

# Uplifting technology

Lifting and handling equipment is mature technology, right? Wrong. Steed Webzell looks at some of the innovative solutions to recent industrial lifting dilemmas



According to HSE (Health & Safety Executive) statistics, more than a third of all industrial accidents and the over-three-day injuries each year are caused by handling loads. Most are strains to the back, arms, hands and fingers as a result of pushing, pulling or lifting, as well as sprains to the wrist, thumb and ankle.

So the argument for investment in lifting and handling equipment to mitigate the risks associated with manual handling is compelling. But employers also have a legal duty to reduce exposure to risks. The HSE Manual Handling Regulations states: 'So far as is reasonably practical, companies should avoid the need for their employees to undertake any manual handling operations at work that involve a risk to their being injured.'

The maximum weight recommended for manual handling under any circumstances is now 25kg for men and 16kg for women. Fortunately, however, there are ways of lightening the load, even when the applications are challenging. Few, for example,



are as awkward as London Underground's, where access to its 275 stations for heavy equipment, materials and spares for maintenance and engineering work is restricted, and moving materials can be a logistical nightmare – yet innovative engineering is solving real problems.

One company that has made a significant contribution to handling materials and equipment below ground is Stanley Handling. Its PowerMate L stair climbers are being introduced by Metronet, enabling a single operator to move items weighing up to 680kg up and down stairs.

## Merchant shipping changes

PUWER (Provision and Use of Work Equipment Regulations) and LOLER (Lifting Operations and Lifting Equipment Regulations) extensions for the marine sector, which came into force on 24 November 2006, are attracting controversy that operators, maintenance engineers and engineer surveyors need to know about.

Under the legislation, 'Merchant Shipping and Fishing Vessels (Lifting Operations and Lifting Equipment) Regulations', not only is the marine world brought under the PUWER and LOLER umbrella, but with additional requirements. Unlike land-based LOLER, equipment for shipping now has to be tested before first use and every five years thereafter. And the same appears to apply to lifting accessories.

As Derrick Bailes, chief executive of LEEA (Lifting Equipment Engineers Association) explains: "With land-based LOLER, if you buy equipment that complies with the supply-side regulations, you can take it into use without doing anything further, unless it has to be installed. With shipping, however, that won't work. Whether its lifting accessories, portable equipment, whatever: it all now has to be load tested before use – and then again every five years... We're actively seeking clarification and explanation from the authorities."

## Developments underground

They're ingenious: a self-contained, battery-powered electric motor drives a pair of wheeled legs that lift the unit up and over each step. Unlike triple-axle manual trucks, often used for deliveries, PowerMate provides the motive power for substantial loads to be transported with minimal effort and greater safety.

On another note, Metronet has also been using a 100-tonne crane for the first time on the London Underground infrastructure. The German-built Kirow crane was used to lift and position 22 pre-built track panels, some as heavy as 21 tonnes, as part of a project to renew Watford South Junction.

Staying in the transport sector, the new Penny Hydraulics Tyre Lift is a platform lift designed to handle tyres and wheels, but also other loads up to 250kg, between ground level and a first floor or mezzanine store, for example, in workshops and



## Regulation aberration

Principal legislation governing the deployment of lifting and handling equipment is the Lifting Operations and Lifting Equipment Regulations (LOLER) 1998. Enforced by the Health & Safety Executive, LOLER is not to be taken lightly.

A recent case in point is Falcon Crane Hire of Shipdam, Norfolk. In January, the HSE served a Prohibition Notice on the company, which required Falcon, with immediate effect, to take out of service all tower cranes in its fleet that had not been subject to a thorough examination by an independent competent person.

HSE took the action following the collapse of two of the company's tower cranes in less than four months at sites in Battersea and Liverpool. Both incidents are the subject of ongoing investigations and the exact causes of the failures have yet to be identified, but HSE says it decided to adopt a precautionary approach. It also emphasises that Falcon has co-operated fully.

LOLER requires that tower cranes are thoroughly examined by a competent person every six or 12 months, depending on usage, or in accordance with a written scheme of examination.

designed for integrating into high-volume conveyor production lines; an updated platform-powered pallet range of cat lift trucks, from Finning Materials Handling, for transporting pallets; and a new range of precision Linipower power jacks, from Tsubaki UK, for all sorts of lifting and actuation. And the old problem of rope wear on winches, due to zigzag layering, has been solved by JD Neuhaus, with optional rope guide drum grooving on air winches.

Note also that these developments are not all targeted solely at lifting and handling of products; some focus on lifting people. For example, Zarges UK is now offering one-man mobile aerial work platforms to facilitate quick and safe access to confined areas. Its battery-driven, self-propelled Turbo F7 and F9 are being introduced in response to the Work at Height Regulations 2005. "The Work at Height legislation has re-written the rules to the extent that there are circumstances where a powered aerial platform is the only solution," observes Alistair Twigg of Zarges UK.

Incidentally, on the subject of safety, it's worth also noting that invaluable equipment inspection services are emerging, such as that from Morris Material Handling. Its maintenance services division is currently promoting a managed service for all industry sectors. Branded AIMS (Asset Inspection Management System), it has been created to help users reduce risk associated with load failures.

AIMS starts by compiling an equipment register or asset database covering all lifting equipment to be inspected. With the equipment register in place, the condition of each item can be entered on hand-held computer during inspection, and the report up-loaded to provide accurate updates. That's where the service comes into its own: not only does the database provide an efficient method of identifying defective items and required corrective actions, but it prints 'Certificates of Thorough Examination' for compliance with the LOLER '98 regulations (see panels) on demand. **FE**

**Left: Metronet uses a German-built, 100-tonne Kirov crane to lift and position pre-built track panels at Watford South Junction**

**Below: Zarges UK one-man, battery-driven mobile aerial work platform in operation**

depots. It offers greater flexibility than continuous belt type products and means that limited working areas can be used more efficiently.

And there are other similar problem solvers. One leading confectionary manufacturer that needed to lift 100kg sacks from ground to a mezzanine floor, used Packline to build a lift based on its Mk 5 Compac stainless steel range. Due to the confined space, the equipment had to have a small footprint and be manoeuvrable. In this case,

the lift height and space specifications were met by using a twin-column arrangement, with the second column independently powered. With a tray fixed to the base of the second column, once raised to its full height, the attachment could be powered up.

All of which shows that, although we've needed mechanical assistance with lifting and handling for decades, engineering development goes on. New applications in sectors as diverse as manufacturing, process plant, utilities, commercial vehicles, railways, marine and the armed forces help to ensure that there's likely to be at least the basis for a lifting solution, however difficult the requirement.

Recent developments, for example, include: a low profile (80mm) mini scissor lift from Airlift & Tilt,

## Pointers

- Ensure that you purchase the correct lifting and handling equipment for the operation
- Ensure that it is regularly inspected and maintained
- For awkward and challenging applications, ask suppliers to propose solutions, and ask colleagues in SOE about solutions developed for other industry sectors