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Polished knuckles

When it comes to product development in the lifting market, few sectors can match the Knuckle boom loader crane market for the pace of development and high levels of sophisticated engineering. **Cranes&Access** takes a look.

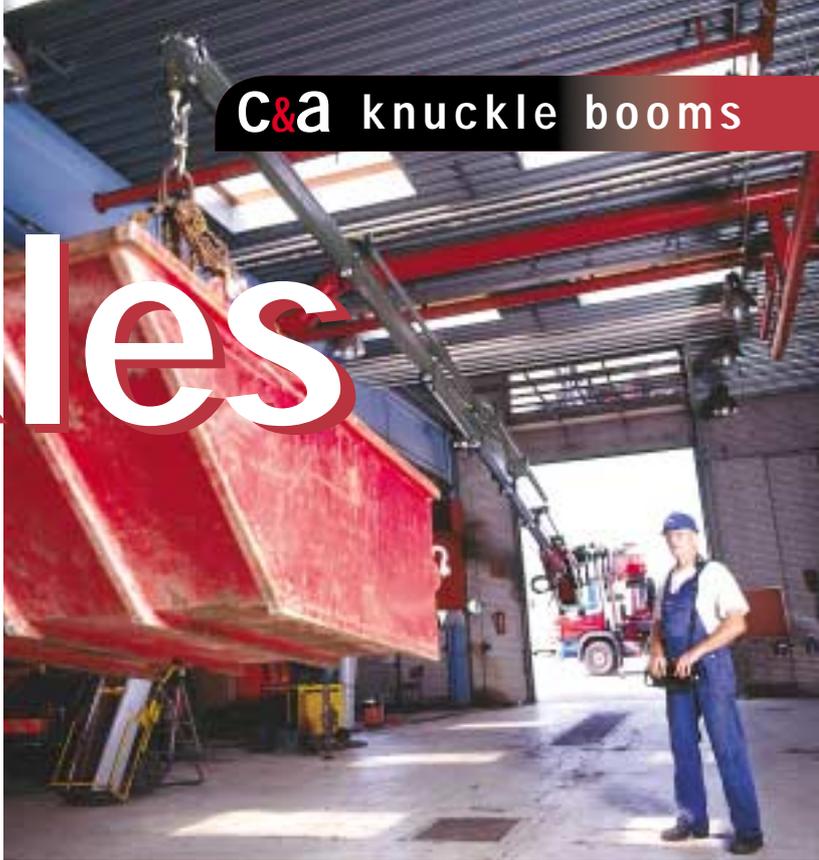
The UK and Irish market for Knuckle boom/loader cranes is relatively stable and mature in terms of numbers, as it is in most of Western Europe. However with annual estimated deliveries of between 3,000 and 4,000 units for the two countries it is a sizeable market. The largest single sector, that of Brick and block handling, has undergone major changes in the past few years thanks to the consolidation among builder's merchants. The industry is now dominated by large chains, who increasingly tend to standardise or "partner" with a particular manufacturer

from which there is a natural reluctance to change.

In addition of there has been a move towards more bulk supply of loose materials, such as sand and cement. This has eroded work for loader cranes on the larger sites but increased it significantly on smaller builds, where bulk bags have largely replaced the old paper sacks.

With an ever more competitive market, and strict enforcement of manual handling, loader cranes or piggy back fork lifts, are at least now obligatory for building supply deliveries.

Large units such as this are increasingly used as rigging cranes on large crawlers.



Here is one excellent application for the above horizontal capability provided by the extra linkage.

UK market leader Atlas Terex cites its national, directly employed, network of service engineers as one of its major attractions for the national chains. The fact that its product line is also focussed on this mid capacity market sector also helps.

While the consolidation among builders merchants has perhaps resulted in a lower overall requirement for loader cranes in this sector, other applications for knuckle boom cranes has expanded their use elsewhere. The rapidly growing telecoms market and private utilities contractors have emerged as substantial users. In many of these applications the cranes are mounted on specialised off road vehicles, such as the Unimog. We test drove a new Unimog loader crane rig earlier this month and carry a short report later in this feature.

While Atlas is the market leader in the UK, Palfinger is the world wide market leader, (and possibly of the combined UK/Irish market). TH White sells and services Palfinger in England, with Outreach in Scotland and Palfinger Ireland in the emerald isle. Palfinger has benefited from the increase in sales of larger cranes, thanks to its strong showing in the 20 to 60 tonne/metre range, although the company says that it is gaining market share across the board.

When asked how, Mark Rigby of TH White says "Palfinger simply builds a better crane" he would say that

wouldn't be. However it is clear that Palfinger with its heavy investment in new products and a broader product line, coupled with a similar commitment to production investment is "on a roll".

Hiab the name synonymous with lorry loaders, the Hoover and JCB of the sector, is investing in regaining its position after a trying period under Partek, where the famous Hiab brand name and image was diluted. Hiab along with Kalmar is now a major part of the newly formed Cargotec group, which is focussing its resources on building up its loader crane business.

The 125 tonne/metre Cormagh 125000, offers up to 36 metres of height.



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Brick and block handling is a major market in the UK

Technical development

As we have already said in our introduction the pace of loader crane development is staggering, ranging from the increasing use of high strength speciality steels, for light, multi section booms to full logic controls and diagnostics, not to mention the ingenuity of the lifting geometry.

More recent developments however have included the use of such links between the boom and fly jib or between lower boom and upper boom, to provide jib articulation of up to 200 degrees. This allows the jib to be raised up to 20 degrees above the horizontal lower boom. A number of people we spoke to questioned the need for such a feature in most applications and saw it as just another cost and maintenance issue. Although recognising that for some jobs, such as equipment moving, where a crane might need to reach into a building, it does provide a tangible benefit.



Linkage between cylinder and boom, allow 15 to 20 degrees over centre reach.

Our discussions with manufacturers and users did tend to throw up a common theme, that the industry seems to be moving towards the introduction of features and developments simply for the need to have something new to talk about, rather than concentrating on developments that bring real benefits to a wider user base.

The "fashion" of recent years has been the adoption of an extra linkage between lift cylinders and booms or jibs. The initial idea was to provide a consistent pressure and lift capability throughout the booms full lifting arc, a positive benefit for those who need to lift heavy loads close in to the vehicle.

While this criticism may have some merit, one thing is for sure. Knuckle booms are becoming lighter, faster, smoother, and more controllable, with higher reach, bigger capacities and a substantially wider range of models.

Who supplies Knuckle booms in the UK and Ireland?

Producer	Light/Medium	Heavy	UK/Irish dealers
Amco Veba	Yes	Yes	Yes
Copma	Yes	Yes	Ireland
Cormagh	Yes	Yes	Yes
Effer	Yes	Yes	No
Hiab	Yes	No	Direct
Hmf	Yes	Yes	Direct
Fassi	Yes	Yes	Direct
Ferrari	Yes	No	Seeking dealers
Palfinger	Yes	Yes	Yes
Pesci	Yes	Yes	Yes
PM	Yes	No	Direct

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This Fassi on twin line lifts demonstrates how loader cranes are used on large and complex lifts



on larger cranes, and load moments moving towards 200 tonne/metres, there is understandably pressure for loader cranes to be grouped in with mobile cranes and be subject to the same rules, regarding crane hire or contract lift and appointed persons etc. Technically they already are, however there is no question that in the real world loader cranes are treated differently, and there is a case with the vast majority of them that they should be. Heaven forbid if every builder's merchant's lorry loader was subject to the same bureaucracy as large mobile cranes. If users don't get



This Pesci crane is unusual in that it uses a minimal open base section.

Remote control developments

One area that is providing massive benefits for users, and rapidly becoming a "must have", is radio remote controls. The latest product offerings focus on single handed control, smooth proportional operation and at the top end, the provision of load information on the controller. Many of them also include outrigger operation.

At the recent SAIE show, sister companies Ferrari and Amco Veba unveiled their latest remotes, the result of a development with Hetric, using a simple gun like design, with a trigger that serves as a deadman while producing the proportional control. It allows true single handed operation. Amco Veba has made its version standard across its product line, a trend that will surely grow as the cost of these items falls.

The choice of controllers is now wide, with the compact console with neck strap seeming to be the preferred choice, especially for the larger



This new one-hand lightweight radio control is ideal for smaller cranes.

machines or those with complex attachments. The new Hiab XS-Drive controller, for example, offers up to 24 functions with mini joystick operation.

Crane Safety and training

With well over 20,000 loader cranes in regular operation in the UK and Ireland, it is fairly certain that the vast majority of operators have had little or no formal training. In the past a lorry loader was fairly simple and quite forgiving, with short booms, and low capacity to weight ratios. As the more modern, lighter and larger cranes start to move down the chain into the used crane market, the "drive by the seat of your pants" method will become an increasingly dangerous habit. A number of companies now offer training courses for loader crane operators. The Association of Lorry Loader Manufacturers and Importers (ALLMI) has developed some first



The new Fassi 850 part of a new Evolution series note its "Prolink"

class courses and is rapidly extending its network of approved training centres around the country. A steep rise in the number of employees attending these courses is needed though, if we are to come anywhere close to a point where most, if not all, operators are properly trained. So far less than a quarter of the nation's full time operators have taken such courses.

With boom lengths and outreaches of over 30 metres now quite common

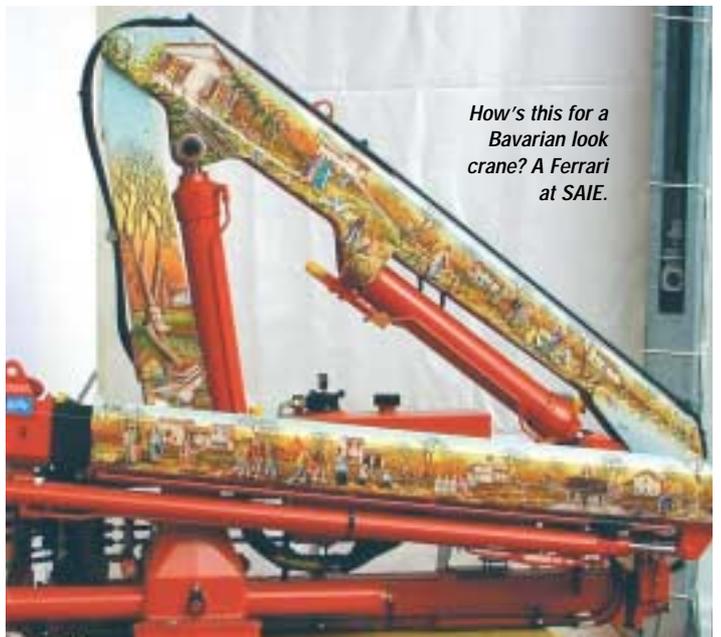
Boom lengths in excess of 30m are not uncommon



their house in order though it will come to this. There are far too many accidents such as bridge bashing, outrigger retention and lack of shoring on soft ground.

RCS issues warning after M4 accident

RCS, a division of Balfour Beatty has issued a safety alert to all of its staff following an accident on the M4 in July. A loader crane was loading maintenance plant on the hard shoulder when it toppled over. The outriggers were not fully extended, which on the model concerned should have automatically derated the cranes lift capacity. However the overload system had been tampered with, resulting in the accident. The alert warns that a full briefing must be given to all operators on the operation of the crane and the safety devices fitted, it warns that no override switches should be tampered with. It concludes by saying "Tampering with any safety devices is a disciplinary matter and a criminal act"



How's this for a Bavarian look crane? A Ferrari at SAIE.

The new 10501
tops out the Palfinger
Performance light
crane range.



Palfinger add models in mid range

Palfinger has added two new models to the top of its light series of PK Performance cranes. The PK8501 with 7.9 metre/tonnes lifting moment and the PK10501 with 10.1 metre tonnes. Both offer up to five powered boom sections for up to 14 metres of outreach.

The PK8501 has been developed from the PK 7501 and is suited to a 7.5 tonne truck for general lifting duties. The PK10501 has been developed from the 9501 for what the company calls Municipal duties, and as such is well suited to attachments such as grabs, augers and work platforms, it requires a truck of at least nine tonnes.

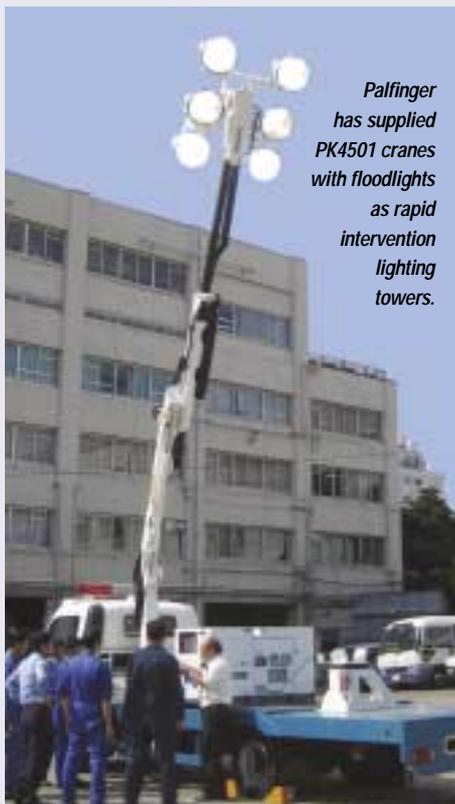
These two cranes are the first Palfinger cranes in the eight to 10 metre/tonne class to be equipped with its HPLS technology, which increase the cranes lifting capacity by up to 10 percent at reduced working speeds.

Let there be light

Palfinger has provided a number of PK4501 cranes for a most unusual application. Japan's police service is bringing light into the dark. Whenever the circumstances and light conditions require, they move in with the special units. Until now telescopic cranes were used for similar applications, but they are restricted by limited manoeuvrability. Thanks to its knuckle boom design the PK 4501 makes it possible, to illuminate the dark areas under bridges from the road above.

In an emergency every police officer with a normal driving license must be able to drive the vehicle so the maximum weight of the truck was limited to a maximum of four tonnes. The PK 4501 was able to meet this requirement complete with floodlights and a working height of 10 metres.

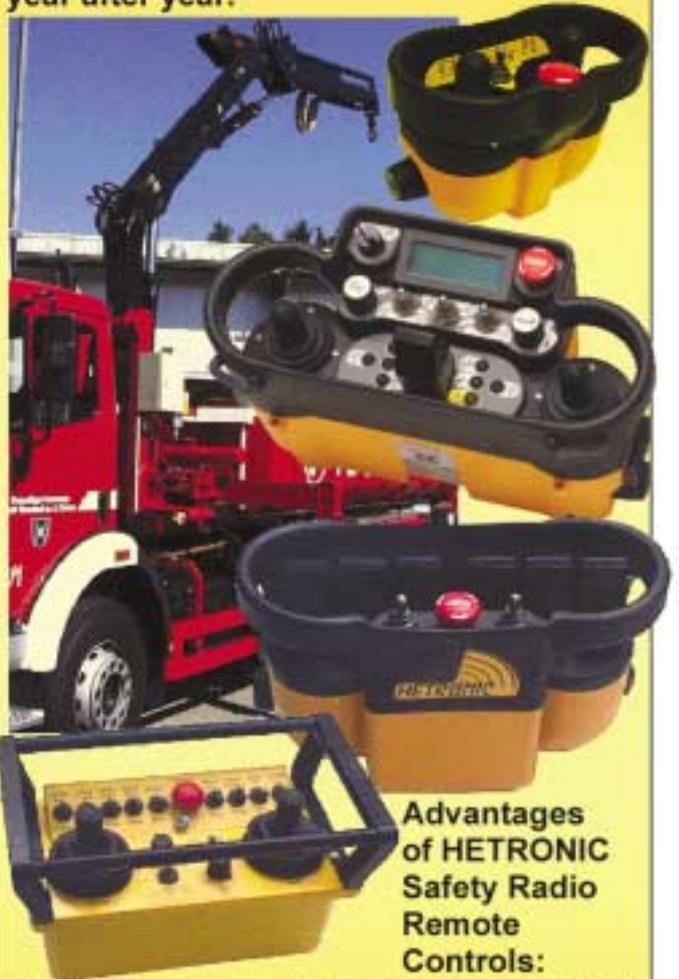
Palfinger's partner in Japan, Unic Corporation based in Tokyo has delivered seven of the special vehicles so far to locations throughout the country.



Palfinger has supplied PK4501 cranes with floodlights as rapid intervention lighting towers.

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knuckle booms C&a

Kent fire department is keeping its Unimog-Hiab crane busy with several call outs a week.



Sales Manager goes the extra mile

You have heard of keen sales people going that extra mile, few though take it as far as Derek Owen of Mercedes-Benz Unimog. He volunteered to jump into treacherous mud flats on the Thames estuary, so that a local Fire Brigade could simulate a rescue with its new Unimog U400.

Owen has been selling Unimog's for over 30 years and was invited to the rescue simulation exercise by Kent Fire Service, unaware that he would be the 'lucky' person to be rescued. On the cold, windswept and bleak mud flats of the River Swale he was fitted with a one-piece dry suit to keep out the water. His instructions were simple: "Run as fast as you can across the mud; when you start to sink, dive forward and crawl like a Commando as far as you can; then stand up. When you start to sink into the mud, we will come and rescue you!"

Thankfully the fire team lived up to their reputation and rescued him before he was swallowed up by the soft ground. The Unimog fitted with a Hiab crane, is the first U400 series to

be specified as a dedicated animal rescue vehicle. Its unrivalled off-road capabilities, as well as high road speeds, make it ideal for reaching accidents where animals have slipped into ponds and rivers, as well as mud. By lifting the animals out vertically rather than dragging them with a winch, trauma is minimised and safety enhanced.

Lifting animals rather than dragging them through the mud significantly reduces the trauma.



Wolseley go all Hiab

Wolseley UK prides itself on its highly advanced delivery and logistics strategy for its various businesses. Thousands of deliveries are made every day, from its trading companies such as Plumb Center, Build Center, Drain Center and many others. Efficiency is essential and operator safety is absolutely critical. To this end the company has been working on a standardisation of policies and practices. As part of this process it prefers to use a single supplier for equipment such as loader cranes.

Over the past five years Wolseley has built up a strong relationship with Hiab, the Company now operates over 350 Hiab cranes, mainly 122 and 144 models, including many specialist remote controlled units within its glass division.

The benefit according to Wolseley is that "once operators are trained they can work across the fleet making it a safer more sustainable way to operate"

"Exceptional care has to be taken when establishing with a single supplier, you have to be totally confident that they can deliver exactly the right package says Roy McCrudden, national fleet manager.

"This must include service levels, customer care engineering, design and the ability to provide a bespoke service. Hiab is taking care of our needs reliably and efficiently".

Wolseley now run a 350 all Hiab crane fleet.



Crane or mountain goat?

Mercedes Unimog has teamed up with Hiab to produce a crane which will go almost anywhere. Markets targeted include of course fire, search and rescue applications as well as local authorities, forestry and certain types of construction such as pipeline work etc. Vertikal's, Leigh Sparrow takes a closer look.

notice is the great view from the forward mounted cab. The transmission is manual but with a Telligent gearshift and no clutch. Essentially when you want to change gear you simply click and tap the gearshift forward (or back) and the transmission does the rest, very smooth, very easy and very forgiving, believe me!

The Hiab 085-2 can lift up to 4,000kgs at two metres or 1,100kgs at 7.5 metres radius.



The Unimog 5000 is matched to a Hiab 085-2 crane, giving 1,110 kgs lift capacity at 7.5 metres and a tip height of around nine metres. The cranes compact, profile takes up less than 700mm of space, ideal for the Unimog's short (3.85m) wheelbase, leaving a reasonable amount of space for cargo. Its low height of 2.1 metres, is also important, given that this vehicle already stands tall, thanks to its over generous ground clearance.

The crane is mounted on a special three point triangular mounting, as the wishbone style chassis flexes to maintain four point tyre contact on really rough ground.

A benefit of this, is that the crane has a high degree of isolation from the punishing impacts on severe terrain.

The package comes with Hiab's "Space" load sensing and management system which helps control the crane and warn as a potential overload situation is approached. The Hiab Combi-drive radio remote control, includes all of the cranes functions, including the winch. I had the opportunity to take this crane around an extreme off road course to see its potential myself.

The first thing you

With three diff locks, and plenty of power, the Unimog handled steep, soft, muddy slopes with ease, and coped with ruts that were more like trenches. Ground clearance is amazing.

Faced with descending slopes that resembled cliff faces rather than hills, the two stage exhaust brake became my favourite gadget, fabulous!

Off the end of the course and the Unimog performs like a road vehicle, reaching a maximum speed of 55 mph in relative comfort and quietness. Very impressive.

It will come as no surprise to those who know them, that I failed to get the Unimog stuck or even to break into a sweat. If anything I can see that with this vehicle you are likely to get "Volvo driver syndrome" gone mad, and feel invulnerable to any terrain. As you probably can tell, I was impressed with this piece of kit, Oh and the crane was pretty good too!

A true mountain goat of a crane

