

# eureka

Issue 15

Winter  
2011

[www.eurekapub.eu](http://www.eurekapub.eu)

THE MAGAZINE FOR THE MATERIALS HANDLING PROFESSIONAL

## **A Salty Tale**

*Cat® Lift Trucks' new range of trucks - suited to challenging jobs.*



## **Charged Up**

*'Spa treatment' keeps batteries fighting fit.*



## **Rounded out**

*Improving financial performance by looking after tyres.*



# eureka issue 15

## The magazine for the materials handling professional

Welcome to the Winter 2011 edition of **eureka!** Various aspects of maintenance figure quite strongly in this edition – and just in time, with the worst of the year's weather almost upon us.

When cost pressures reach fever pitch, it is always tempting to look at the maintenance budget and trim a little, here and there. But that temptation should be avoided, as all it does is store up trouble in the long term. Planned and scheduled maintenance saves money – and so does effective warehouse planning, both in layout and in the movement of goods, both inwards and outwards. Gay Sutton explains more from **page 4**.

Grime and water – especially salty water – attack metal and electrical connections, causing corrosion damage that can be impossible to remedy. So Cat® lift trucks customers will be very pleased to see the new range of EP13-20(C)PN(T) electric counterbalanced trucks, launched in October. They feature a higher level of corrosion protection, including IPx4 splash resistance and IP54 sealed traction and hydraulic motors, as well as completely sealed wet disc brakes. That can reduce maintenance requirements – and prevention is better than cure, right? We welcome Robin Meczes back with his report, which starts on **page 7**.

Gian Schiava discovers how to extend battery life to as much as 15 years! A bit of 'spa treatment' makes me feel better and it seems to do the trick with batteries, too. See **page 9**.

Look after your tyres and they will pay you back with lower operating costs and fewer accidents. Ruari McCallion passes on some top tips – and the results of scientific analysis. See **page 14**.

He has been having a closer look at RFID as an effective means of tracking products and managing materials handling. RFID has not gained the market share expected of it but improvements in technology – and lower costs – may make it worth another look – starting **page 12**.

Tell us what you think of **eureka** - drop us a line via our website at [www.eurekapub.eu](http://www.eurekapub.eu) or e-mail us at [comment@eurekapub.eu](mailto:comment@eurekapub.eu).



**Monica Escutia**  
Commissioning Editor

Issue 15 - Winter 2011

**Commissioning Editor:**  
Monica Escutia

**Contributing Editors:**

Ruari McCallion  
Gay Sutton  
Gian Schiava  
Robin Meczes

**Art Director:**  
Paul Fretwell

**Produced by:**  
gu9creative

**Printed & Distributed by:**  
BTB Mailflight, UK

**Published by:**  
Cat Lift Trucks, Hefbrugweg 77,  
1332 AM Almere  
The Netherlands

©2011, MCFE. All rights reserved. CAT, CATERPILLAR, their respective logos, 'Caterpillar yellow' and the 'Power Edge' trade dress, as well as corporate and product identity used herein, are trademarks of Caterpillar and may not be used without permission.  
OEPC1435(11/11)gu9



**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 nine 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](http://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.



**4-6**  
**Cutting costs**  
**Boosting the bottom line**

Better coordination of inbound and outbound journeys can save 10-15%; effective warehouse design and strict fleet maintenance can help, too.

**7-8**  
**Fishery Industry**  
**Like a duck to water**

Salty water in a fish-handling warehouse provides the ultimate test of corrosion resistance but water and grime can be a major problem for lift trucks everywhere. Cat Lift Trucks' new electric counterbalance range is strong enough to fight back.

**9-11**  
**Battery Spa**  
**Spa Treatment for Batteries**

A touch of pampering pays dividends in extending battery life and efficiency.

**12-13**  
**RFID**  
**Bright Sparks**

RFID has not achieved the market penetration that was expected of it. What have the problems been and are they now things of the past? We take a closer look and offer 10 tips to help warehouse managers decide.

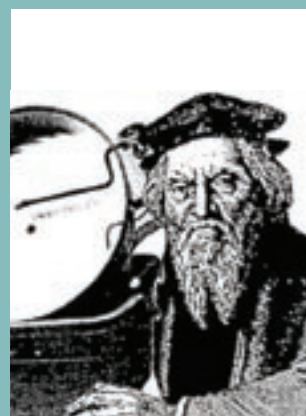
**14-15**  
**Tyre Safety**  
**Tyred out**

Small, round and often overlooked, tyres are the only contact point between a lift truck and the ground. The right choice and maintenance programme helps to reduce accidents and cut costs.

## Events Calendar

Date, Event, Location, Website	Overview
14 - 15 February 2012 <b>LOGISTICS LINK SOUTH</b> Surrey, United Kingdom <a href="http://www.logisticslink.co.uk">www.logisticslink.co.uk</a>	The established market-leading logistics and warehouse solutions event, <i>Logistics Link South 2012</i> will deliver the ultimate experience at a logistics show. The UK's best providers of products and services for logistics and warehouse management will be on hand to discuss your bespoke logistics requirements face-to-face.
29 February - 1 March 2012 <b>PACKTECH 2012</b> NEC Birmingham, United Kingdom <a href="http://www.easyfairs.com">www.easyfairs.com</a>	As a leading exhibition in the packaging industry <i>PACKTECH 2012</i> provides you with a perfect opportunity to penetrate the market and create instant awareness of your products and services to current and new clients.
6 - 8 March 2012 <b>TRANSPORT WEEK 2012</b> Polish Baltic Philharmonic, Gdansk, Poland <a href="http://www.actiaconferences.com">www.actiaconferences.com</a>	<i>Transport Week</i> is an exhibition where you can establish new business contacts, evaluate opportunities for market entry, exhibit and sell products and services, monitor competition, build brand image, obtain information about the market, establish new business partnership at a regional level & much more.
13 - 15 March 2012 <b>LogiMAT 2012</b> Stuttgart, Germany <a href="http://www.logimat-messe.de">www.logimat-messe.de</a>	The opening event for intralogistics in the heart of Europe, <i>LogiMAT</i> offers a complete review of the market, featuring everything to do with intralogistics. International exhibitors will be presenting innovative technologies, products, systems and solutions for rationalisation and cost-optimisation of in-company logistics processes. <i>LogiMAT</i> provides the trade audience with a comprehensive review of the main themes in the sector, from procurement to production and deliveries. International logistics professionals come to <i>LogiMAT</i> to discover new ways of optimising processes and reducing costs.

"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.'





# Boosting the bottom line

With business confidence dwindling fast, many companies are looking to cut costs significantly, but how can the forklift operations deliver savings effectively?

**Gay Sutton** separates the good initiatives from the bad - those that can cost the company dear in the long run, and those that can put money in the bank.

Isn't confidence an ephemeral thing? Just a few months ago, the Europe-wide manufacturing and retail purchasing managers indices reflected growing confidence, buoyant orders and increased output in the manufacturing, retail and services sectors. Today, the global recovery has stalled. Europe has slipped back into contraction for the first time in over two years and the outlook is not good.

"The forward-looking indicators, notably an increased rate of decline of incoming new business and falling confidence about the year ahead in the service sector, raise the risk of further contraction in the coming months," said Chris Williamson, chief economist at global financial information services provider, Markit.

So when the corporate cost cutting eye turns to the forklift operations, where can economies be made without jeopardising safety and cost effectiveness?

**"The forward-looking indicators, notably an increased rate of decline of incoming new business and falling confidence about the year ahead in the service sector, raise the risk of further contraction in the coming months."**

Tom Broeder, manager sales at Crepa in the Netherlands, believes that for many companies an impressive 10%-15% saving can be achieved simply by coordinating inbound and outbound forklift truck journeys.

"We often see drivers tasked with doing either one job or the other and rushing to fulfil the demands of the sales team," he explained. "However, if every time an order is carried to the docking area for despatch, the driver is able to pick up a consignment from goods-in and make the return journey to the warehouse fully laden, the number of journeys required each day will be reduced." Not only will this significantly cut fuel consumption but it can also reduce the number of forklifts trucks and drivers required to service the goods-in and goods-out function.

This process can be taken a step further by timing inbound and outbound deliveries to iron out the peaks and troughs in activity. "A company that has 10 forklift trucks to cope with peaks in demand may only require seven for the majority of the time. If the peaks can be smoothed out through better sales and procurement planning they may be able to permanently reduce the fleet by 2 or 3 trucks, and therefore reduce their manpower correspondingly."

This type of system has three main requirements if it is to work well. Firstly inbound and outbound goods should have longer lead times to enable the warehouse to coordinate the movement of both, and smooth the peaks and troughs. Secondly, a larger buffer area is needed at the pick and drop site so that orders can be stacked ready for moving. And thirdly some form of system is needed for scheduling. For smaller companies, this can easily be managed from an excel spreadsheet, but a good WMS can create the most efficient combination of inbound and outbound forklift movements, based on direct information and prioritisation from the sales and operations.

The main stumbling block to this coordination, for Broeder, is one of culture. The warehouse is often regarded as a pure cost, and both sales and operations are accustomed to receiving instant service. It's therefore important for the company as a whole to examine the effects on sales, the warehouse and operations of coordinating all three. From this, a new sales and procurement planning strategy can be developed which will effectively balance them to achieve the best overall result. Ultimately, the efficiency of the warehouse can be built into relationships with customers and suppliers.

**"The warehouse is often regarded as a pure cost, and both sales and operations are accustomed to receiving instant service. It's therefore important for the company as a whole to examine the effects on sales, the warehouse and operations of coordinating all three."**

Of course, changing the terms of business with longstanding customers is not something that most sales teams relish. But in many cases it is possible to negotiate a longer delivery schedule, particularly when a percentage of those savings can be passed on as discount. "However, in some markets it's not possible for customers to wait - time is money. But if you don't discuss it with your customer, then you'll never know," Broeder said.

Broeder had another interesting suggestion to make. "We often see warehouses designed to provide as many pallet places as possible, resulting in very narrow aisles. If a lift truck operator can't manoeuvre easily in the space, damage will occur to the truck, racking and product. This costs time and money, as well as compromising the safety of the operation." →



1. Tom Broeder, manager sales at Crepa.  
2. Fewer pallet places allows wider aisles, meaning the operator can manoeuvre more easily, quickly and safely.



→ he said. "In our opinion, it is better to lose some pallet places and create aisles wide enough for the operator to manoeuvre more easily, quickly and safely."

For David Ellison of the British Forklift Truck Association, the longer a forklift fleet has been in operation, the more changes are likely to have occurred in the operational side of the business, thus reducing the efficiency and cost effectiveness of the fleet. "One of the best things you can do is arrange to have a new professional survey or audit of the forklift operations. There may well be savings you can make, or you may need to spend some money." Either way, it's then possible to assess the financial case for investing in efficiency gains.

**"In our opinion, it is better to lose some pallet places and create aisles wide enough for the operator to manoeuvre more easily, quickly and safely."**

Reducing costs in many instances is a matter of instilling fuel efficient operational practices and good warehouse management. "You may be able to reduce journey times and distances by reducing the number of steps in an operation or relocating areas such as goods-in and goods-out," Ellison continued. This also extends to reducing hazards and obstacles. Driving around damaged pallets and debris increases journey time and fuel consumption, and increases the risk of more serious delays.

**Top ten false economies - to be avoided:**

- ✘ Reducing pre-shift checks
- ✘ Reducing maintenance
- ✘ Reducing training
- ✘ Sloppy authorisation to operate
- ✘ Taking unassessed agency staff
- ✘ Relaxing loading bay controls
- ✘ Relaxing best practice
- ✘ Using inappropriate equipment
- ✘ Using poor quality fuel
- ✘ Relaxing pedestrian segregation

Cost cutting also comes with a big health warning. Some very tempting initiatives can create serious and expensive long-term problems. The pre-shift checks performed daily by the operator are designed to identify faults and problems with the lift truck, and should not be curtailed. "If a hydraulic oil leak, damaged tyre or problem with the forks is picked up at the beginning of the day it can be sorted out quickly," Ellison said. "If the truck breaks down with the mast up in the air in the middle of the racking, then you have a problem on your hands."

Training is key to safe and efficient forklift operations. Any attempt to reduce initial driver training, familiarisation on different vehicles and supervisor training will quickly reduce driver efficiency, increase the frequency of accidents to racking, vehicles and people and markedly increase costs to the business. "However, many companies tend to provide refresher training on a regular basis so they don't have to worry about it." By regularly monitoring, assessing and documenting operators' performance, Ellison believes those who need additional training can be identified and put through a refresher course as soon as it becomes necessary. "When you're on a limited budget it's a question of making sure the money you have for training is spent on the people who will benefit most."

Tempting though it is to delay scheduled maintenance or to use cheap fuel, this degrades the efficiency of the engine. Fuel costs rise and the risk of breakdown increases. Equally, slackening safety procedures to save time is dangerous and accidents are expensive.

**"When you're on a limited budget it's a question of making sure the money you have for training is spent on the people who will benefit most."**

Ellison finished with a word of advice for companies employing agency staff to cover the peaks in demand. "It's OK if it's a good agency. If it's not, the chances are that the operators haven't been properly trained, or not trained on the type of equipment you use. So always check incoming operators are qualified and up-to-date."

Broeder concluded by saying. "The most important thing is that companies should think - analyse each initiative and calculate the long-term benefit or cost. If they can do that, they can make some significant savings for the business." ■

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



3

3, 4. Training is key to safe and efficient forklift operations. Reducing it is a false economy.



4



1

The electric lift truck is a formidable working machine. But in some applications, its vulnerability to water and dirt - which can clog up vulnerable components like motors and brakes, interfere with electrics and help corrode the very body of the truck - has proved a significant problem for end users.

Nowhere is this problem greater than in the fishery business, where salt water, which will eat metal away completely given sufficient time, is brought in with the product, threatening to damage both external and internal components. It's also a common issue at port terminals, where salty spray from waves permeates every corner of the working environment and you can taste the salt in the air.

Even without salt, of course, the presence of water is an issue. And that makes even unsalted water a problem in applications where trucks need thorough and regular washing, like the general food or chemicals industries.

Such problems tend, where standard lift trucks are used, to lead to more frequent and more costly maintenance than would otherwise be necessary, increasing truck downtime and decreasing productivity. Ultimately, they can also mean a significantly reduced lifespan for the lift truck.

These issues have now been thoroughly addressed, however, with the launch in October of the new EP13-20(C)PN(T) range of electric counterbalanced trucks from Cat Lift Trucks.

# Like a duck to water...

Water and grime can be a major problem for lift trucks in sectors like the fishery business – but a new range of electric counterbalanced lift trucks unveiled by Cat® Lift Trucks in October will help end users beat the threat they pose.

*Robin Meczes* finds out more.

**"Even without salt, of course, the presence of water is an issue. And that makes even unsalted water a problem in applications where trucks need thorough and regular washing, like the general food or chemicals industries."**

Available in lift capacities of 1.3, 1.5, 1.6, 1.8 and 2.0 tonnes across both three and four-wheel versions, the EP-PN trucks all come as standard with IPx4 splash resistance and IP54 sealed traction and hydraulic motors, as well as completely sealed wet disc brakes. These features make the new trucks highly resistant to harsh working environments and allow them to be thoroughly washed down, ensuring high levels of uptime and a normal truck lifespan.

On top of the standard water and dirt resistant features, the frame and mast on the new EP-PN range can also be galvanized, making it one of the most corrosion-resistant trucks around.

Such features make the new trucks well suited to applications where water is a common part of the environment, says Marcel van der Winden, product manager for electric counterbalanced trucks at Cat Lift Trucks.

The wet disc brakes are a particularly useful feature of the new range, he suggests. As they are totally sealed, they completely resist any ingress of water or dirt and being →



2

1, 2. Salt water brought in with the product causes corrosion. At port terminals, spray from waves causes the same problem. 3. The range is well suited to the challenges posed by the fisheries industry.

→ maintenance-free also contribute to the EP-PN's greatly extended service intervals of 1,000 hours (500 hours on previous models), helping to reduce total cost of ownership.

Apart from all the water and dirt resistance, the new EP-PN range is a very well specified truck, points out Van der Winden, with electronic power steering, an advanced operator presence detection system called PDS+ that includes a 'hill hold' function, manager and driver configurable performance settings, automatic speed reduction on corners and an easily accessed, comfortable cabin with more floor space for drivers.

**"The wet disc brakes are a particularly useful feature of the new range. As they are totally sealed, they completely resist any ingress of water or dirt and being maintenance-free also contribute to the EP-PN's greatly extended service intervals of 1,000 hours (500 hours on previous models), helping to reduce total cost of ownership."**

The new EP-PN range also boasts a 12% reduction in typical energy consumption compared to older models and reduced noise levels, which at just 66dB(A) at the driver's ear are among the quietest available anywhere.

Long-lasting LED worklights have been fitted as standard, meanwhile, and the trucks can take either DIN or British Standard batteries, the latter providing enough additional capacity over DIN equivalents for around two hours' extra work in an average application, says van der Winden.

Unsurprisingly, Cat lift trucks dealers and customers have reacted well to the launch of the new trucks. "Customers really like the styling and all the new features, which go a long way towards meeting the items on their wishlist," says Van der Winden.

That's borne out by the experiences of Cat lift truck dealers. Rúnar Hjartar, sales manager for lift trucks and warehouse solutions at Klettur in Iceland, says customers there have reacted very well to the new range so far. "They're very positive about it, both in terms of the new design and the wet disc brakes," he confirms.

Hjartar says he expects the fishery sector – one of the largest industries in Iceland – to be a major customer for the new range and that the extended service intervals will be a particular gain for such customers. "Many fisheries trucks work about 2,000 hours a year, so instead of them having to service the truck four times a year, it'll only be two times - a significant benefit," he comments.

Danish dealer Rocla also reports an enthusiastic welcome for the new EP-PN. "We've had some very good conversations with a couple of firms, including one in the fishery sector," says Rocla business manager, Einar Løfgren. "What we have from Cat Lift Trucks here is a very modern truck with some very good features that is very well suited to the type of challenges you see in the fishery industry."

"It seems the case that customers really like the features of this truck and feel the price level is very fair, compared to the competition," he continues. "That certainly bodes well in these hard economic times." ■

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

“What we have from Cat Lift Trucks here is a very modern truck with some very good features that is very well suited to the type of challenges you see in the fishery industry.”



# Recharge your batteries with a spa treatment!

Effective management of truck batteries can save a lot of money – so give your batteries a bit of pampering!

**Gian Schiava** sees the results at Cat® Lift Trucks' factory.

### The project

Our latest visit to Cat Lift Trucks factory at Almere, the Netherlands, has brought us to the company's carefully designed battery management system. What we are going to be shown is how effective management of battery resources can extend their life and ensure that they deliver optimum performance, all the time. **A bit of TLC (tender loving care) works wonders!** →

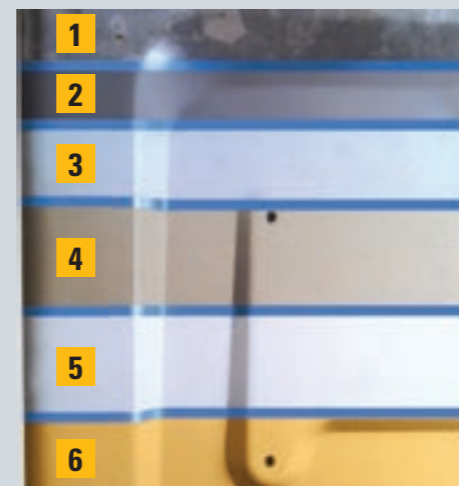
### Applying the zinc

Optional galvanization of the new EP13-20(C)PN(T) trucks includes the frame, side panels, battery cover and floorplate as standard – in fact pretty much everything apart from the counterweight, according to Kasper Blankenzee, custom shop modification specialist at Cat Lift Trucks. Additionally, it is possible to water protect various parts of the mast and the fork carriage, including sideshift components and mast rollers.

Galvanization, which involves the application of a layer of zinc to corrosion-protect the base metal underneath, is undertaken for Cat Lift Trucks by a firm specialising in the process - Straalbedrijf Petersen, in Harderwijk, not far from the Cat Lift Trucks production line at Almere.

The process involves first sandblasting the truck and then flame-galvanizing it, before the paint is applied. Flame-galvanizing is used instead of electro-galvanizing as it requires less power and avoids the problem of quickly solidifying zinc building up in the nooks and crannies of the frame as it is lifted out of a zinc bath, explains Blankenzee. It also results in a rougher surface on the zinc which provides an excellent substrate for subsequent layers of paint.

The zinc coating should last the whole lifetime of the truck and although it adds to the costs - Van der Winden suggests a galvanized truck will be around 6% more expensive to buy – it will also extend the lifetime of the truck in corrosive environments and thus protect residual values. "In the long run, it's actually the cheaper option," says Van der Winden.



- 1 The base metal
- 2 Grid-blasted material
- 3 Applied zinc coating
- 4 Epoxy pre-coating
- 5 Epoxy coating
- 6 Finish coat

For more information about the EP13-20(C)PN(T) range, see [www.catliftpower.com](http://www.catliftpower.com).



→ The end of the truck production line is the start of the battery management system. The origins of the project date back a number of years ago, when the need to tackle random use of batteries was recognised. When an electric counterbalance lift truck comes to the end of the assembly line, it will need a battery for two reasons. The first is obvious; it needs power to drive to the next stage of the production process, where the mast will be assembled onto the chassis before inspection, programming and option fitting. The second reason is that the truck needs the battery to become a 'complete product' and undergo final testing, before proceeding to the shipping area. The batteries used in these final stages are owned by the factory and will not be shipped to the customer – so they are pretty much in continuous operation.

In normal use, these batteries would probably last the standard 6 years or so. To make the most of this resource, Cat Lift Trucks' engineers developed what they call the '8-8-8' concept. A battery works for a full 8-hour shift, then it undergoes the 8 hour recharging cycle. Finally, the battery is given 8 hours of complete relaxation, and this is a key element in the whole project.

Cat Lift Trucks formed a pool of about 200 lead-acid batteries, made up mostly of 48 Volt batteries, along with some 24 and 80 Volt units. They wait at the end of the assembly line to be inserted in the next electric truck and are arranged according to the production schedule. The move-test-proceed to shipping cycle begins and when the truck arrives at the shipping area, the local manager determines whether the battery can return to the end of the line and undertake a whole new cycle, or whether it should go to the charging station.



**"...Cat Lift Trucks' engineers developed what they call the '8-8-8' concept. A battery works for a full 8-hour shift, then it undergoes the 8 hour recharging cycle. Finally, the battery is given 8 hours of complete relaxation, and this is a key element in the whole project."**

**Deep clean, recharge, relax**

A cycle of treatment that looks like the equivalent of a VIP spa treatment for batteries begins when it is decided that charging is needed. The battery is first measured and is then completely cleaned, to remove exterior dirt, any corrosion, and acid residues. It also receives proper maintenance, such as refilling with clean water, cell replacement and repair or replacement of a broken main connector or cable. When this is completed, batteries are brought into the so-called nursery room to be charged. This area adheres to the highest safety standards, processes and behaviours being reinforced with warning and instruction signs everywhere. A special extraction installation operating with small openings in the walls behind the batteries keeps the air around the units clean. After being fully charged, the battery moves to a rest room, where it can enjoy the 8 hours of rest necessary for full revitalisation.

**More than a nice idea**

At first sight, it might be thought to be a waste of time to let the batteries wait so long before they are returned to work. In many companies, recharged batteries are put out to work again immediately. The explanation is that the process of charging and unloading is a chemical process and one that benefits from rest from time to time. Even in the apparent quiet time of loading,



the chemical process is working as electrical energy is converted back to chemical energy again, which creates heat and other reactions. Letting the batteries rest for a while after charging positively affects battery life.

Batteries should always be fully discharged and recharged again. Ideally, a battery should discharge down to 20% before being recharged. Battery life is around 6 years, or 1500 loading cycles. Hook batteries onto a charging station too soon and you will end up with a 'lazy' battery, one that will release its energy faster and faster, resulting in a shortened life. Certainly, there are new technologies that fight this process of ageing and there are also systems that use air bubbles to enable earlier charging (e.g., at 60%) without the negative effects. But that does not take away that rest is good for a battery.

**"Batteries should always be fully discharged and recharged again. Ideally, a battery should discharge down to 20% before being recharged."**

**Amazing results**

All of the above sounds logical but the question is always: does it really deliver positive results? Yes, it does, is the answer. One remarkable fact to note from this factory in Almere is that it is using batteries dating from 1994 – 17 years ago, almost three times normal battery lifetime – and they are still going strong! The initial investment in some extra batteries has resulted in significant savings, by hugely reducing the need for replacement units. The battery management process requires great discipline as it is so tempting and so very easy to take a battery



that is fully charged but resting, but the benefits are clear.

**"One remarkable fact to note from this factory in Almere is that it is using batteries dating from 1994 – 17 years ago, almost three times normal battery lifetime – and they are still going strong!"**

**Lesson learned**

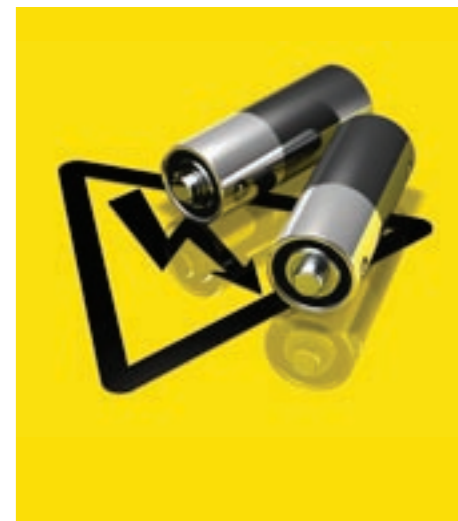
While this example may be a special, or particular case, it still demonstrates the value of wider, more effective battery management. It is a process that can be implemented in any company that has a fleet of electric forklifts. It requires an initial investment in additional batteries, as well as a battery recharging area that adheres to the highest standards. Fleet operators may also want to invest in initial training of staff, in order to ensure that they understand why certain activities – or lack of activity, in case of battery rest – need to be undertaken. Any professional supplier of materials handling products can help set up this system. It may sound a bit hard to swallow, but setting up this VIP treatment for your batteries will save you money in the end. It is well worth asking about. ■

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

- 1. Battery 'teenager': The factory in Almere is using batteries dating from 1994 – 17 years ago, almost three times normal battery lifetime – and they are still going strong!
- 2. An emergency shower area for staff members who have accidentally come into contact with chemicals.
- 3. The 'nursery', where batteries are taken to for recharging.
- 4. Batteries are given 8 hours of total rest.

**TOP 5 TIPS FOR A LONGER BATTERY LIFE**

- + Always discharge the battery to around 20% power level before recharging. This stops it turning into a 'lazy battery', which will discharge quicker and quicker.
- + If some batteries are not being used for a while, use a 'battery jogger', a device on your charging station that will keep the battery in shape with regular charge/discharge cycles.
- Don't cut spending on maintenance; it will pay for itself with improved efficiency and longer battery life.
- + Make sure the charging area adheres to all safety standards. Protect both your staff and products.
- + Give the batteries time for R&R-rest and recuperation. You will be rewarded with a longer and more productive life from your batteries.



# Where are we with

# RFID?

Efficient warehouse management depends on reliable and accessible information, which would appear to be a shoe-in for RFID tags. But have they overcome problems of cost and effectiveness?

**Ruari McCallion** has been finding out.



1

**R** RFID (radio frequency identification) tags promise a great deal. They can carry more data than conventional barcodes and they can be active, telling warehouse management systems where they are and what has happened to them. However, takeup of RFID systems has been pretty low. In a paper called 'RFID in the supply chain: lessons from European early adopters', in the International Journal of Physical Distribution & Logistics Management (White, A., M. Johnson, and H. Wilson, 2008), the authors reported that no less than 67% of companies in distribution, transport, logistics or warehousing activities had no plans for RFID trials and only 13% deployed RFID technology in their business. These figures were quoted by Witold Bahr and Dr. Ming K Lim, of the Engineering Systems and Management School of Engineering and Applied Science, Aston University, Birmingham, UK, in a presentation to the XIX International Conference on Materials Handling, Construction and Logistics. Among the concerns mentioned were cost, ROI (return on investment) and reliability – one particular issue raised was the ability of RFID systems to read tags on moving forklift trucks. A study in 2009 by the California Polytechnic State University found that readability fell to just 12.8% for pallets of drink cans carried through the RFID portal at a lift truck speed of 16.09 km/h.

## Making it work

However, companies like Sony, Hugo Boss and DHL – perhaps DHL especially – are very unlikely to implement a system that does not work. Sony is expanding its RFID activities

from the initial project at its electronic products distribution centre in Tilburg, in the Netherlands, to DHL's Freight Hub Cologne, a central gateway for the distribution of Sony products in Germany, after a five-month pilot project. The Tilburg operation involves direct integration of SAP, Zebra RFID tags and technology, Reva Systems Tag Acquisition Processor (TAP) products, and Symbol, with integration services provided by Mieloo & Alexander. It combines item-level RFID and digital video to increase efficiency, control 'shrinkage' (a euphemism for theft) and streamline claims processes.

**"Sony is expanding its RFID activities from the initial project at its electronic products distribution centre in Tilburg, in the Netherlands, to DHL's Freight Hub Cologne, a central gateway for the distribution of Sony products in Germany, after a five-month pilot project."**

Sony tags products for shipment with RFID labels and records the tag IDs at each stage – picking, stacking and when shrink-wrapped onto pallets. It logs pallet movements all the way through to loading onto delivery trailers. Automated video records the process, burns RFID data onto the video image and stores the video data according to RFID information, for comprehensive proof of delivery. Initial problems with poor reading during product transport by overhead conveyors and lift trucks were resolved by Reva's TAP system, which uses European Listen Before Talk (LBT)-standard systems.

## Hugo Boss cuts to the chase

The Hugo Boss hanging garment distribution centre in Metzingen, Germany, uses a Fordertechnik clothes hanger adapter featuring an RFID system from Baluff. The facility stores around 1.35 million articles and dispatches some 100,000 each day. At the sorting area each garment is given its own L-VIS which contains a Baluff RFID chip and a 2D barcode holding identical information. The RFID code is read automatically by the conveying technology, while the 2D codes are read manually using a hand-held reader. The RFID chip is from Baluff's BIS series, which allows inductive data exchange within direct alignment of the product with a reader, and without contact. The decoder can be supplied with 30 read heads but it was determined that a two-read head system was more appropriate for the large facility. Transport units can be tracked over the entire conveyor line and within the aisles between the individual shelves. A 2D code alone would have required camera technology to be installed at all 110 read stations and it was also found that the cameras would not have been capable of reading the codes reliably at the speeds required. Although the facility has high personnel overheads, Hugo Boss has said that it is economic because of the high level of automation and short transport distances within the warehouse.

**"The Hugo Boss hanging garment distribution centre in Metzingen, Germany, uses a Fordertechnik clothes hanger adapter featuring an RFID system from Baluff."**

These two examples – and RFID introduced in DHL's corporate apparel supply chain, which has 39 manufacturing locations globally – have something rather important in common: they were all implemented after careful analysis and pilot studies. Zebra Technologies, a leading vendor of RFID technologies, emphasises the importance of getting one's 'house in order' first and should walk before breaking into a run. Zebra says that businesses need solid warehouse practices, good flow in and out, good people and good processes, and barcode systems should be the first step – they deliver 'out of the box' and there is a lot of experience to be drawn on already in the marketplace.

## Planning problems out

Going forward, quite a few problems originally associated with RFID have been faced and overcome. Its dislike of metal can be handled easily, simply by mounting a rubber seal

between the RFID tag and the metal of the product it is sitting on. Sealing it prevents water from interfering. And some suggestions should be obvious, such as: do not use high-cost active RFID tags on non-returnable pallets. Passive RFID tags are cheaper than active ones and can deliver to needs to a reasonably high level. The tags' ability to acquire and distribute information, and to hold a significant amount, is extremely useful and can help reduce selection times in warehouses from an average of over a minute to just a few seconds. But the key is: prepare first. eureka mentioned the arrival of bokodes, technology that is capable of storing massive amounts of information in a tiny tag. They may be the future but, for now, they are expensive – and going straight to an advanced setup will not overcome problems that are inherent within a warehouse management system that is not right in the first place. ■

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

With thanks to Hugo Boss, Prof Bahr and Dr Lim for their help in preparing this article.

## 10 top tips for successful implementation of RFID technology

### 1) Ensure there is plenty of time for planning and research

*Establish exactly how your company can benefit from RFID before you start spending*

### 2) Plan RFID from the ground up

*Start with the processes on the warehouse floor and work upwards to make a profit throughout the supply chain*

### 3) Thoroughly research RFID offerings

*The choice on the market can at first seem bewildering, but it's vital to make the right choice for your business*

### 4) Get the right supplies

*Remember to get the print media right for it all to work effectively*

### 5) Choose the right partners to ensure your RFID system runs smoothly

*There are a lot of experts out there – make sure you choose the partner which knows your industry and technology best*

### 6) Take a step-by-step approach

*Caution is the key word – set yourself achievable goals and you'll see the results at every step*

### 7) Carry out thorough testing to avoid issues as the implementation scales up

*The only way to keep track of the roll out and monitor success is to test at every stage*

### 8) Analyse the data to drive ROI

*Keep track of your ROI – the results will be worth it*

### 9) Extend RFID internally, to make the most of the technology

*Think of where else you can use RFID to get your money's worth*

### 10) Plan for flexibility during the implementation

*Accept that the plan will change during implementation*

Tips provided by Zebra Technologies



2

# Tyred out

They're often small, round and usually black – and they're essential to efficient and safe operations.

**Ruari McCallion** looks at lift truck tyres.

The physical connection between a Formula One Grand Prix racing car and the track on which it runs is four small patches of rubber, each about the size of a large business envelope. They are the contact points of the tyres. Ask a racing engineer about their role and be prepared for a potentially long and detailed explanation of the importance of grip, different compounds, load at speed, under braking and cornering forces, and the effect of side winds and surface water. Aerodynamics and engines are important but the tyres are vital.

What is the connection with lift trucks? Again, the point of contact with the ground is four small patches of rubber. Racing tyres can be changed, depending on conditions, with special compounds and tread patterns to cope with hot tarmac, light rain or monsoon conditions. Lift

trucks have no such luxuries. A single set of tyres has to cope with heavy loads, no loads, slippery surfaces and smooth concrete, and move from warehouse interiors to outside conditions, whatever they are. They could be regarded as the first line of safety in operations. Indeed, one manufacturer ran an advertising campaign a few years ago which proclaimed that 'a driver has five safety belts'. We make four of them.

### Buying cheaper = false economy

Tight economic conditions and competitive pressures mean that operators will look everywhere for opportunities to save costs and it is tempting to go for cheaper options, wherever they can be found. That could be a mistake and, in the case of tyres, quite an expensive one. Cheaper tyres often do not perform as well as apparently more expensive alternatives. They may wear out faster and they may have less grip, and the latter could lead to serious workplace accidents. As lift trucks are involved in a quarter of all workplace accidents, there is absolutely no justification for running an increased risk.

## Lift Truck Tyres - key points

Most lift trucks in warehouse environments have solid tyres and these do not tend to be subject to variations in stability. However, pneumatic tyres may sometimes be needed to improve traction in vehicles that work outside as well as in warehouses, for example, and they should have a minimum depth of 1.6mm in the tread pattern over the centre 75% of the tread, all round. If used in high-traction operations or on rough terrain, they will lose effective performance well before reaching minimum tread depth and excess wear can lead to loss of the very traction that is being sought or even to rapid deflation.

- **Tyres should not be mixed – those on each axle should be the same make, type and size, and with the same amount of wear. The use of tyres with substantially different amounts of tread wear on the same axle is risky and, perhaps surprisingly, risks from differential wear – even if both treads are within 'safe' limits – are even greater with solid tyres.**
- **Pressures within pneumatic tyres should be maintained at correct levels. This may seem obvious but pressures are worth checking at least every shift, as unequal pressures can lead to instability - and they can be an indication of a puncture or valve failure, which can become dangerous, quite quickly.**
- **Finally, tyres should be replaced no later than when wear reaches the manufacturers' specifications.**

Total cost of ownership is the right basis for purchasing decisions, rather than front-end ticket price. A lift truck fleet represents a significant investment but it is after purchase that the true costs emerge, in terms of reliability, maintenance and replacement. In the case of solid industrial tyres, the total cost of ownership will be determined by mileage, fuel consumption, energy consumption, downtime costs and service. A long-lasting tyre reduces downtime and fitting costs, minimises wasted rubber on the whole tyre, not just the tread rubber, and also has an impact on CO<sup>2</sup> emissions.

**"As lift trucks are involved in a quarter of all workplace accidents, there is absolutely no justification for running an increased risk."**

### Testing time

Fleet operators' assessment of tyre wear is often based on a combination of own experience, assurances from suppliers and hearsay. None of these is entirely satisfactory; dispassionate testing is needed and, to this end, industrial tyre manufacturer Trelleborg Wheel Systems set up a test with TUV SUD Automotive, the German certification body, with the intention of analysing and evaluating tread wear of its own Elite XP LOC solid tyre, and to compare it with another established industry model. The intention of the exercise was to measure tread wear in simulated heavy operational conditions. The factors measured were weight loss, which would give the project information on the amount of rubber used. Tread depth was also measured at 16

points on the tyre, at four points across the width of the tread at 90 degree intervals.

The test was conducted in March 2011 at Istituto Sperimentale Auto e Motori S.p.A. (ISAM) in Anagni, Italy. TUV SUD bought the tyres on the open market and the electric counterbalance lift truck used carried a 1730kg load, around 70% of its maximum capacity of 2500kg. The test track measured 320m and was conducted in accordance with ISO10844 Annex A, which covers texture depth of 1.8mm. Speed was kept constant and equal for both brands by limiting accelerator pedal travel and adapting it to the tyres' circumference.

The trucks in the test were run for 38.3km in total, with drivers and direction of travel changed every 20 laps. The Trelleborg Elite XP showed a weight loss of 900g on the front tyres, and 250g for the rears.

### Watch out for wear

What the test illustrated was that even the most resilient tyres perhaps wear out at a rate operators do not fully appreciate. It also strongly suggests that premium tyres are, in fact, likely to be the lower-cost choice for full cost of ownership - the comparator tyres wore even faster. In order to get the best out of the truck fleet, paying attention to the humble doughnuts of rubber at each corner can yield dividends in costs of operation, including energy use. In a challenging and competitive market, any opportunity to save money should not be ignored. ■

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

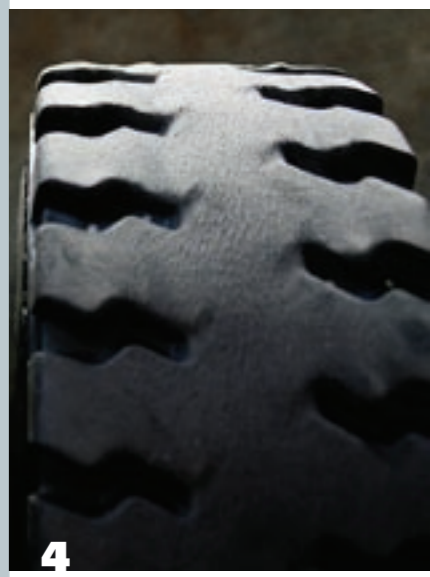


2

1. The forklift is run during the test at ISAM.  
2. A tyre is weighed after the test to reveal the amount of rubber used.  
3,4. Tread wear comparison after the TUV test. The test strongly suggests that premium tyres are the better choice for lower cost of ownership.



3



4



1







# THE POWER TO DELIVER, DAY AFTER DAY...

## ...on both our service and our trucks.

Your materials handling needs are our top priority, which means that we guarantee to provide you with our most cost efficient and productive solution.

Impact Handling is the sole distributor of the full range of Cat® lift trucks and warehouse equipment in the UK and Ireland and provides the strength of service needed to match all your expectations from the choice of quality, productive, durable products, to flexible finance and after sales service.

Our expertise lies in streamlining materials handling to boost productivity and lower costs. By understanding your requirements and objectives, we can provide the complete solution to satisfy all your service requirements. And with our flexible, one-stop-shop philosophy and convenient, local offices, we make it easy for you to put the right trucks into the right applications.

Make a powerful decision: Book a **free, no obligation site survey** and find out how **Impact Handling** can help your business save money. call us on: **0800 169 9789**, or email: **sales@impact-handling.com**

Case studies: [www.impact-handling.com/news](http://www.impact-handling.com/news)

"Impact demonstrated fantastic responsiveness – it was an outstanding piece of work!... Impact really manage/run the fleet on site and makes continuous improvements."

Paul Morris, Cat Logistics.



[www.impact-handling.com](http://www.impact-handling.com)

©2011, MCFE. All rights reserved. CAT, CATERPILLAR their respective logos, 'Caterpillar yellow' and the 'Power Edge' trade dress, as well as corporate and product identity used herein, are trademarks of Caterpillar and may not be used without permission.

**IMPACT HANDLING**  
POWERFUL PARTNERS

**CAT**  
Lift Trucks