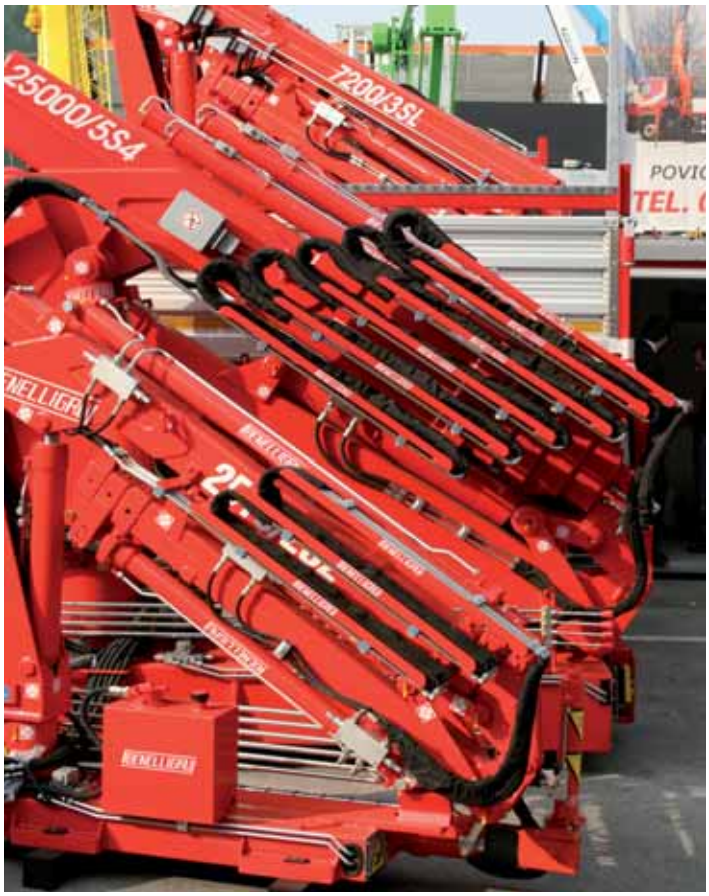
Latest developments in loader cranes

Whether you are a manufacturer, supplier, installer or user, the latest changes to loader crane legislation will affect you. Cranes & Access - with the help of experts within the specialist trade association ALLMI - attempts to put the complicated new rules into plain English. We also take a look at some of the latest models and developments in the lorry loader market.



In the past loader cranes were primarily used for loading and unloading materials onto and from the vehicles on which they were mounted. In the last few years, however, capacities and boom lengths have increased significantly and larger units are now frequently used for the handling and installation of materials, not just for delivery. This extended scope of use in more complex situations has brought about a requirement for a greater degree of planning, set up, training, maintenance and supervision than for the lorry loader's traditional role.

For those involved with lorry loaders, there are four main areas that have changed or are changing very shortly - engine management systems, whole vehicle type approval, a new code of practice BS7121 Part 4 and the third amendment to EN12999 A3. As the last two have the most day-to-day impact we will focus on these. If you are involved in off-road timber handling cranes, the main change that does not apply is the stabiliser interlocks in EN12999 A3 - all the rest does.

BS7121 Part 4

BS7121 is the British Standards code of practice for the safe use of cranes, currently comprising numerous parts (please don't ask where the other parts went!)

- **BS7121-1:** Cranes, general
- **BS7121-2:** Inspection, testing and examination of cranes
- **BS7121-3:** Mobile cranes
- **BS7121-4**: Lorry loaders
- **BS7121-5:** Tower cranes
- **BS7121-11:** Offshore cranes
- **BS7121-12:** Recovery vehicles and equipment.
- **BS7121-14:** Side boom pipelayers

This article focuses on Part 4 Lorry Loaders. The closing date for public comment on Part 4 passed at the end of October so it will hopefully be ready for a March/April 2010 publication.

A 'Best Practice Guide' giving more specific guidance - jointly published by ALLMI and the CPA, with involvement from the HSE, UKCG, SAFED, Pre-Cast Flooring Association and one or two others - will be available free-of-charge via all websites when published hopefully by Christmas.

Essentially, Part 4 is concerned with the safe use of loader cranes and was brought in to deal with the increase in lift planning requirements and the use of the larger loader cranes which now compete 'head to head' with smaller mobile cranes.

Part 4 now requires users of loader cranes to have an Appointed Person (AP) who decides how the lift should be carried out and is ultimately responsible for the lift. Even if a site has a 'crane co-ordinator' (whose role is to deal with multiple machines - loaders, mobiles and tower cranes - on a site) or a 'lift supervisor' in charge of a slinger/signaller and crane operator, there still has to be a nominated AP, but their level of involvement depends on the complexity of a particular lift.

Currently, a self employed brick haulier probably carries out all these roles himself - AP, lift supervisor, slinger/signaller and operator. The new rules will require an AP (which can still be the owner operator) to assess the lifting operation - including approval of all risk assessments, lift categorisation and method statements - but once carried out, should not directly affect the loader crane operator for Basic lifts so long they fall within the identified parameters of that lift.

The AP does not need to be involved further and is not required to visit the site. However, if the driver arrives on site and finds that the lift is not as straightforward as the standard parameters, then the AP must reassess the lift deciding if it is now a Standard (or Intermediate) or Complex lift (see table 1 below).

This will mean that there will have to be an AP involved in varying degrees depending on the specific complexity of the operation, and could therefore incur additional costs - costs that mobile crane hirers already carry when working on contract lifts. The rules do not really change the way complex lifts are handled by loader cranes, as strictly speaking they have always been subject to the same rules as mobiles - however the new code formalises this in a document that has legal implications.

The table above outlines the type of lift by rating the load (Lift Complexity) and the site conditions (Environmental) in three categories from 1 - Basic, 2 - Intermediate or Standard as it is currently referred to) and 3 - Complex.

Identifying the complexity of the lift is the key and we have used just one or two of many practical examples to give an idea of what is involved in each category.

Table 1: *Calculating lift complexity*

Environmental complexity (E)	Load complexity (L) 1	2	3
3	Complex	Complex	Complex
2	Standard/ Intermediate	Standard/ Intermediate	Complex
1	Basic	Standard/ Intermediate	Complex

It should be noted that the current wording in the Lift Complexity is Basic, Standard and Complex however many in the consultation process believe that the term 'Standard' implies 'normal' as opposed to the second of three degrees of lift complexity and is therefore potentially (dangerously?) misleading. Therefore the word Standard may be changed to Intermediate in the final version.

Lift Complexity - Changes in the Environment

Basic Lift - a straight forward lift, for example lifting roof trusses (Load 1) from the back of the truck and placing them onto the ground. The ground conditions are good, it is on a secure site with no pedestrian access or other environmental hazards and there is a continual line of sight between the operator and the load. (Environmental 1).

Standard or Intermediate Lift - a slightly more complicated lift such as unloading roof trusses and placing them at a higher level or into place on the building with personnel standing on the roof at height. Here, although the load remains the same (Load 1) the lift is complicated because of the added dimension of lifting onto the building where operatives are working and the line of sight may also be obstructed (Environmental 2) resulting in an Intermediate Lift.

Complex Lift - Staying with the same job placing the same roof trusses (Load 1) but being lifted off the delivery vehicle in a busy suburban street and placed directly on to the roof structure out of the line of site of the operator and with personnel standing on the roof, perhaps with the added complication of soft or slopping ground overhead power lines, scaffolding or other obstructions (Environmental 3) results in a Complex Lift.

Lift Complexity - Changes in the Load

1. Lifting street lamp components

Basic Lift - a vehicle is to be loaded with new lamp standards in a depot.

Complexity Index Environmental 1, Load 1

Standard/Intermediate Lift - Old lamp standards are to be unloaded in a depot with a risk that the standard will collapse due to age and corrosion.

Complexity Index Environmental 1, Load 2

Complex Lift - Old lamp standards are to be extracted adjacent to the open lane of a highway.

Complexity Index Environmental 3, Load 2

2. Lifting a boat

Basic Lift - The loader crane operator has clear sight of the load path, the ground is firm and level and the load will be placed on the ground.

Complexity Index Environmental 1, Load 1

Standard/Intermediate Lift - The boat is to be lifted into water and additional hazards are present due to the presence of water and the need to release slings adjacent to water.

Complexity Index Environmental 2, Load 1

Complex Lift - The boat is to be lifted from the water, the weight of the load is not accurately known and the centre of gravity is likely to shift during lifting.

Complexity Index Environmental 2, Load 3

Activity	Role	Lift Category		
		Basic	Intermediate	Complex
Planning	Appointed person	Required	Required	Required
Site Visit	Appointed person	Not essential	May be required	Required
Lifting operation	Appointed person	Not essential	May be required	Required
	Crane supervisor	Roles may be combined in one person	Roles may be combined in one person	Required
	Operator	Roles may be combined in one person	Roles may be combined in one person	Required
	Slinger/ signaller	Roles may be combined in one person	Required	Required

Table 2: *Combination of Lifting Team Roles*

The above examples show changes in the site conditions and changes in the complexity of the Load, which will vary from basic to complex according to its size, weight and uniformity. Generally, if the weight or centre of gravity is not known it is not a basic lift and in the example of the boat, if the centre of gravity is likely to shift during lifting then it is in the Complex category.

Table 2 - an extract from the Best Practice Guide and is not in BS7121 Part 4 - outlines the various roles of the lifting team showing that every lift must have an AP, even if the crane supervisor, operator and slinger/signaller may be carried out by one person.

In some circumstances it may be appropriate for the AP to also assume other roles such as crane supervisor, slinger/signaller or operator. Of course, the person undertaking the combined role must have achieved the necessary competence for each role. This will of course mean a huge demand for various loader crane courses. There are already CPCS accredited AP courses and ALLMI is in the process of developing its own 18 module, AP course specifically designed for users of loader cranes giving them an edge over existing courses which deal mainly with mobile and tower cranes.

EN12999 A3

The third amendment to the European Crane and Loader Crane standard will come into force on 27th December 2009 when it is published in the European Journal.

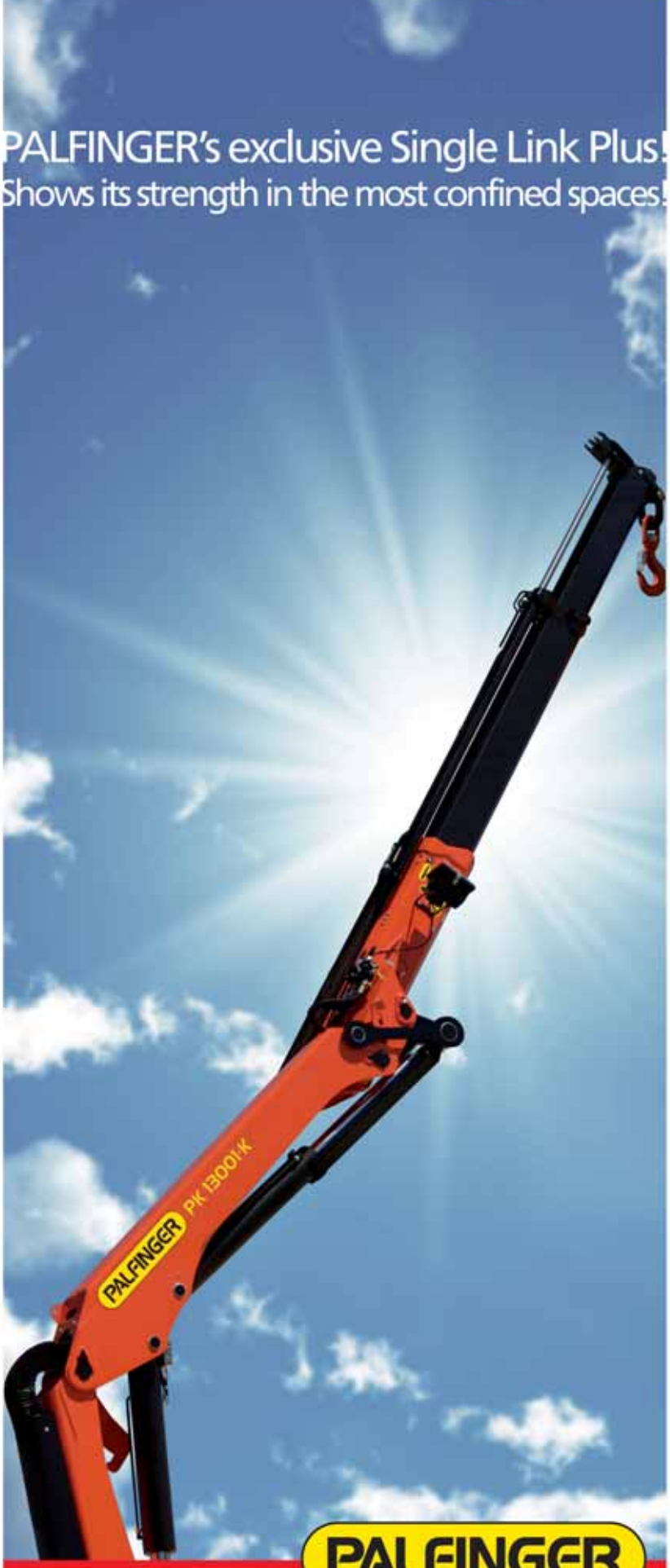
Originally introduced in 2002, EN12999 has already undergone two revisions. In 2004 it mandated shrouding hoses within one metre of the operator, fitting an emergency lowering facility and emergency stop and an acoustic warning if operating at more than 12 metres outreach. In 2006 the A2 revision introduced 'stabiliser not locked' visual warnings for manual stabilisers amongst other amendments.
The latest A3 revision is the final modification that can be made (only three revisions are allowed for any Standard). Should further 'changes' be required the standard must be entirely re-written.

The principle amendments introduced by A3 are that the position of the stabiliser legs must be monitored by the Rated Capacity Limiter (RCL) (effectively introducing mandatory stabiliser interlocks or sensing), the complete installation must also be noise tested, the 'boom height/not stowed' and 'manual stabiliser not locked' warning devices must be both visual and audible and finally manufacturers must ensure that the pressure exerted through the stabiliser foot does not exceed 4 MPa.(5.8 PSI), which may require the mandatory use of outrigger mats on some cranes.

The first item affecting distributors and purchasers of new loader cranes is confirm which standard the cranes that are currently in stock conform to - A3 or the previous A2? The current economic climate and slower sales mean that there are a number of dealers with equipment in stock that complies with the old A 2 standard.

ALLMI has taken the view that any crane built before 27th December 2009 falls under the rules of the A2 revision of the standard and should not be required to conform to the latest revisions, even if it is installed after this date. However the Declaration of Conformity should state clearly that the crane conforms to EN12999 A2 and not A3 and

PALFINGER's exclusive Single Link Plus!
Shows its strength in the most confined spaces!



PALFINGER

World premiere for the new *High Performance* single link knuckle boom cranes in the 13 to 18 mt class. High strength fine-grained structural steel, state-of the art equipment combined with an unbeatable ratio of dead weight to lifting power. PALFINGER's Single Link Plus is the first 15 degree reverse linkage knuckle boom on a single link knuckle boom crane that offers maximum precision and flexibility even in the most confined spaces.

PALFINGER AG · 5101 Bergheim/Salzburg, Austria · E-mail info@palfinger.com · www.palfinger.com

customers should be made aware of this at the point of sale and the differences between the two standards should be highlighted. All this should be documented so that owners can fulfill their own obligations under PUWER, as the owner of the equipment is ultimately responsible for providing the correct equipment for its employees.

The very nature of this situation also means that it is impossible to have a cut-off date for 2009 plate (A2) loaders being installed after A3 comes into effect. So anyone subsequently examining/testing the loader crane must take into account the year of manufacture from the cranes serial number plate bearing the CE mark, rather than the vehicles date of registration.

Stabiliser interlocks

On loader cranes with a rated capacity of 1,000kg (or 40,000Nm) and over, the overall stability of the vehicle has to be included in the safety function of the Rated Capacity Limiter (RCL). In other words, the RCL must either be linked to specific position stabiliser interlocks or be capable of monitoring the position of each stabiliser and then adjust the allowable lift capacity depending on their position. There are many different systems available to achieve this - some more technically sophisticated /user friendly than others.

Taking it further

Some manufacturers are suggesting that the new standard requires more than just linking the stabilisers into the capacity limiter. Their argument is that the crane may set up with its stabilisers fully extended and the truck levelled, allowing it to lift its maximum capacity. However if the ground is soft and the outrigger mats too small for the conditions, the crane may start to tip or tilt causing instability.

Those arguing this point have incorporated sophisticated tilt sensors into their load systems which can differentiate between crane tilting caused by allowable chassis flex and a loss of stability caused by shifts caused by outriggers or ground conditions. An interpretation such as this goes much further than the current rules covering aerial lifts and mobile cranes and it could be argued that the state of the art is not sufficiently developed to mandate such an interpretation.

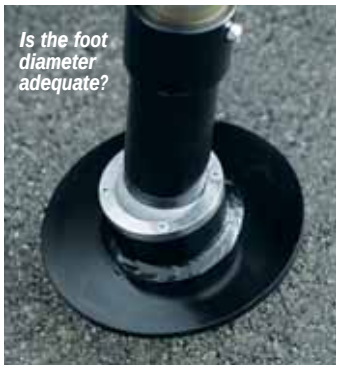
Noise

Another new area is noise levels of the loader cranes while operating. This now has to be tested after the crane has been fitted and linked up to its power source so is clearly the installer's responsibility.

Testing using a hand held, Class 1 Type 1 sound level meter is relatively quick and easy. The test should be taken at a distance of one metre and at a height of 1.6 metres from the loudest point in accordance with EN ISO 11201:1995. The crane has to perform all working movements (slewing, boom articulation, boom extension and hoisting) over the full operating range at about 50 percent load capacity and at normal speeds. The A-weighted and peak C-weighted emission sound pressure level data taken needs to be noted in the operators' manual and technical documentation. In the case of the A-weighted figure it must either state that it is less than 70 dB(A) or show the specific figure if more than this. Should the reading exceed 80 dB(A) a full sound power level test (which is both extensive and expensive) should be carried out.

ALLMI is in the process of compiling comparative emission data for similar loader crane installations which hopefully will do away with physically conducting a test on each and every installation. The sound power level test is a very complex exercise requiring specialist equipment and very specific test criteria and is very expensive to carry out - about the same price as an average 10 tonne/metre crane installation.

Part of HMF's sophisticated stability system including the ECT 5320 and RCL 5300

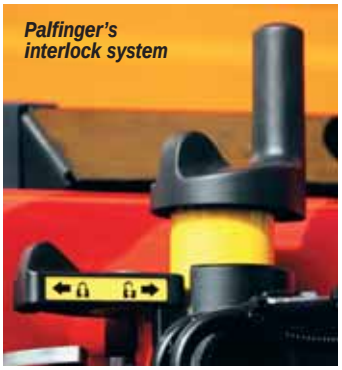


Is the foot diameter adequate?

Ground pressure

The maximum ground pressure that is now allowable under the stabiliser foot is 4 MPa (5.8 PSI) and it is down to the manufacturer or installer to ensure that whatever the size of loader crane, the foot diameter is adequate or they must provide outrigger mats where necessary.

Consideration also needs to be given where the stabiliser interlock system allows partial or non-deployment of the lateral stabiliser beams. It should also be checked that the resultant maximum pressure through the foot still remains less than 4 MPa in these positions. This information is usually available from the manufacturer or can be checked by using the information and formula provided by in the ALLMI Guidance Note 13 - Stabiliser Forces.



Palfinger's interlock system

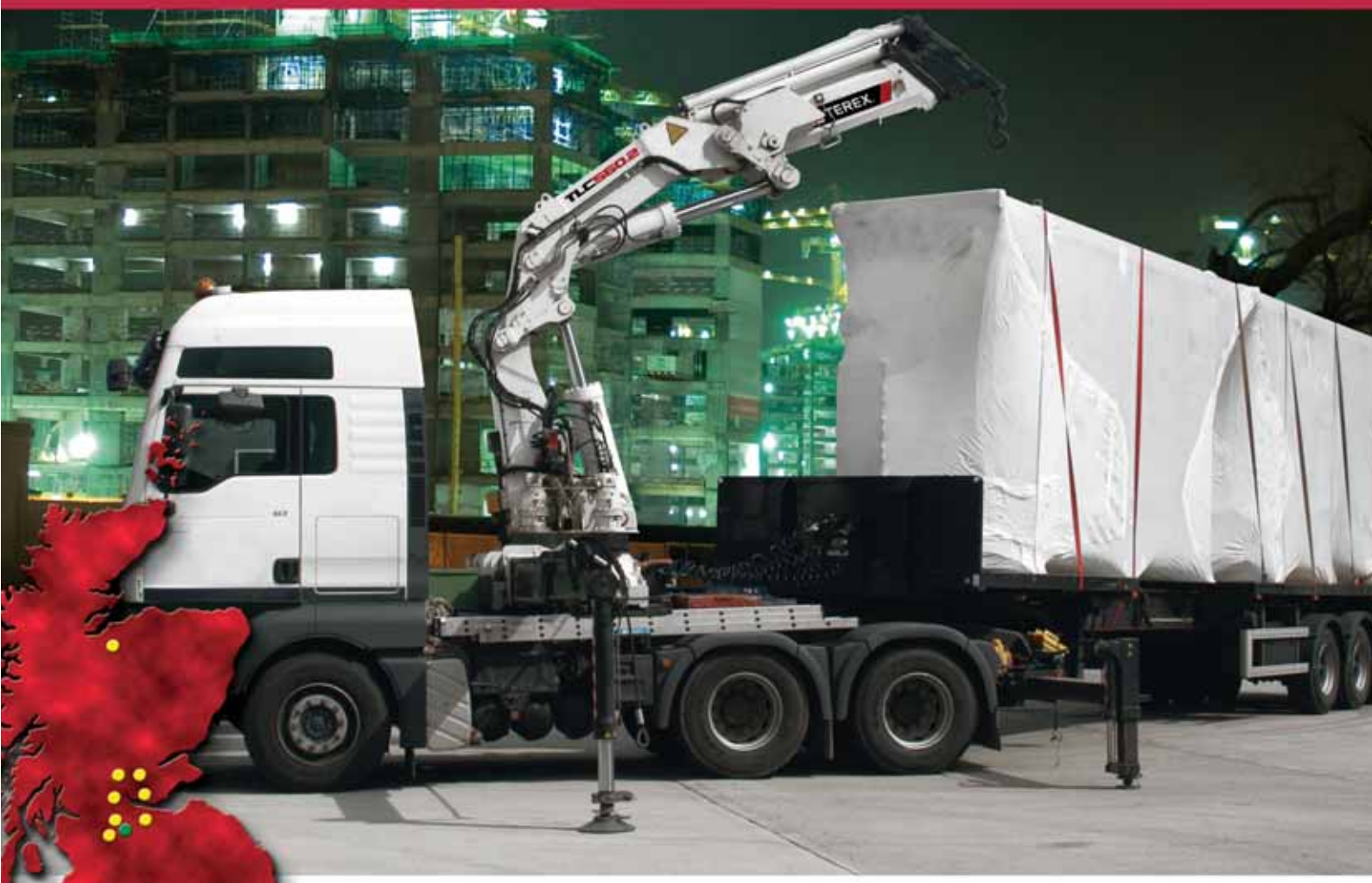
For example a 10 tonne/metre B4 rated crane mounted on an 8x4 chassis for tipper grab applications can work at full capacity with the stabiliser beams fully retracted, resulting in higher forces through the foot pad. All stability test certificates must state the position of the stabilisers at the time of the test.

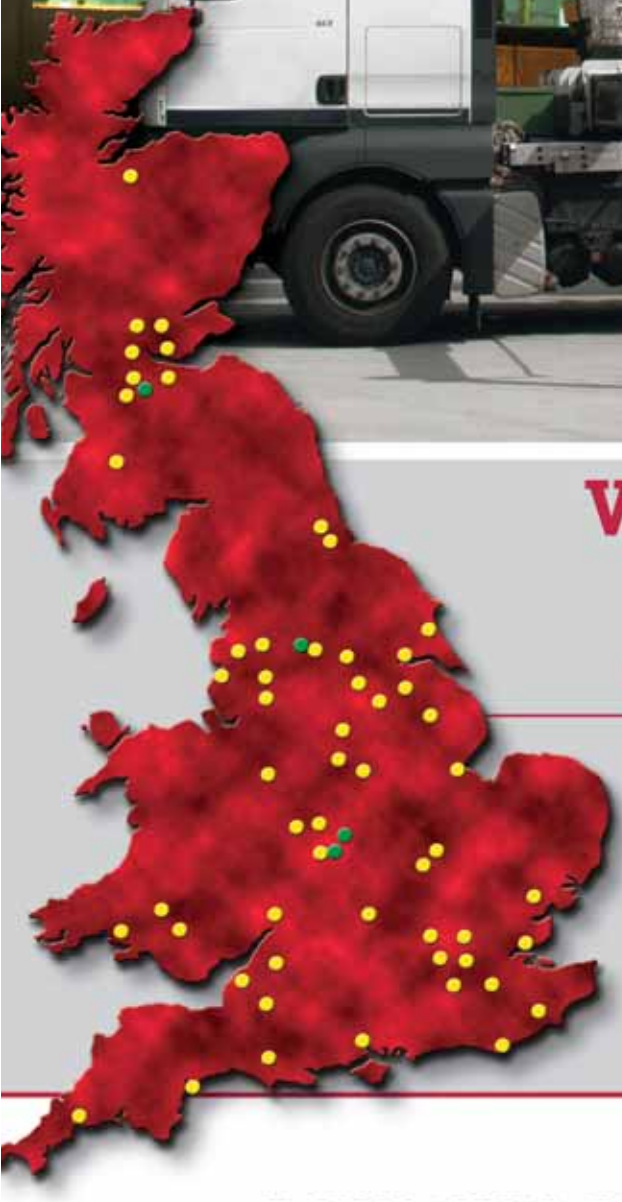
Boom stowed stabilisers locked?

One final change is for the audible and visual warnings in the cab for the 'boom over height (boom not stowed)' and 'manual stabilisers not locked'. ALLMI members have, for several years, advocated the fitment of both but it is now mandatory to have these devices fitted on all A3 machines. There is no requirement however to retro-fit them to existing cranes.

An integrated stability control panel.

TEREX® LOADER CRANES





Versatility & Reliability
Power & Performance
Nationwide Coverage

More versatile, more powerful and completely dependable, every Terex® loader crane is supported by a specialist team whose knowledge and technical competence is unmatched in its field. A team which prides itself on the long term relationships and the close rapport it has with its users.

Subscribe to Terex® Cranetalk.
Email now for your free copy.

TEREX®

T: 01698 503276 M: 07771 654986 James.Smith@terex.com

www.terex.com

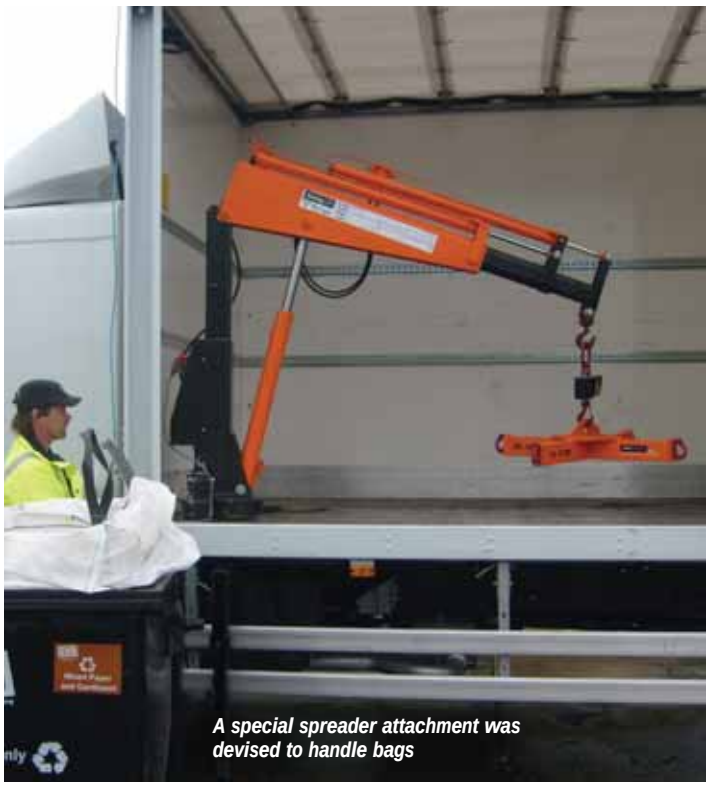
In for a Penny (or two)

UK-based SWR recycles automotive, industrial and general business waste and has seen demand for its services grow significantly in recent years. As it became ever busier, it realised that substantial efficiencies could be made by using vehicles specially configured for the loading and transportation of waste.

So after evaluating and identifying improvements in the way it handles a wide range of items it collects from customers' premises - largely body shops and car dealerships which generate a wide range of different waste products - it came up with a concept based around an 18,000kg Renault vehicle with rigid body on the offside and curtains on the nearside.

Paper, cardboard and plastic packaging material is now stored in IBC dumpy bags (rather than wheelie bins) or baled on site prior to collection. Meanwhile metal waste, such as body panels, brake discs and general scrap, is stored and collected in steel stillages.

The wheelie bins are still used but are now lined with dumpy bags which are removed and loaded onto the vehicle. Up to 15 bags can be carried in the same vehicle space as four wheelie bins, allowing better customer service, a reduced number of vehicle movements and more customer sites per journey before the vehicle is full to capacity.



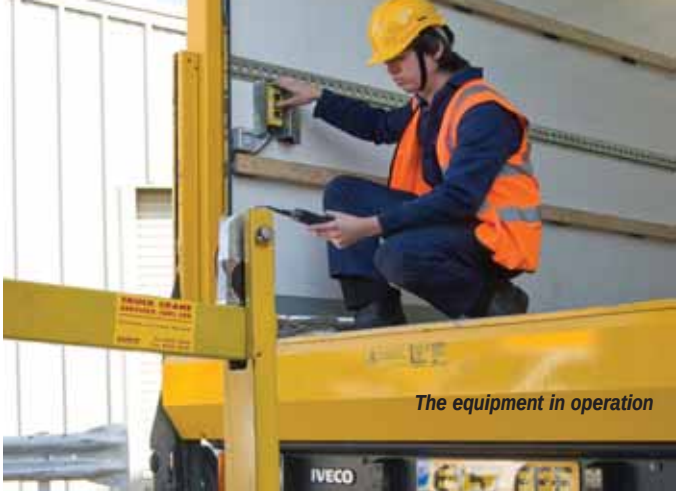
A special spreader attachment was devised to handle bags

The front two thirds of the vehicle are used for the dumpy bags and other items while the rear section is used for the stillages, which are loaded by hand-pallet truck using the vehicle's tail lift. The switch from moving wheelie bins meant that an alternative method of handling was required for the bags. A crane was the obvious option but most of the products available had a maximum capacity that was well above the requirement making them too expensive and possibly heavy. The search led SWF to Penny Hydraulics from which it ordered two Swing Lift V20 cranes for the new collection vehicles.

"We didn't need a really big crane but our bodybuilder mentioned the Swing Lift V20 and although we looked at competitor's products, this was quickly identified as being the most suitable," says Mark Hammett, fleet and compliance manager at SWR. "It is a very simple crane with plenty of capacity for the job and the small amount of space it takes on the vehicle makes it ideal for this type of work".

The Swing Lift V20 is the largest crane in the Penny Hydraulics range. It has a maximum capacity of 2,000kgs at 1.4 metres and can handle 720kgs at its full extension of 3.5 metres. This performance allows SWR to handle IBC dumpy bags, paper bales and other loads in all configurations of the crane. In general use the V20 is mounted at the front of the load space and can lift items into any position in the front two thirds of the vehicle. For added flexibility Penny Hydraulics supplied an alternative mounting socket that has been fitted towards the centre of the nearside load space so that it can handle items to any point on the vehicle. The crane is completely self contained and can be repositioned simply by unplugging the power supply, transferring it to the second socket and reconnecting the power. Like other Penny Hydraulics cranes, the V20 folds down to the king post when not in use to maximise the available floor and load space.

After assessing SWR's operational requirement Penny Hydraulics devised and constructed a special spreader attachment for the crane that allows the bags to be handled safely even when the straps cannot be drawn together, a common occurrence in waste collection. The spreader is a simple cross that connects to the crane's hook and has safety catches at the end of each arm to lock the bag straps into place for security during lifting. It is typically used in conjunction with a weighing device that allows SWR to measure the amount of waste collected from each customer so that it can provide audits and charge for services accordingly. The crane was supplied with a remote wandering lead controller allowing the operator to stand in a safe position well clear of the load and vehicle while loading and unloading takes place.



The equipment in operation

Easier LOLER tests

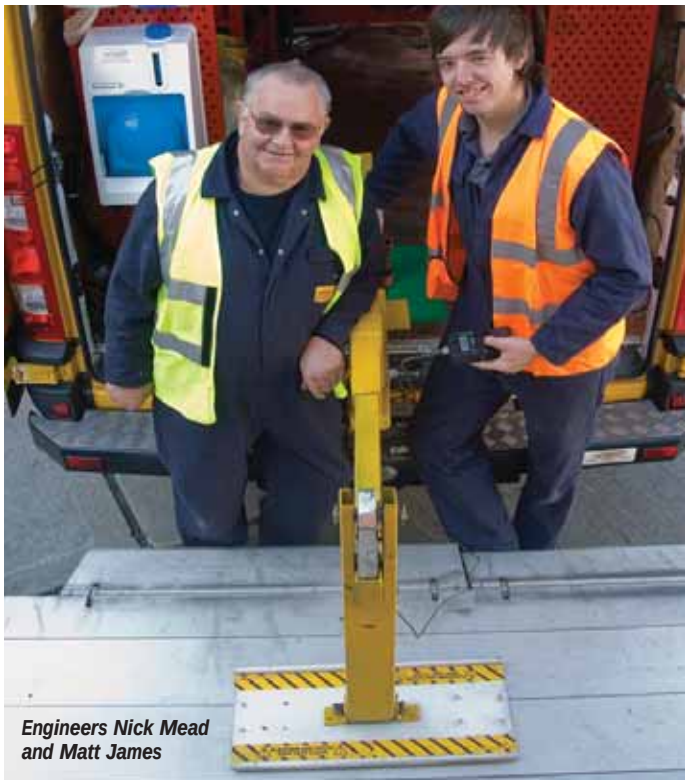
Providing the right weight needed for the LOLER 125 percent tail lift overload test can be a problem. The heavy weights required to perform the test are not usually carried on service vehicles.

Truck Crane Services (UK) has recently developed a device which is easier and more reliable than weights. The device, devised by TCS director Guy Pomroy and two TCS engineers, Nick Mead and Matt James - can be stowed in the service van and is efficient, safe, light-weight and one-man operated.

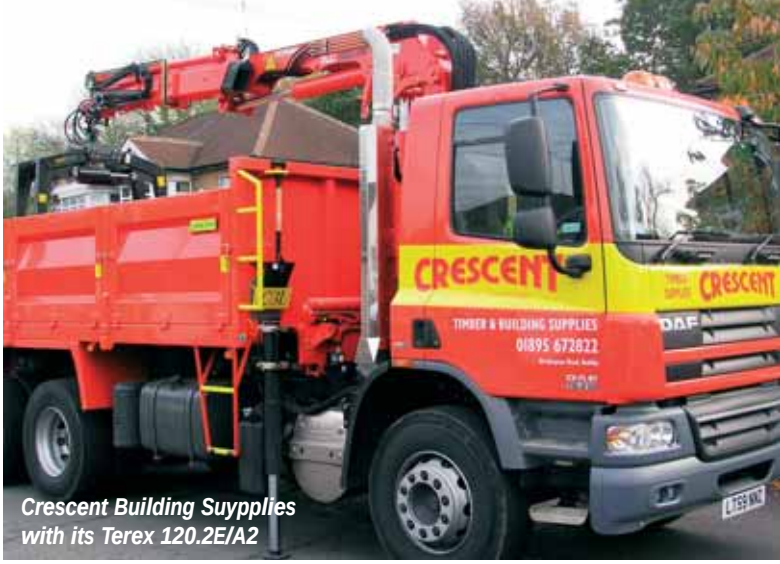
The equipment comprises of an adjustable fulcrum arm and hydraulic assembly that attaches to the rear of the service van and which is equipped with an electronic sensor (load cell) to accurately display the loads that have been applied to the platform.

The basic design was refined and after ensuring that the strength of the equipment was capable of safely and reliably applying test forces in excess of 1.5 tonnes, a production version was developed and successfully tested at the National Physical Laboratory in Teddington. Production examples have now been produced for use by TCS engineers.

A subsidiary of Essex-based Canute Group, TCS specialises in the maintenance and repair of tail lifts, vehicle mounted cranes and a variety of vehicle mounted equipment and is continually looking at methods to make the servicing, repair and LOLER testing of truck and van mounted equipment easier and more cost effective for its customers.


Engineers Nick Mead and Matt James

Builders' merchants gear up



Crescent Building Suypplies with its Terex 120.2E/A2

Despite the recession, which has hit many of Europe's building materials suppliers hard, some are still updating their fleets with new cranes.
Crescent Building Supplies, which operates depots in Ruislip, Hillingdon and Uxbridge in the English Home Counties, has taken delivery of its 10th Terex loader crane fitted to a 26 tonne CF Series DAF.

The 12 tonne/metre TLC 120.2E/A2 is fitted with radio remote control and is capable of lifting 1,680kg at up to 7.11metres. "The 120.2E is the classic choice for builders' merchants like us and is supported by a first class after sales service," says managing director Les White.

At the same time Gloucestershire-based timber and builder's merchant Hale & Co taking a Terex TLC 92.2 with radio remote control, fitted to the first 300hp, 18 tonne Isuzu sold in the UK - a Forward F180.300 4 x 2 rigid. The rear mounted nine tonne/metre crane, the sixth Terex unit to join the fleet, is delivering building materials within a 20 mile radius of the company's depot in Drybrook. Transport and sales manager Martin Nealon says that the crane is a perfect match for the Isuzu, making the ideal combination for delivery work in the area.

The first 300 hundred hp Isuzu fitted with a Terex TLC 92.2

Terex has also been working with ALC - an equal partnership between Amey and VT Group - which provides the UK's Ministry of Defence with its C Vehicle Capability by providing and maintaining a worldwide fleet of construction and rough terrain handling equipment. It has recently installed TLC 240.2E's to 33, specialist 6 x 6 off-road Iveco Trakkers and is undertaking trials to supply a further 71, TLC 105.2's cranes on the same chassis for the Self Loading Dump Truck Project (SLDT).

Brass in pocket


Giovanni Fassi

The recent sale of its access subsidiary, Socage, means that Italian loader crane manufacturer Fassi Gru can now totally concentrate on its core market sector - or will it? Mark Darwin finds out more….

This year, Fassi is celebrating its 45th anniversary and it will be a year to remember. After 20 years in the Group, managing director Giovanni Fassi decided the time (and price) was right to sell its platform subsidiary Socage to the newly-formed, First Step which has also purchased Italian truck and spider manufacturer Cela.

Commercially it will be a year to remember with sales worldwide falling an average of 50 percent (40 percent in its main market of Italy) and it sees very little improvement in 2010. Surprisingly Spain, after a huge increase in sales, is once again its worst performing region, closely followed by the UK with other markets performing only slightly better.

"For us a 90 percent sales drop in a small country is less than a 10 percent drop in Italy, so a 40 percent drop in Italy is significant," says Fassi. "Our budgets next year are the same for 2009 - same revenues, same production - with possibly a 10 percent improvement towards the end of the 2010. It is not a crisis, we have just had to reset the levels to those of 2007."

Fassi is reasonably happy at the moment, having sold the Socage business at his asking price, but is undecided what to do next.

"I didn't need to but have wanted to sell Socage for a few years," he said. "Although it has been part of the Group since 1989, there were no synergies, commercial or production. It used completely different steel, cylinders, boom lengths - Fassi did not produce anything. We were approached by a few companies but in the end I was happy to sell to people who specialise in the equipment and not just an investment company."

"Looking towards the future, I am interested in investing in or developing some other lifting/crane products in another industry sector (not loader cranes) but as yet, haven't decided what. I have two options - acquire a company or develop in house. The latter looks more probable but I will take more time to decide what to do next."

All this company activity has not diverted Fassi from its core business - manufacturing loader cranes. It has recently extended its XP 'power reserve' system to the small to medium crane range as well as adding radio remote control and increased the capacity 10 percent.

The company has always believed in the potential of electronics and has introduced the new FX500 electronic control and management system for the smaller cranes. It says that it is also working on a new whole machine stability system, not controlling the stabilisers or measuring distances, but a system that understands the position of the crane hook in a three dimensional space.

It was this emphasis on technical innovation and Fassi's Evolution Concept project almost a decade ago that was the foundation for the company's rapid growth over the last four years in particular.

Giovanni Fassi still believes that innovation, research and passion are the main ingredients needed to achieve success. With these in place, money in the bank and a blank piece of paper in front of him, it will be intriguing to see what he comes up with next.