers the ability to activate restraint devices safely via remote control.

Factors which increase the risk of sudden slipping of the platform include large height differences between the vehicle's loading floor and the dock, variation in the position and thickness of the buffers on the dock and the vehicle, compression of the buffers by a vehicle driven too close to the dock and accidental placement of a trailer on top of the dock's buffers.

The traditional approach to stopping a parked vehicle from moving is to place chocks against its wheels or use some other physical restraining device. Today's technology offers the ability to activate restraint devices safely via remote control.

By keeping the trailer and tractor unit coupled, advanced restraint devices avoid the see-saw effect mentioned earlier. If uncoupling of the trailer is necessary, a trailer prop can be used to prevent rocking.

Beware gradients

Ideally, the loading dock and the loading floor of the vehicle should be at the same height. In practice, they vary between sites and models. The height of a vehicle may actually vary from day to day depending on the weight of its load, the pressure of its tyres or the behaviour of its suspension. Some trailers have two load decks, so one or other of them is sure to be at a different height to the dock.

Steep slopes resulting from these height differences are a particular problem when loads are held in wheeled containers, as workers may be struck by runaway loads rolling into or out of the vehicle.

If an incline cannot be avoided, it is better for the vehicle to be higher than the dock, rather than vice versa, as personnel working inside the lorry are more easily trapped by a runaway load. A modern technological solution is provided by hydraulic dock levellers.



3
Unintentional movements of vehicle

- Main risks:**
Lifting machinery, goods and staff thrown from vehicle and platform – and crushed or struck by falling objects
- Solutions include:**
- Chocks against wheels
 - Other physical restraining devices
 - Trailer prop (if trailer uncoupled)
 - Vehicle restraint technology

Stay out of the rain

Water on the loading dock or platform is a slip hazard to both workers and materials handling equipment. Usually the dock has some sort of curtain system or shelter to keep out the rain, hail and snow, but the seal is not always effective. An additional problem has arisen in recent years with the invention of 'teardrop' trailers, which have great aerodynamic benefits but whose design may channel water backwards into the loading dock.

Water on the loading dock or platform is a slip hazard to both workers and materials handling equipment.

Rapid advances in the design of dock canopies, shelters and sealing systems have not only provided a solution to wet surfaces but have reduced energy bills by improving insulation. Meanwhile, trailer manufacturers have developed ways of diverting rainwater sideways rather than into the loading area.

Training – the most essential ingredient for safety

Whether you choose traditional methods or invest in the latest automated technology, accidents remain a possibility unless employers, managers and personnel understand the dangers, know how to minimise them and actually follow the loading dock safety rules on a daily basis. Whatever else you do to make this area safer, you should make regular training a priority. ■

Article feedback is welcome: editor@eurekapub.eu



HSE:
Loading Guidance



4
Water on platforms

- Main risks:**
Slipping of lifting machinery and staff
- Solutions include:**
- Canopy, shelter or sealing system



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