eureka

Issue 22

Summer 2014

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THE MAGAZINE FOR THE MATERIALS HANDLING PROFESSIONAL

Successful tendering

How Cat® lift truck dealers around Europe work to deliver the winning bid.

Counterbalance creativity

The latest developments and trends behind the closed doors at Järvenpää.

Bottom up productivity

Look again at the warehouse floor. The improvements that can increase output.

eureka issue 22

The magazine for the materials handling professional

Welcome to the Summer 2014 edition of **eu**reka magazine.

After an extraordinary winter that has wrought havoc in parts of Europe it is a genuine relief to see such improvements across the economies of the continent.

According to the Markit Purchasing Managers' Index (PMI), Eurozone economic growth has reached a three-year high and improvement is continuing into the second quarter. In the UK, the Markit-CIPS PMI is even more positive and reports a record spell of job creation.

With these positive trends percolating through industry and business, we have opened the magazine with an article that reviews the process of **tendering across Europe**. Making changes to the materials handling fleet is a critical financial decision, and it pays to get it right. ***Ruari McCallion*** explores how Cat® dealers put together a compelling tender that will ensure you get a materials handling fleet that is fit for purpose well into the future.

As with most industries, new products are often the result of continuous small evolutions, and it's the same for counterbalance trucks. However, ***Mark Nicholson*** lifts the veil on the Cat development and production centre in Järvenpää and looks further ahead at the **latest innovations and trends**.

Moving our focus into the warehouse, we find that one of the most frequently ignored elements is **the floor**. Its condition is vital to warehouse productivity and we show how this can be improved in some surprisingly simple ways. Finally, we conclude this issue by exploring how the **warehouse can be managed and run**, in conjunction with its staff and suppliers, to reduce the hazards of the unexpected, and ensure change occurs in a way that enhances efficiency and safety.

Tell us what you think of **eu**reka - drop us a line via our website at **www.eurekapub.eu** or e-mail us at **comment@eurekapub.eu**.

Monica Escutia
Commissioning Editor

"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 '**eu**reka!', literally, 'I've found it.'

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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.

*Visit **eu**reka online!*

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Fleet Management
Tenderisation

There is more to tendering than simply submitting a price. It can take months to bring together the depth of client communication, analysis and specification to design a materials handling fleet that is fit for purpose, and remains so into the future. ***Ruari McCallion*** finds out how Cat® lift truck dealers in the UK and Europe handle the process.

7-9

Lift Truck Innovations
A sense of the future

The R&D team at Cat® Lift Truck's development and production centre in Järvenpää, Finland, talk to ***Mark Nicholson*** about some of the radical new changes being introduced into the next generation of counterbalance lift trucks. There is a great deal going on in intelligent automatic adaptation, battery power, testing and economy.

10-12

Productivity
High productivity starts at the bottom

Are you ignoring a significant contributor - or detractor - to productivity? Just look down. What condition is the warehouse floor in? Often, the only time it is given consideration is during construction. Here, ***Gian Schiava*** looks at the implications of an uneven, deteriorating or weak floor and reveals some cost effective methods for improving it.

13-15

Safety
Expecting the unexpected

Warehouses are hotbeds of the unexpected - nothing ever stays the same. Yet spotting change before it becomes a safety hazard or reduces efficiency can be difficult. ***Gay Sutton*** finds out how some of the best companies are developing ways to identify unexpected or incremental change and maintain safety and productivity throughout.

Events Calendar

Date, Event, Location, Website	Overview
4 - 6 November 2014 **TRANSFAIRLOG** Hamburg, Germany www.10times.com/transfairlog-expo-hamburg	*Transfairlog* is an international platform catering exclusively to the logistics industry. This platform aims to enable companies optimize freight transport and logistics processes on a Local as well as a global scale. It invites decision makers and experts from various commerce and service companies involved in transport processes and logistics to discuss and improve existing processes. *Transfairlog* serves to display various products and services as well as solutions related to the operations executed in the logistics industry. This event focuses not only on operational equipment or freight forwarding services and inland or ocean shipping but also concentrates on warehouse optimization better known as process control. Container cranes and electric stackers both of which play an important role in logistics are also focused upon in this event.
7 - 8 October 2014 **TOP TRANSPORT EUROPE** Marseille, France www.10times.com/top-transport-europe	*Top Transport Europe* is a 2 day event being held from 7th October to the 8th October 2014 in Marseille, France. This event showcases products like carriers and logistics suppliers etc. in the Logistics & Transportation industry.
26 - 27 November 2014 **TOC CONTAINER SUPPLY CHAIN: EUROPE** CNIT - Paris la Défense, Paris, France www.supplychain-event.com	Reed Exhibitions Group (SITL) and Supply Chain Magazine have joined forces to create the SUPPLY CHAIN EVENT. Representing a new concept, this gathering will take place at the CNIT, Paris la Défense bringing together one hundred exhibitors and several thousand visitors.

Tenderisation

There is more to the process of tendering than simply submitting a price.

Ruari McCallion has been getting a few insights from people in the know: Cat® lift trucks dealers in Europe.

When a company reassesses or reviews its materials handling fleet strategy, it takes time to reach the right decision. After all, a fleet is a major financial outlay and it is important to get it right – to have a fleet that sits nicely in the 'Cinderella zone' – not too big, not too small, just right. Dealers go to at least as much trouble as fleet operators, in order to make sure that they put together the right package, at the right price and with the right equipment. It may sometimes seem that the process is time-consuming and detailed but it is better to take a month or so to ensure everything is right, than to find oneself stuck with the wrong setup for several years.

"When a company reassesses or reviews its materials handling fleet strategy, it takes time to reach the right decision."

Route and branch

"Before we formally submit a tender, the Aprolis team will audit the current pool of equipment: the brands, models, configurations, technical specifications and so on," said Elizabeth Niedojadlo, sales administration manager with France's Aprolis Loueur et Manutencion. "Whenever possible, we will seek to complete a site survey, in order to be fully aware of the different machines, how they are being used and the operating conditions." The team will audit the floors, the age of the buildings, driveway size and review the operator's needs.

"Whenever possible, we will seek to complete a site survey, in order to be fully aware of the different machines, how they are being used and the operating conditions."

In Spain, Bergé Manutención follow pretty much the same process – initially, at least. "We will ask the client what they want to include in the service contract and to identify any particular incidents or issues they have had with forklift trucks in the past," said Ana Martínez, Bergé's product manager. Questions of fleet size and specification will also be raised - whether it is large enough and appropriate for the jobs – and they will be looking for ways to do things better and provide more value. For Impact Handling in the UK, the first step will often be an RFI – a request for information – that is drawn up by the client. It is a substantial document that will go into quite some depth of detail in describing forthcoming requirements including terms of supply, details of product range and operating locations.

Visit the Aprolis website.

Visit the Bergé Manutención website.

1. *The Tendering process begins with a site survey, to provide an understanding of the different machines, their usage and the operating conditions. The floors, the age of the buildings, driveway size and operator's needs will all be reviewed.*
2. *Operating staff will be interviewed and discussions with local management will clarify their needs and safety requirements. This provides an opportunity to offer advice, discuss product benefits, and to investigate cost reduction without changing site efficiencies.*

Documentation

"We will complete the customer questionnaire which generally comprises of: a copy of our company accounts for the past three trading years; company accreditations, a list of the Impact Handling team involved with the tender and their skills, the relevant products to be supplied, a draft copy of the SLA (service level agreement), and information on the geographical location of our service depots to the customer sites, parts support capability, contract management support and the details of the funding to be provided to provide the leasing terms of the equipment," said Peter Walker, Impact Handling's manager – major accounts. As his answer reveals, it is an extensive process, and most UK customers are seeking flexible leasing arrangements, which have their own particular attributes.

The length of time taken to provide initial information to the clients varies. Aprolis says that the more information is provided initially, the sooner the initial tender will be prepared. For Bergé, it depends on whether it is a private sector client or a government department or agency.

First steps

"Private client tenders normally take more time than those for government, where milestones are very well defined," Martínez said. By contrast, the experience in France is that the level of detail in public sector tenders is significant and failure to meet all specifications can result in exclusion. For Impact, the RFI document will be prepared by a team of around four people and can be presented in as little as a week. The pool of potential suppliers will then be whittled down to a shortlist and the real work begins.

"The shortlisted suppliers will carry out a thorough assessment of the products to be handled and site conditions," said Walker. This process will also reveal operational hours and involve interviewing operating staff. Discussions with local management will crystallise their needs and safety requirements. "This process provides an opportunity to offer advice, to discuss product benefits, and to investigate the possibility of reducing costs, without changing site efficiencies." The client will then receive individual presentations from the shortlisted suppliers, which presents Impact Handling with the opportunity to clearly describe its flexible finance terms, benefits of certain products, service support capability, and reduced "out of contract" cost by dedicated contract management and short term hire capability. "Our objective is always to focus on quality, to identify what the customer is not receiving from their current supplier and to determine what best suits their industry needs." In general, the →

Visit the Impact Handling website.

→ average time taken from initiation of a tender enquiry to order placement is about six months.

"The shortlisted suppliers will carry out a thorough assessment of the products to be handled and site conditions."

Public concerns

While Impact does not have a huge presence in the public sector, which is largely dominated purely by cost considerations, Aprolis and Bergé both see government work as important, and have developed the expertise required to ensure they meet the criteria.

"Communication during the tender is very formal. All questions have to be send by mail, and the answer is given to all the suppliers tendering."

"Communication during the tender is very formal. All questions have to be sent by mail, and the answer is given to all the suppliers tendering," said Elizabeth Niedojadlo. Bergé highlighted the fact that public sector tenders might be more transparent, with the benefit of knowing pat facts such as price, specifications and service levels. In Spain, the private sector tends to lease more than public agencies and they will also look for more add-ons. It may also be harder to get onto the 'approved list' of suppliers, as many private companies, especially the larger enterprises, have headquarters in other countries; in France it might be more difficult to get on the list in the government arena.

Train to gain

Other areas requiring attention will include training requirements. If the supplier is bringing in new trucks then there will be acclimatisation and familiarisation to be gone through.

"Generally in the UK the customers will provide training for their operators," said Walker. "Impact Handling always carry out documented installation of new and used equipment. We work with a driver training company called Mentor, who we can put forward should a customer require accredited driver training but this is not a frequent request." Aprolis has chosen to stay neutral, on the basis that it is not an official, accredited training centre. Bergé agrees that training is a customer responsibility but it is prepared to help.

"Other areas requiring attention will include training requirements. If the supplier is bringing in new trucks then there will be acclimatisation and familiarisation to be gone through."

"For us as service supplier, education in issues that affect the state of the truck is important," Ana Martínez said. "For example, it's very important that operators charge and change batteries correctly as this directly affects their life. And it is common for customers to ask for operator training in order to ensure that the truck is driven safely and efficiently, to save energy and reduce operating costs." All Cat lift trucks dealers are committed to ensuring customers get the best out of their fleet, and it all starts with the tender process.

"Our benchmark for success with tenders is to understand the customer, to listen to any difficulties they may have experienced in the past and to put forward a cost effective solution," Impact's Peter Walker concluded. "Most customers are receptive to genuine advice and will guide an understanding supplier to success with their tender offer." ■

Article feedback is welcome: **editor@eurekapub.eu**

3. *It is common for customers to ask for operator training in order to ensure that the truck is driven safely and efficiently, to save energy and reduce operating costs.*

Visit the Mentor Training website.

A sense of the future

Gradual improvement in counterbalance lift trucks is always to be expected, but what larger and more radical changes in design and technology are on the horizon?

Mark Nicholson talks to the Cat® Lift Trucks team at Järvenpää to find out how the future will look and feel.

This article focuses on the counterbalance market, but the Cat® Lift Trucks development and production centre in Järvenpää, Finland, is also able to call upon its long experience in the fields of warehouse and AGV technology to enhance a wide range of products.

The main drivers of change, according to these specialists, are demands for improvement in the user experience, emissions, energy efficiency and economy.

The user experience

"The user experience is a very important factor for customers today, and it's an area in which we feel our focus is different from that of other manufacturers," says Research and Development Vice President Janne Polvilampi.

"Customers actually want to enjoy operating a lift truck, just as they enjoy driving a car. Cars have set new standards for smooth, easy, comfortable and precise operation of all controls, and drivers want to feel the same in a lift truck. Even the design and appearance of the operator compartment now needs to give the feeling of a car. The overall sensation felt during a test drive often distinguishes a higher-quality brand from the rest."

"Customers actually want to enjoy operating a lift truck, just as they enjoy driving a car. Cars have set new standards for smooth, easy, comfortable and precise operation of all controls, and drivers want to feel the same in a lift truck."

One key element of a truck's user interface is the display panel, which is an aspect the company has spent considerable time testing in the market. Janne Polvilampi says, "Again customers are looking for a car-like experience. The display needs to look attractive and to use colour, contrast and design to give very clear, easy-to-interpret readings. It should tell the operator what he or she needs to know at any moment, without unnecessary information."

In electric trucks, programmability has brought increasing flexibility in meeting the needs of different operators and tasks. The aim now, as Technology Manager Jani Mähönen explains, is to make the adjustments in parameters automatic.

"In electric trucks, programmability has brought increasing flexibility in meeting the needs of different operators and tasks."

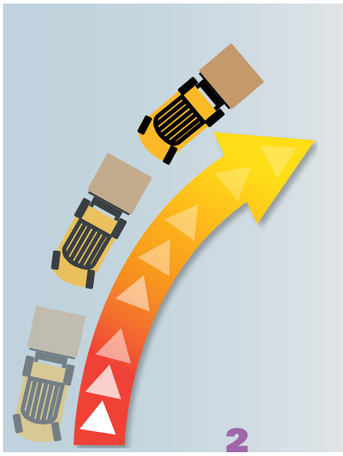
"The curve control on Cat® electric models, which automatically reduces travel speed when cornering or when the forks are raised, is a simple example of a truck adjusting its parameters as circumstances change. In our new 2.5 to 3.5 tonne 80V range we have taken this kind of intelligent automatic adaptation much further (see 'Intelligence and agility'). Instead of pre-setting parameters, we want to see the truck and its controls constantly adapting as the operator works."

He adds, "The trend is to give the driver a simple choice between, say, economy and high performance – similar to selecting economy or sports mode in a quality car. A sense of safety and confidence is important, and our developments are aimed at achieving this without spoiling the overall user experience."

Emissions and energy efficiency

There is a major trend towards battery power, largely due to emissions regulations and the longer-term economy (in terms of total →

1. *The premium display specified as standard on the latest EP25-35N range of 2.5 to 3.5 tonne 80V Cat electric lift trucks is considered a vital part of the user interface and has been the subject of extensive operator research.*
2. *Curve control automatically reduces the forklift truck's speed when cornering or when the forks are raised.*



➔ cost of ownership) that electric technology can bring to many applications. In response, designers are producing electric trucks with the power and resilience to operate in many workplaces that would previously have required IC engine trucks.

The Cat Lift Trucks team points out that the design of its latest range of 4 to 5 tonne electric lift trucks has reduced energy consumption by up to 25%, which shows that there is still scope for significant improvements. But what about using more efficient battery technologies to power the trucks? Janne Polvilampi warns that customers may have to wait a while for any big change.

"The Cat Lift Trucks team points out that the design of its latest range of 4 to 5 tonne electric lift trucks has reduced energy consumption by up to 25%."

"Our global organisation has been closely involved in developing lithium-ion battery technology but at the moment it's too expensive in most user circumstances to give a reasonably quick return on investment. In time, expansion of the electric and hybrid car markets will bring down the cost of Li-ion batteries and make them viable for lift trucks. We see these as a much better option for development than hydrogen cells, which require heavy investment in customer infrastructure."

Of course, for some applications the sheer size and weight of the loads and the harshness of the environment still call for an IC engine truck. At the moment, much of the diesel engine designers' attention is focused on meeting increasingly strict exhaust emission regulations. Reijo Gröndahl, the Product Management and Pricing Manager, says, "For our new generation of 7 tonne and 10 to 16 tonne diesels we have chosen advanced Perkins engines which benefit from over 80 years of continuous development. These modern units are surprisingly light and compact. More importantly, they deliver the same levels of power as older engines but with much lower emissions and fuel consumption."

While engines will undoubtedly continue to become cleaner and more economical, and the trucks will share many ergonomic features with electric models, IC Product Manager Ari Pajusalo does not envisage any huge revolution in diesel and gas counterbalance design in the short term.

"There is no big trend toward diesel or gas, although different regions have their own preferences. In the Middle East there is a demand for use of compressed natural gas instead of LPG, but not sufficient to cover the cost of the necessary developments. Diesel/Li-ion hybrid lift trucks, which our global company markets in Japan, are an option for the future but Europe's interest in hybrids is currently limited."

He adds, "It seems that for IC engine trucks the most important changes have already been made. Evolution will be steady, focusing largely on ergonomics, addition of features for manoeuvring and handling, lowering emissions and improving designs. We will be closely following developments in other IC commercial vehicle sectors."

3. *The user experience is important; customers actually want to enjoy operating a lift truck, just as they enjoy driving a car. Cars have set new standards for smooth, easy, comfortable and precise operation of all controls, and drivers want to feel the same in a lift truck.*

Other economies

The team at Järvenpää notes that increasing land prices are encouraging businesses to build warehouses higher and with narrower aisles. This makes high lifting capability and compact design more important than ever.

Another way in which design of the warehouse and the trucks can be aligned is to integrate charging systems into the trucks, avoiding the need to set aside large areas for battery stations. This is another case where the technology is currently too expensive but may be economically viable in years to come.

While car designers constantly seek lighter materials, lift trucks need weight for counterbalancing. However, there is still an economic and environmental driver for reduction in the amount of material used – particularly when it comes to expensive metals. In the latest Cat electric lift trucks, for example, significant savings have been made on materials and energy through use of compact component layouts.

"In the latest Cat electric lift trucks, for example, significant savings have been made on materials and energy through use of compact component layouts."

CANbus communication, which reduces wiring harness size and complexity, is now standard on most lift trucks. The trend is towards connecting more devices to the controllers via CANbus, and so minimising both material costs and the potential for electrical problems.

Motors are among the components which are becoming progressively smaller, thanks largely to improved cooling efficiency. This saves on materials and at the same time allows the trucks to be more compact.

Dependability

Reliable performance and durability are also essential to minimising the lifetime costs of lift trucks. As they become more technologically sophisticated, particularly in their electronic systems, a fresh approach to quality control and testing has become necessary.

At Järvenpää, extensive use is made of automated equipment to test the endurance and performance of products. This allows trucks to be subjected to continuous, rigorous trials, day and night, which would be impossible for a human driver to withstand. At the same time, automated monitoring via online connections ensures that no failure or defect is missed – even if it is undetectable to the human senses.

A relatively new concept used by Cat Lift Trucks is hardware-in-the-loop (HIL) testing. This computerised facility tests the extensive and complex control systems without the need for a fully assembled truck.

As Technology Manager Jani Mähönen reminds us, "The performance, efficiency and ergonomics of a modern truck may be superb, but that will count for nothing if it fails to operate." ■

Article feedback is welcome: **editor@eurekapub.eu**

4. *Increasing land prices are leading businesses to build warehouses higher with narrower aisles. This makes high lifting capability and compact design more important than ever.*

Intelligence and agility

Intelligent curve control on the new Cat EP25-35N range of 2.5 to 3.5 tonne 80V electric lift trucks reduces speed in a much more natural and comfortable way than previous cornering systems. Industrial Design Manager Kero Uusitalo explains, "The initial speed reduction, as the turn begins, is relatively small. The system responds smoothly to the steering, so that the correct speed is reached without the operator noticing the change or feeling any sensation of leaning as the truck turns."

He continues, "The new progressive controls for acceleration and handling not only give a natural feeling to the driving and lifting experience but appear to 'know' how the operator needs the truck to behave at any time. The driver will notice better handling at low speeds and during precise lifting operations but on the other hand the truck's behaviour will become fast and powerful when necessary, with great efficiency. It's a bit like having a car with sport and comfort modes working together, except that the truck selects them for you automatically according to your driving."

Kero Uusitalo adds that the truck also features a next-generation dual drive system which makes it much more manoeuvrable than other trucks. "The two drive motors act independently, sometimes moving at different speeds and in different directions from each other, but synchronised with the rear axle. A turning point in the middle of the front axle enables manoeuvring in very tight spots. In slippery conditions, this 'four wheel steering' gives better traction and grip – which means increased operating safety. When reversing, the truck turns instantly without pushing back. This results in greater agility, reduced tyre wear and less stress on the rear axle."

He concludes, "We have been thinking a lot about how to make the driver's working life more comfortable and safe, which is why we have added these new features. We believe that the same technology will also reduce the stress and damage caused by poorly loaded cargo."

Cleaner combustion

The latest exhaust emission regulations are Stage IIIB for the EU and the equivalent Tier 4 Interim for the United States. Engines need to comply with strict limits on the levels of:

- Particulate matter (PM)
  – soot and oil residues
- Nitrogen oxides (NOx)
- Hydrocarbons (HC)
- Carbon monoxide (CO)

Key engine advances in the new Cat 7 tonne and 10 to 16 tonne diesels, designed to meet this challenge, include use of a fuel-efficient turbocharger and the latest in diesel particulate filter (DPF) technology. The DPF in these engines features 'passive regeneration', which means that it burns off soot while the truck is operating rather than requiring downtime. Its ceramic filter is maintenance-free and requires no additives such as urea.

High productivity starts at the bottom

1

In the search for maximum output and productivity we tend to compare specs on forklifts and warehouse trucks time and time again, looking for trucks that offer impressive lift or travel speeds and maximum stability, or mast options that will help us retrieve goods more quickly. But there is one almost neglected factor that will greatly affect the performance of any of these trucks: the warehouse floor. So let us take a tour around the world of superflat floors, and see how they can help you achieve your desired output. ***Gian Schiava***

A secure base

First we have to ask the question: what is a good floor? The answer may be almost too obvious: a clean, flat floor without cracks and holes and of course with a long life span. True…but reality requires a more thorough investigation. We begin by looking at the components that comprise the warehouse. What types of goods are stored? Are trucks driven both inside and outside? What heights are goods stored at? And what storage techniques are used? In other words, the logistics of the warehouse determine the kind of floor required.

What type of floor is most common? Well, a large majority of warehouses use monolithic concrete floors. The maximum load pressure is influenced by what lies beneath: was the floor created on a sand base, clay or even softer subsoil. In the latter case, the floor can be reinforced using piles which transfer forces to the deeper permanent layers. If you have a floor with an average load pressure capacity, it will require an enormous investment to re-lay the entire floor. So it clearly pays to get it right first time.

"What type of floor is most common? Well, a large majority of warehouses use monolithic concrete floors."

In hindsight, clever thinking can help. For example, instead of using pallet racking with three pallets on one pair of beams, you could use shorter beams that accommodate just two pallets. This will increase the costs as more frames are added, but it is more economical than getting the floor replaced.

Having a true flat floor is even more important if you lift to heights above seven or eight metres, with reach trucks, for example. The job of retrieving goods is already demanding, but uneven floors may have a larger negative influence than you think. The higher the mast rises the greater the risk of mast movements, which could slow the operation unacceptably. A poor floor can also force a reduction in the operating speed of trucks, increasing costs.

"The job of retrieving goods is already demanding, but uneven floors may have a larger negative influence than you think. The higher the mast rises the greater the risk of mast movements, which could slow the operation unacceptably."

In short, the flatness of the warehouse floor is vital for safe and efficient logistics operations. A non-flat floor not only disrupts activity, but can also affect the driver's safety and the lifetime of the warehouse equipment. Ultimately, the types of goods handled determine the required flatness of the floor. At the other end of the scale, don't forget that a floor that is too good ➔

2

1. *A poor floor can force a reduction in operating speeds, increasing costs.*
2. *Having a true flat floor is even more important if you lift to heights above seven or eight metres, with reach trucks, for example. The higher the mast rises the greater the risk of mast movements.*

➔ for the application means that unnecessary expenditure has been made.

Supporting standards

There are a couple of standards that help businesses achieve a level of floor flatness that ensures safety in the warehouse, and these prescribe tolerances. High bay warehouses, obviously, need a stricter safety margins than warehouses with bulk storage. There are a variety of standards across Europe. The Netherlands keeps a close eye on NEN 2747 or DIN 15185. In the UK, the Concrete Society Technical Report (TR) 34 has been very influential. This guide to the design and construction of concrete industrial ground floors recently received its fourth upgrade. In Belgium, the WTCB TV 204 has been derived from basic European standards like EN 15620. And just a couple of years ago, the German VDMA issued a new directive on the subject and raised the bar even higher. Countries such as France, Italy and Spain follow the generally accepted DIN 15185 or the detailed TR84 standards.

"High bay warehouses, obviously, need a stricter safety margins than warehouses with bulk storage."

Certainly, it pays to have professionals check your floor, and to ask advice about which standard to adhere to. Ideally, you should talk to a neutral company which can advise unbiased about what needs to be done.

Improve performance of an existing concrete floor

Rick Seppen, managing director at Dutch floor consultancy firm Buro Vloeradvies® explains how to improve rather than replace a floor: "Basically, there are two ways to improve the flatness of an existing floor. The first method is an overlay onto an existing warehouse floor. This could be an overlay of concrete Spramex of at least 5cm thickness, or a synthetic layer with a minimum thickness of 2mm.

The other method is to grind the floor. The intensity of grinding depends on the difference between the current situation and the desired result. This may vary from sanding down a few humps here and there, and deploying heavy machinery throughout all aisles."

Besides reinforcing the floor itself it also pays to look at two further matters. Firstly, pay special attention to any declared residual capacities or special features of the warehouse trucks. For example, some stackers can be equipped with supporting legs to increase stability. Another example is the Active Sway Control (ASC) that can be fitted to Cat® Lift Trucks reach trucks, which can minimize mast sway when lifting pallets at the upper bay levels.

"Besides reinforcing the floor itself it also pays to look at two further matters. Firstly, pay special attention to any declared residual capacities or special features of the warehouse trucks."

The other often forgotten countermeasure is to clean the floor on a regular basis. Debris and dirt on the warehouse floor is not only messy, but can cause unsafe conditions. Paper, foil and broken-off pieces from pallets can be slippery and can also cause technical problems for your materials handling equipment. Foil can wrap around axes. Dust and paper scraps can block the cooling. Wheels can get damaged. And finally, messy items can be dragged throughout the warehouse, and that can damage your floor. So cleaning the floor can prevent having to repair an existing warehouse floor.

The only time the choice of floor type is given much attention is usually when a new warehouse is built. However, we have seen that the condition of the floor can have considerable influence on warehouse operations, so it pays to review the situation from time to time. Circumstances change all the time, and good advice from an external expert will always pay for itself. ■

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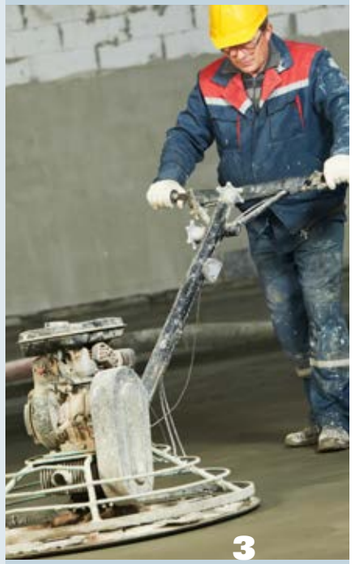

3. *Grinding to improve the surface of the floor. This can vary from sanding a few humps to deploying heavy machinery throughout all aisles.*
4. *The only time the choice of floor type is given much attention is usually when a new warehouse is built. However, the condition of the floor can have considerable influence on warehouse operations, so it pays to keep reviewing the situation.*
5. *Dirt and debris on the warehouse floor can cause unsafe conditions and damage truck wheels and the floor itself. Regular cleaning is highly important.*

Expecting the unexpected

Warehouse safety and efficiency are very closely related, and most businesses aspire to both. So how do the best companies achieve high levels of performance when the environment itself is under constant and often unexpected change?

Gay Sutton reports.

Step into the densely packed interior of a third party logistics provider or, in fact, into almost any warehouse and what do you find? An environment that is under continuous evolution – continuous change. Warehouse managers need to be problem solvers, but planning for change can make an enormous difference, mitigating many of the problems they face, and ensuring the operation is safer and as efficient as possible.

"Warehouse managers need to be problem solvers, but planning for change can make an enormous difference, mitigating many of the problems they face, and ensuring the operation is safer and as efficient as possible."

In many ways, major change is easier to handle. Refurbishing a building, stripping out the old racking and installing new, or introducing a new picking system, can provide a marvellous opportunity to redesign the facility for the greatest efficiency and safety. Expert advisors supported by an internal advisory team can create a highly efficient storage and working space, capable of adapting to future change, performing extremely well with the current workload, and conforming to the highest standards and legislation.

"You only need to look at the cost effectiveness of safety to see that it goes hand in hand with improved efficiency and performance," said Roger Bibbings of RoSPA. "In recession it may seem quite counterintuitive, but the business case for safety is stronger than it is in more buoyant times because you haven't got the sales and turnover to make good the losses that you suffer. You only have to avoid relatively few accidents for safety measures to pay for themselves several times over." ➔

Main image. *Warehouse managers face many challenges in a continually changing environment.*
1. *Major changes, such as introducing a new picking system, provide an opportunity to optimise the efficiency of the warehouse.*

"You only need to look at the cost effectiveness of safety to see that it goes hand in hand with improved efficiency and performance." *Roger Bibbings, RoSPA*

➔ When undertaking a major redesign, however, Bibbings did warn that professional warehouse designers can be a bit remote from the realities of the work environment they are designing. So by providing a small advisory team from the warehouse that includes an experienced supervisor, safety rep and someone from the management team, the designer should be able to address many of the safety and efficiency issues in that working environment. "It may consume time," Bibbings admitted, "but the designers will receive an authentic reflection of the problems with the existing setup, and can design a solution that addresses those."

"When undertaking a major redesign, however, Bibbings did warn that professional warehouse designers can be a bit remote from the realities of the work environment they are designing."

The unexpected

These larger scale changes can be easier to initiate, design and manage than the continuous day to day changes that take place in the modern warehouse. And these latter demand a very vigilant eye and quick response if safety and efficiency are to be maintained.

"The world I work in is third-party logistics," said Steve Clark chairman of the retail and distribution group at IOSH. "We do business with the likes of Amazon and Sainsbury, and run warehouses for them." All the recognised safety practices for the handling and storage of products are strictly adhered to. But one of the challenges of this type of operation is the unexpected.

Large organisations dealing with millions of products will inevitably send materials or products to the warehouse that are totally unexpected, and the surprise might be that familiar products are packaged in a very different way than expected and will require a different method of handling and storage. Or perhaps the surprise is in the nature of the goods themselves. "For example, in a food warehouse, some cake decorations now resemble Roman candles and are therefore classed as explosives," Clark explained. "Other food products may come in aerosol cans, which are not normally seen in the food sector. A whole raft of legislation applies to both of these, and they represent hazards and risk that have to be managed."

Communication matters

Clark prepares for the unexpected in two ways. Firstly, he believes it is essential to build a close long term relationship with the customer. As part of the contract tendering process, there would have been a thorough exchange of details on the products, stock keeping and skus, in order to identify how the goods should be handled, and how and where they should be stored within the facility.

Continuing communication with the customer is then critical, if the warehouse is to be notified of changes and can prepare: examine the handling processes and storage requirements, undertake a risk assessment, and implement the necessary controls and training before the first consignment of new items arrives.

2. *Roger Bibbings, Occupational Safety Adviser at RoSPA.*
3. *Information from advisors within the warehouse team can help warehouse designers better address safety and efficiency issues.*

Visit the RoSPA website, Occupational Safety section.

Visit the IOSH website, Retail and Distribution section.

Contingency planning

Even the best customer, however, may not be aware of the hazards and risks a new product or change in packaging poses. For example, the explosive candles mentioned above may have been documented throughout as cake decoration. For the warehouse manager, this can be the most difficult thing to spot and deal with quickly and safely. Clark's approach is to ensure his warehouse staff are trained and empowered to identify and flag up hazards and issues in the products they handle. "Your front-line staff are often the first to see a hazard while management are unaware of it, perhaps because it has a completely innocuous name."

Bibbings reinforces this view, and takes the concept in another direction, emphasizing the importance of the frontline staff in initiating any change and improvement in warehouse safety and efficiency. "When it comes to safety, the workforce is a great mine of information. Regarding them as an entirely passive resource that has to fit in with the plan that's being developed is wasting an opportunity to tap into the knowledge which you'd otherwise pay consultants tens of thousands of pounds for," he said.

"When it comes to safety, the workforce is a great mine of information."

"So part of the challenge for effective management is to get people to surface their concerns and suggestions in a positive way," he continued. And this is exactly how Clark handles the unexpected, expecting and relying on his staff to highlight problems immediately.

Spotting incremental change

Supporting this direct and immediate action from frontline staff, Clark says it is important to establish an auditing inspection regime. And this can help pick up on the cumulative effect of incremental change. "You can't audit everybody all the time, but a risk based audit program can pick up on deficiencies and you can then correct those. And where things are work well you might look to improve them."

"Nothing stands still," Bibbings said. "Sometimes even small changes are 'latent pathogens', as we say, which means they can store up problems that you don't realise at the time, and lead to issues later on. So it's a matter of looking far enough ahead and having enough flexibility in your system to adapt from one set of circumstances to another."

Clark believes that bringing in a 'new pair of eyes' to look around the warehouse on a regular basis can often highlight issues that are surfacing from cumulative change, which internal staff have not yet identified as warranting change.

Finally, the quality of supervision throughout the warehouse is very important if new procedures are to be implemented successfully. "It's no good just training your forklift drivers or pickers to change," Clark said. "It's vital to ensure those who are going to supervise them are also fully trained to the change and understand what management of risk is required for that change, and this is something that is unfortunately often overlooked."

Looking beyond the warehouse walls

There is much that can be learned across often very dissimilar industries. "I'm a great advocate of business to business learning," Bibbings concluded, "and thankfully there is a great willingness among people to share knowledge and information about safety. So I would say companies need to be benchmarking with each other, taking part in forums and social networking and listen to the grapevine, learning from accidents elsewhere. Then you can forestall problems before they happen." ■

Article feedback is welcome: **editor@eurekapub.eu**

4. *When changes are made, it is essential that supervisors and not just forklift operators and pickers are fully trained and have a complete understanding of the change and its implications.*

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