



# Raise high

the pallet, engineers

It's too easy to go for the same old equipment for yet another lifting or handling task.

Brian Tinham examines some of the options and the engineering issues in specifying plant

**Right: fork lift trucks are hard to beat, but, when it comes to mezzanine floor lifting, there are other ways**

Sometimes, fork lift trucks (FLTs) aren't the only answer to a lifting and handling task. Yes, they could do the job, but not without site preparation – and that includes risk assessments and setting up processes to mitigate the dangers of moving trucks, managing the driver and banksman training and documentation, as well as maintaining the fleet.

In short, FLTs may be ideal for loading lorries and for warehouse operations, but there are sometimes better alternatives when it comes to moving goods – for instance, to and from ground and mezzanine floors. In that example, fixed goods lifts may well be the answer, because they can be surprisingly inexpensive, require very little training and (assuming they are specified, built, installed, commissioned and maintained correctly) present little or no health and safety issues.

So says Robin Penny, production director at lifting and handling equipment specialist Penny Hydraulics. Himself a mining engineer, Penny insists on going back to engineering basics for every lifting challenge that can't clearly be handled simply by using hand-operated chain blocks, hydraulic jacks, electric hoists, Genie material lifts and the like – although, even there, he's a firm advocate of proper education and training.

For him, it's not only about adhering to the letter of the LOLER (Lifting Operations and Lifting Equipment Regulations 1998) and PUWER (Provision and Use of Work Equipment Regulations 1998) regulations, with their risk assessments, statutory thorough examinations, documentation and the rest – important though these are. It's also to do with specifying the right tools for the task by taking the long view and applying an engineer's mind.

Taking the mezzanine lift example again, Penny says: "You need to get on site, see the job and location, talk to the operators and take your own measurements. Even if they only want to replace a forklift truck with a similarly rated fixed goods lift, it's not always as straightforward as you might think."

Wise words and they apply whatever the lifting and handling situation. So putting meat on the bones, as a plant engineer, you need to start by asking what weight is to be lifted, he advises. "The stock answer is 'It takes two men to carry it, so about 1.0 tonne'. So they're big men, then! It's quite alarming how little people know about their own lifting jobs, and the fact is you don't want to over-specify the lift. That just adds cost."

## Uplifting challenges

But you also need to know how big the goods are, their centre of gravity, and the nature of the load and handling requirements. "Our most challenging load was stained glass panels for Canterbury Cathedral – although curb stones are also pretty awkward, as you can only hold the top, due to the way they have to be lowered into position. We have several ways of holding them, from end-grabs to vacuum lifters," explains Penny. He also refers to tyres for ATS, where Penny supplies lifts for car and lorry wheels. "A car tyre lift costs around £9,000, whereas a lift for lorry tyres is nearer £14,000, because of the different safety arrangements and interlocks you need with the much larger tyres, to prevent people falling through the gates."

Next, there's the duty cycle, nature and frequency of operation. "This greatly affects the specification of any motors. Our Load Lift, for example, which is typically designed to get one lorry tyre in and out of a van, is very different to our

## Pointers

- Fork lift trucks seem the obvious choice for anything that requires more than chain blocks etc – but not always
- Goods lifts can be low cost, with very low H&S issues
- Engineering specification for goods lifts is not always as simple as it might seem
- Duty cycles, materials and site conditions are key points
- Meanwhile, fork lift truck technology is moving on
- Key points include newer, greener power sources, advanced transmissions and driver management add-ons

Mezz Lift, used to deliver large numbers of tyres up to a mezzanine floor," he points out.

The questions go on. What are the operating conditions? "Is it in a damp cellar, as many of our beer delivery lifts are? We recently made a goods lift for an oil rig to get luggage to and from the accommodation block. It was open to sea spray and in a flameproof area – meaning it had to be air powered." How is the material to be loaded? "Manually loading boxes of paper may require a waist high platform, but a 1.0 tonne pallet needs level access." Who is going to use the device? Can they be trained? Can the general public gain access, in which case does it need to be locked after use?

Just as important, how is the lift going to be installed? It's one thing to build a machine in the factory, but it then has to be safely handled and assembled in situ. And how



is the lift going to be serviced? "The nature of lifting machines means that there is a change in level, so often risks associated with working at height come into play for service engineers," advises Penny. "The manufacturer and operator have a duty to co-operate to set up safe systems, even if that means changes to a building or vehicle."

So much for specification; what about best available technologies? Unsurprisingly, Penny is a hydraulics fan, although he insists that the firm offers electric operation on many of its specialist cranes and jibs. "Hydraulic motors are simple, safe and reliable; it's easy to set overloads using relief valves; and, by using twin chain drives, each capable of taking the safe working load, you can build in redundancy, take in different height ranges and convert lifts to work on slopes."

Also, from a maintenance perspective, all you need is an annual service, interim inspection and the annual thorough examination. And, as a general

## Fork lift trucks update

Nothing in industry stands still, and that maxim certainly applies to fork lift trucks! However, not everything is always as it seems. For example, while much of the industry talk is about hydrogen fuel cells as the new power source for forklifts, the reality is this technology is a good decade away, according to Bill Goodwin, sales director of Jungheinrich UK (right).

Quite apart from hydrogen's hyped green credentials (which quickly collapse when current production processes for compressed or liquefied gas are considered) he points to "site supply problems, health and safety concerns over refuelling and the lack of service back-up through established suppliers".

Goodwin's view: "The lead acid battery remains the industry standard forklift power source. In the short term, lithium-ion batteries will be available with benefits of rapid charging, long running times and compact dimensions. Mid term, over the next two to three years, methanol fuel cells will be available for forklifts."

LPG is another: the Palletline palletised distribution networks, for example, recently bought a fleet of 40 LPG-powered 2,000kg Hyster Fortens lift trucks for its distribution hubs in Solihull, near Birmingham, and Perivale Park, London. Several aspects are remarkable here. First, Palletline is the first such operator to go live with a drive-through, side-load operation, thus achieving total de-pedestrianisation and realising Health & Safety standards well beyond current regulations.

Second, the trucks, which were supplied by Barloworld Handling, feature advanced technology aimed at improving productivity and efficiency, while cutting running costs. Palletline operations director Mark Pulford cites the machines' Duramatch transmissions, which are equipped with Hyster's ADS (auto-deceleration system), programmed to slow trucks when the accelerator pedal is released, so resulting in reduced brake pedal usage and a claimed 60% increase in brake life. Power reversal is also said to make even the most aggressive drivers' direction changes smooth, further increasing tyre life by up to 50%.

Interestingly, Barloworld has also installed a telemetry device on each truck, which automatically uploads run time and availability data to its fleet web portal. That's not just about management statistics: if there's a problem, the truck sends a fault code, so that, when a technician is despatched, he or she has the correct parts. Also, Palletline's operations management team can use the information to aid continuous improvement.

But, as with all lifting and handling applications, it's horses for courses.

Drainage equipment supplier Wavin's choice of 60 new and refurbished FLT's – all Jungheinrich DFG low level order pickers, reach trucks and counterbalanced trucks – was partly due to their hydrostatic transmissions. The truck engine drives a reversible variable delivery pump that supplies a fluid motor for the drive wheels, making it robust and smooth enough for intensive shuttling operations, such as lorry loading and unloading. Also, these FLT's are equipped with a drive control system that automatically adheres to the site speed limits whenever the truck's forks are raised.

And it's not just about the FLT's: sometimes it's damage limitation. Palletised goods distributor Palletways reports success with a fleet management system, from Transmon Engineering, designed to identify operator training requirements. Installed on its new fleet of 51 Caterpillar GP25N LPG forklift trucks, Data Savure ensures that only authorised, qualified drivers can operate the trucks' ignition, and then monitors any impacts. It also records operational hours, so that maintenance schedules can be kept.

rule, these lifts are not subject to all aspects of the BS7255 2001 Code of Practice for safe working on lifts. For example, they don't require shaft refuges – not least because operation is by press-and-hold button, not send and receive. **FE**

