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Lifting and moving...

Over the past few months we have seen numerous examples of items being 'picked' and 'carried' without using the traditional pick & carry crane. This month's feature therefore takes a slightly unconventional look at machines that can carry out this role.

There will always be a need to move loads horizontally. The emergence of the construction telehandler/industrial forklift shows how efficient moving and placing a load can be particularly if it is palletised and not too heavy. When a load increases in size or weight renting in an All Terrain or truck crane is an option that copes with the majority of jobs. But add say restricted headroom, obstructions, space limitations or indoor working and other solutions need to be sought. An ultra compact City or even Rough Terrain crane may be the solution for some, as long as space allows and if all else fails a traditional industrial pick & carry crane which 'does exactly what it says on the tin'. Add in size, electric power and other advantages and this type of lifting machine will usually prove ideal. However there are a few alternatives including mini crawler cranes and as long as the load is light some spider cranes might handle it.

Last year we featured the lightweight portable skate tug, the Powercat - a small portable electric powered tug which is also available in a cordless version. This issue we feature an industrial lifting, moving and transport company - County Lifting - which prefers to use heavy 'agricultural-looking' extendible chassis fork trucks but which excel at some industrial shifting applications. We also feature the world's largest crane - the 200,000 tonne/metre Mammoet PTC. Obviously not able to pick and carry in the traditional sense (although it can move on rails or SPMTs) this enormous crane because of its luffing jib and speed has the capability of moving a load to 200 metres and can lift 1,300 tonnes to 100 metres.

Traditional pick & carry cranes

We start with the traditional industrial pick and carry cranes which are now mostly manufactured in Italy including Valla, Ormig, Galizia, Jekko, JMG and Kegiom - and the USA such as Broderson, Grove and Shuttlelift.

There has been a renewed interest in this type of crane particularly with the introduction of the compact, pedestrian-operated, two tonners a few years ago. Having introduced the first modern product in this category Valla was either unable or unwilling to keep up with the rapidly growing











demand causing others to enter the market. This included Jekko which in a change of direction away from its spider crane line introduced the GMK20, while Galizia soon followed with its G20. Valla responded to what were more modern and up to date products with its 2.5 tonne capacity 25E and Galizia matched this capacity. Overnight the ultra compact 'pick & carry' sector was given new impetus giving end-users a wider selection to choose from. Cranes & Access compared these machines in last year's feature on this type of crane and developments continue. Valla is currently working on a new 12 tonne 120 Evo. Galizia unveiled a new fully remote control version of its 2.5 tonne G25 which has no manual controls. The company also says that it is working on a new range based on its larger 'F200 type' machines with capacities from 12 to 35 tonnes which should be ready by this Autumn.

Ormig, traditionally the champion of the heavier diesel powered pick & carry crane market, has been moving progressively smaller and has had considerably success with

its electric powered 5.5 tonne 5.5tmE, which is now joined by a diesel powered version. Crane buyers tend to follow the adage 'if it looks right it probably is right' if there is any truth to this statement the little Ormig must be a great performer.

A more recent entrant into what has become a dynamic market is another Italian manufacturer, JMG Cranes first seen at SAIE in Bologna last October. The company benefits from owners/senior management with years of electric pick & carry



pick & carry

c&a

crane experience, mostly from time served at Valla. The team has moved fast and already boasts an extensive 14 model range extending from an ultra compact 2.5 tonner to a 60 tonne heavyweight. The company has also benefited from the experience of UK based mini crane specialist Compact Lifting Equipment. Its latest addition, unveiled at the recent GIS show in Piacenza, Italy is the MC110. With its 11 tonne maximum capacity available one metre from its front bumper, JMG claims that it is the most compact machine in its class, measuring 4.08 metres long, 1.95 metres wide and 1.95 metres high. Key features include twin AC electric motors for lift and travel, dual front-wheel drive and braking, 90 degree crank angle rear steer and a patented three section proportional boom. The boom design allows the practical fitting of a wide range of attachments, including a winch, various jibs and a set of forks.



Alternatives

Outside the traditional pick & carry machines there are many other ways of lifting and moving a load. Mini cranes such as Maeda's latest 2.93 tonne LC383M-5 have been

primarily developed for working in exceptionally tight spaces, with 360 degree zero tail-swing slewing within its tracked footprint. It has a useful 1.5 tonnes pick & carry capacity while its largest LC model the six tonne capacity LC1385B can pick & carry two tonnes. While this does not compare to that offered by the regular pick & carry models the small dimensions and low ground pressure under the rubber tracks may well suit certain applications.

Crude but effective

However, one item of equipment that has been widely used by riggers on the other side of the Atlantic for many years - the heavy fork trucks or mobile jacking trucks - are becoming steadily more popular - particularly in Germany and now in the UK. Manufacturers such as Versa-Lift and Lift Systems both produce contraptions that offer amazing pick & carry capabilities for their weight - up to 63.5 tonnes with frames extended.

The Versa-Lift machines are made by Custom Mobile Equipment based in Baldwin City, Kansas. The company was formed in 1993 by Gary Dick with the purpose of designing and building material handling equipment. Within a year the first Versa-Lift 40/60 had been supplied to Taylor Crane and Rigging and the product was up and running. Custom Mobile launched a larger model - the 60/80 - in 1998 with many similar features as the 40/60 but capable of lifting 80,000lbs at a 36 inch load centre (36.6 tonnes at just under a metre). The nomenclature represents the lift capacity in 1,000lbs - the first without extending the frame/ballast, the second in maximum capacity mode. A more compact model was





introduced in 2000 - the 15.8 tonne capacity 25/35 - designed specifically for machinery moving but with attachments that allow it to be used in many other markets such as paper roll handling.

Demand for the trucks continued especially for moving heavier loads. This resulted in the introduction of the massive 100/140. The company which purchased the first machine in 2003 - Mayberry Machinery Movers - tended to use gantries however the set-up was very time consuming and at times dangerous - not so using a big forklift. Versa-Lift also has two electric

versions - the 25/35E and the 40/60E and a full remote control option is also available (as owned by County Lifting - see page 66). The other major manufacturer of these lift trucks is East Moline, Illinois-based Lift Systems which has a wide range of hydraulic gantry systems, mobile pick and carry machines, crawler mounted transporters, custom cylinders and many other types of specialised lifting and moving equipment. Its UK dealer is specialist heavy lift engineers Chester-based Claxton International.



Lift Systems dates back to 1980 when Riggers Manufacturing was formed by Gary Lorenz. He then sold his interest in 1983 and founded Lift Systems. Over the years the company has evolved into a major player in gantry systems, mobile pick and carry machines, crawler mounted transporters and other types of specialist equipment.

Lift Systems introduced its pick &

carry MobiLift and Twin Lift hoist trucks in 1987 with the first machines ranging from 30 to 50 ton capacity. Today the product lines range from 33 to 110 tons and has been joined by the TF45/60 telescopic forklift in 2001. Although the company was sold by Lorenz to









an investor group headed by Bruce Forster in 2005 product development still continues. The Twin Lifts allow lifting from either a central eye on the 'boom' or from one of the corners allowing different rigging configurations and its design also allows a forklift attachment to be used.

However the most versatile item in the Lift Systems mobile range is the extendible frame TF45/60.

Offering very low overall height and big lift capacity (60,000lbs/27.2 tonnes) the unit can be fitted with three attachments converting it from a fork truck to a riggers boom to an industrial boom type lift truck. The latter format is ideal for machinery movements. It can easily be transported onto site, used to unload a heavy object and then carry to item and place it into its final position much quicker and easier than almost any other type of equipment.

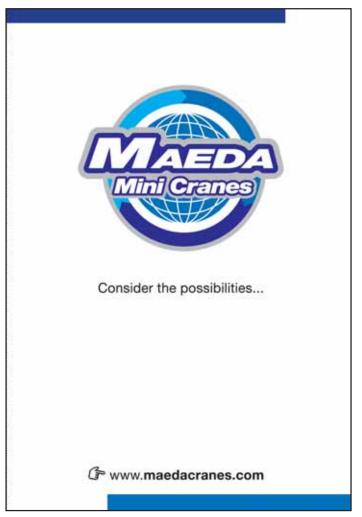
Reach stackers

Along a similar vein to these big lift trucks but offering substantially greater sophistication are modified reach stackers. While not widely used for rope suspended pick & carry duties, Scottish-based











lifting & moving

crawler crane specialist Weldex used two modified Hyster RS 46-41L CH reach stackers to handle large wind turbine components for Siemens Wind Power at the Port of Mostyn in North Wales. A typical job involves lifting and carrying the 100 tonne tower sections from the quay side - after arriving from Denmark - to the storage area. The machines are also used individually to handle the 50 tonne hubs.

The reach stackers were modified by Barloworld, in conjunction with Hyster's Special Engineering Department to enable them to work like large industrial pick and carry cranes. The units weigh 84 tonnes, have a tip height of 18.2 metres and can travel at up to 24kph. The massive spreader attachment has been replaced with a simple fixed hook with heavy duty swivel.

Mega Mammoet

The new generation PTC (Platform Twinning Containerised) super heavy lift crane - used increasingly for petro chemical plant refurbishment installing or replacing massive vessels - was introduced by Mammoet at its new dedicated testing facility in Westdorpe near Terneuzen, Holland. The PTC is obviously no pick & carry crane, however its sheer size/reach and crane-like performance (unlike sliding gantries) means that it is more versatile and able to carry out multiple lifts during a project compared with the company's MSG (single lift) and other large lift crane systems. Two models with capacities of 140,000 and 200,000 tonne/metres are available and each has three rigging options - main boom, main boom plus fixed jib and fixed main boom plus luffing jib. Figures for the PTC200 are impressive. From its set-up position the crane has a maximum radius of 205 metres and can lift 1,000 tonnes at 100 metres, 2,500 tonnes at 65 metres and 3,200 tonnes at 55 metres, yet has a ground bearing pressure of just 20 tonnes per square metre. When fitted with the 106 metre maximum luffing jib it can lift loads up and over allowing the crane to be positioned much closer to existing structures - a major advantage over sliding gantries with a rigid main boom. With luffing jib, lifting a load of 1,000 tonnes at 100 metre radius is totally feasible. Slewing is on bogies and a full

rotation takes about 15 minutes which also makes operations much more efficient, allowing large loads to picked up and moved across a large part of the site. And by using four, 800 tonne main winch system which are automatically synchronised and controlled, loads up to the maximum can be hoisted at a speed up to 10 metres a minute (33 ft/min) a figure perhaps 60 times faster than some strand jacks. These are more suited to single lift projects because of their slow speed and also the wear on the wire rope. The PTC also has an auxiliary 250 tonne hoist with a speed of either 10 or 20 metres a minute depending on the configuration.

Both PTC's carry their counterweight within the ring - i.e. zero tailswing resulting in a footprint diameter of 45 metres for the PTC140 and 55 metres for the PTC200. All key electric and hydraulic components - such as the power packs, gearboxes, slewing and hoisting drives, PLCs and electronics - are fully duplicated, allowing repairs and maintenance to be carried out without interrupting lift operations. Two hydraulic power packs are used should one fail or be shut down for maintenance. In the unlikely event that both fail, the crane can be operated using an external power pack.

Mammoet - celebrating 45 years this year - says that it has learnt through experience the need for reliability. The crane has been designed to resist a lightning strike (operational again within five minutes) and an earthquake (working again within four hours). The PTC crane has a strong A-frame structure formed by its twin booms, and can operate in wind speeds up to 14 metres per second (31 mph). The main boom and luffing jib can remain fully erected in gusts up to 50 metres per sec (112 mph). However the crane can be made hurricane proof (a maximum of 67 metres per sec/150 mph) within four hours by laying the main boom/jib flat on the ground. No auxiliary crane is needed to achieve this or to return the boom to normal operations.

The PTC breaks down into components that fit into standard 20 and 40 foot shipping containers. Only two mobile cranes are needed (300 tonne maximum) with assembly generally taking between three to six weeks. And the cost? For all three crane/boom jib options a whopping €160 million!





The 140,000 tonne/











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A sign of the times

Whilst Farnborough-based Tracked Access is known as the UK distributor for Palazzani equipment, it also has one of the widest ranges of pick & carry equipment available for hire. Perhaps this is because operations director, Phil Lomax, has a long history in this sector having started his career with Jones Cranes on pick & carry cranes?

In one sense, the company name Tracked Access is something of a misnomer. Yes, the company has a wide range of booms, scissors and mast booms but it also has a wide and varied range of smaller capacity pick & carry cranes. The company has built up a sizeable and diverse crane fleet including products from Maeda, Jekko, Valla and Kegiom, along with Merlo 360 degree telehandlers.

Lomax should now a thing or two about this sector because as a young Jones Cranes apprentice he worked on many pick & carry cranes including the 971 (mobile, crawler and HLB dock models) as well refurbishing 11-7 cranes operated by the Coal Board.

"Although Jones Cranes were manufacturing the Iron Fairy in the 1980's it continued to make strut and cantilever jib cranes for customers throughout the world," he remembers. "The main advantage of these cranes over the modern hydraulic machines was their simplicity. They could be sold into third world regions where technical skills were limited and reliability was paramount."

Jones Cranes was a brand of British-built cranes from K&L (Kryn and Lahy) Steel founders and Engineers in Letchworth Garden City, Hertfordshire. The company was started 1915 by Belgian refugees which then aided the World War I war effort as well as producing carbon steel castings for all manner of heavy industrial applications including cars, bridges, cranes, railway engine wheels and parts. The company was later acquired by George Cohen Machinery in the 1920's. In 1973 it merged with the GCM 600 group formally the George Cohen 600 group - which became known as the 600 group in 1975. The company went into decline in the 1980's and closed in the early 90's. In its halcyon days it employed thousands of people and its foundry was the third largest in the UK. Since being formed in 2005 by Lomax and managing director Tony Gettins, Tracked Access has invested more than £3 million building up its varied fleet including Maeda spider cranes and Palazzani spider lifts. However during that time it has seen rental rates for

Phil Lomax both types of equipment (spider and pick & carry) drop significantly but this has been off-set by its expanding customer base less reliant on the construction sector. "All of our Maeda MC405 cranes have a pick & carry facility which is a useful feature but the duties are limited. Maeda has three crawler pick & carry cranes which are superb and very popular for use in construction and utilities work but

> Lomax says that he has been very impressed by the reliability and general build quality of our Maeda fleet and the lift capacities from such compact machines which shows real progress over the cranes of yesteryear.

> at the moment they are not widely

used in industrial applications."

"Our two tonne capacity Jekko MPK20 and Valla 20e cranes have been a useful addition to our core spider crane fleet and are generally used on construction sites where there are space, height or weight restrictions," he says. "They compete in many cases with compact telehandlers but their DC power allows them to work inside

with winch

buildings. They are also light enough to be towed on a small trailer. Compare the specification of these or the MC405 to a Jones KL15 and you can see just how far technology and manufacturing has come over the last half century."

Although not pick & carry, all Palazzani spider lifts have the option of a winch for lifting materials. The smaller machines can be fitted with

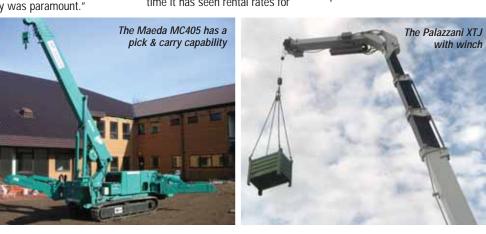
machines can have either an electric or hydraulic winch capable of lifting 300kg. "While the lifting capacity isn't very high it is quite impressive at heights of 30 to 50 metres," says Lomax. Palazzani also makes two heavy duty pick & carry cranes with capacities of 10 and 15

an electric winch

where the larger



exclusively for the industrial sector. Whilst these aren't a major product in the Palazzani line-up Lomax says they are well built and reliable. Weighing just over 11 tonnes, the smaller FPB 100 crane has a maximum retracted boom capacity of 10 tonnes or 3.1 tonnes fully extended to its maximum hook height of seven metres. The units also have a handy travel speed of up to 18 km per hour.





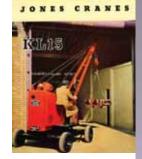


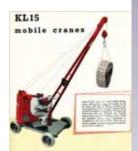
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Riding the decks

We have all seen the famous photographs of steelworkers working on the Empire State Building or taking a lunch break at the RCA building in New York from the 1930's. While this method of working occurs from time to time in most parts of the world there is a strong push to stop all walking or working on steelwork. The UK is possibly leading this charge with the Health & Safety Executive (HSE) having virtually banned the practice.

At lower heights it is not much of an issue with all manner of boom or scissor lifts available to access most parts of a steel structure - certainly up to about 45 metres. Over that it can be possible to use a truck mounted lift for heights of up to 112 metres BUT truck mounted lifts over 70 metres are still exceptionally rare, very costly and big, so lack the manoeuvrability required for most high rise sites.

The solutions available for high rise construction are therefore more limited and tend to slip down the so called hierarchy of fall prevention/ protection methods. They are not the most efficient and can include special scaffolds or nets and safety lines etc... all of which are a good deal less efficient and rarely as safe.

Finding a high rise solution

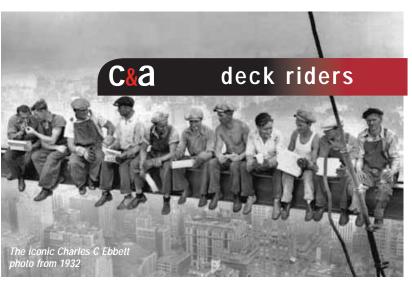
Steel erector Steelcraft Erection Services led by Peter Ellison - then group operations director of steel fabrication company Severfield Rowan, Steelcraft's parent -

set out to find a solution to get men off the steelwork on high rise jobs, without reducing efficiency, while matching the safety enjoyed by those working from aerial lifts at lower heights.



Now working as a consultant, Ellison said that when faced with the challenge, he contacted a number of manufacturers including Niftylift with his ideas. While most companies were polite and listened, it took





Niftylift just three to four weeks to come up with a concept solution. A 15 metre working height boom lift mounted on a special skid that could sit on the steelwork and achieve everything the company required. The machine was dubbed the Deck Rider 15, given that it was based on Nifty's Height Rider HR15 self-propelled boom.

A prototype was built and assessed on a test structure at the Severfield group's engineering centre in Thirsk. The results were so promising, in terms of both improving safety and boosting efficiency, that units were ordered and after some initial trials on mid-rise buildings were put to work on the Heron Tower, London's second but soon to be





deck riders

third highest building which was completed in 2010.

Up to 25% efficiency gains

Ellison said that due to the complexity of the structure three or four men working from scaffolds connected to the steelwork were needed just to tighten the 400 bolts on the more complex multiple connection points. The three dimensional capability of an aerial lift allowed one man to almost do the same work and basic piece count efficiencies improved by between 10 and 12 percent. At the same time it required fewer men leading to a total saving in the region of 18 to 25 percent. The improved efficiency allowed the crew to complete a storey every week. The work was more consistent as well as there were no hold-ups waiting for slow curing concrete floors to be ready to support regular access equipment.

The method had knock-on efficiencies for other trades as well such as the floor casting crews who were able to carry



out their work unhindered by the steel erectors adding to the overall efficiencies and safety improvements. The Deck Rider is designed to be lifted into position by the on-site tower cranes and is essentially a standard Niftylift HR15 articulated boom lift mounted on a special skid chassis. The unit is placed on the steelwork and used in exactly the same way as a regular boom to install the steel framework for the next two floors above. Once the steelwork is completed the two

storeys are handed over to the main contractor and the Deck Rider placed by the tower crane on top of the two new floors so that it can be used to install the next two floors and so on until the top is reached.

One storey a week

On the Heron Tower working with the Deck Riders, the Steelcraft team handed over two floors every two weeks, rapidly completing the 34 floor steel structure. Steelcraft currently owns 20 Deck Riders, 18 of which are working in the UK

and two in India, with the latest project being the London Shard. Ellison says that not only do the Deck Riders enable work platforms to be used all the way to the top of a steel structure, but that given the increasingly limited space at ground level, they can be used to replace regular booms from the first floor up, clearing the space for other trades and equipment.

The contractor has also developed software to go with the Deck Riders, which plot in advance the





machine positions for the entire building so that the construction crew and tower crane operator know exactly where to place them for each floor. It also highlights any no-go areas in red to help ensure that the lifts are not placed in a position where they may cause

21 metre version

Niftylift showed a 21 metre version of the Deck Rider at Conexpo this spring which could allow it to do three floors at a time. However the new design includes the ability to switch the machine quickly and

easily between a regular self-propelled lift to a Deck Rider which might just encourage rental companies to add them to their fleet. It also featured Nifty's environment friendly Hybrid power unit, SiOPs safety system and Tough Cage, all of which are ideally suited for steel erection work and which are now available on the 15 and 17 metre models.

The 21 metre Deck Rider introduces the ability to quickly convert the machine between Height Rider and



