



Small Crane, Big Ideas

Consider the Possibilities



MC285



MC305



MC815



MK1033



CC1485



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A broader spider crane sector

The 'flavour of the month' when it comes to smaller tracked cranes appears to be the heavy duty articulated crawler crane - a variation on the spider crane - which looks set to be a popular addition to the compact lifting sector. We take a look at the latest launches and developments.

In last year's spider crane feature we asked if the traditional spider crane produced by market leaders Maeda and Unic was coming under threat from the articulated crawler crane - essentially loader cranes mounted on tracked chassis. Given the increased activity in this sector over the past year, the answer must be a resounding yes!

One-off custom-built models have been around for some time - for example Wemotec teamed up with Palfinger in 2010 to produce the SMK320.67 long boom specialist spider crane - while Kegiom and others have put smaller articulated cranes on tracks. The recent upsurge however can be tracked to Brennero's launch of the BG Lift range at Bauma 2016, which included two articulated crawler cranes. Since then Fassi has become a joint owner of spider crane manufacturer Jekko which produced its first articulated crawler crane - the Fassi-based Jekko

JF535 - taking the concept into the mainstream market. As with all good ideas - and the resulting interest and sales - other manufacturers are starting to follow suit. The latest is Palfinger which is set to launch a three model range at the IAA Hannover show later this month.

What to call them?

Over the years there have been many companies with variations on the original Unic/Maeda type of spider crane. Larger models substituted the spider leg design with telescopic fold down or beam and jack outriggers, while others added long telescopic jibs to create articulated boom models. The latest derivation uses a large standard articulated loader crane top, mounted on crawler chassis with regular beam and jack outriggers, creating quite a different beast to the original spider crane. Perhaps they deserve a separate category - 'articulated crawler cranes'?

The fact is that the major loader crane manufacturers are behind the

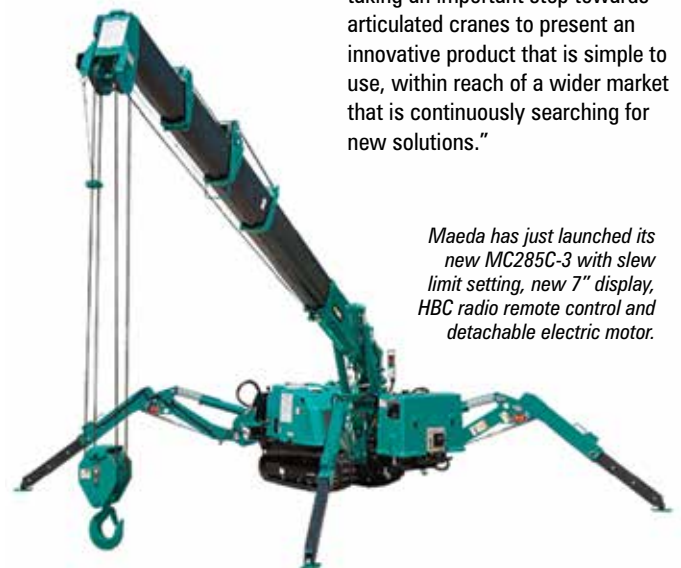


BG Lift delivered its first CWL 525 in the UK to specialist lifting, moving and installation company Country Lifting

new machines, mounting existing crane models on tracks rather than designing a crane from the ground up.

With Brennero, Jekko/Fassi and now Palfinger entering the market

this is obviously a product that looks as though it is here to stay. Jekko says this design is the future and that it will take over from the traditional spider crane design saying: "The mini crane culture is taking an important step towards articulated cranes to present an innovative product that is simple to use, within reach of a wider market that is continuously searching for new solutions."



Maeda has just launched its new MC285C-3 with slew limit setting, new 7" display, HBC radio remote control and detachable electric motor.

Should the new breed of machines be called articulated crawler cranes?





The Jekko JF545 a six section main boom and six section jib giving a maximum reach of 28.1 metres with 600kg capacity

Brennero BG Lift

The company's first two models, the CWE 525 and the CWE 465 have evolved into a single model available in two variations - the original CWE 525 and the newer CWE 525 RT. The main difference is the RT version has a wider 2.07 metre overall width rather than 1.85 metres, with the resulting heavier chassis giving increased stability. Both currently use an Effer articulated loader crane, so the recent acquisition of Effer by Hiab brings a third major manufacturer into the sector. BG Lift delivered its first CWE 525 in the UK to specialist lifting, moving and installation company Country Lifting. The CWE 525 has a six section articulated boom and six section jib. Maximum capacity is 14.4 tonnes at three metres and can take loads to almost 30 metres.

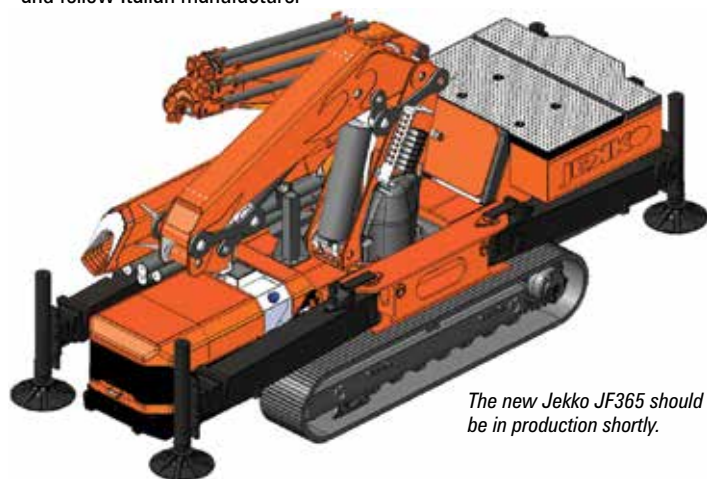
BG Lift also has two more traditional spider cranes - the 2.7 tonne, 5.7 metre tip height M300 and 2.5 tonne/11 metre M250. However, unlike the Unic and Maeda cranes which have the slew ring positioned at one end of the chassis, BG Lift - and fellow Italian manufacturer

Jekko - place the slew ring in the centre of the chassis, integral with the star-shaped spread of the outrigger legs.

Jekko currently has three articulated crawler cranes - the 15.5 tonne JF545 and the much smaller JF30 and JF40 - however it will be unveiling its new 11.5 tonne JF 365 later this month. The larger JF545 is selling particularly well in Germany with 17 units delivered by May of this year.

If you hadn't guessed by now, the model numbers of the Jekko machines tie in directly to the nomenclature of the Fassi loader cranes. So rumours that Jekko will be launching a JF990 sometime next year, possibly at Bauma, means that it will be using the 84.3 tonne metre Fassi F990 crane which with jib has about a 32 metre maximum lift height.

The JF545 also has a six section main boom and six section jib giving a maximum reach of 28.1 metres with 600kg capacity at full reach while maximum lift height is 30 metres with 500kg. In transport mode the unit has an overall width



The new Jekko JF365 should be in production shortly.



Palfinger is set to unveil three new heavy duty, high capacity PCC tracked articulated boom spider cranes later this month



Hoeflon C6

of 1.84 metres, is 5.45 metres long, and 2.75 metres high - slightly longer and higher than the BG Lift CWE 525, but it does have a higher nominal capacity.

The JF545 also uses a simplified lifting moment limiter, although it can still automatically calculate load charts based on outrigger and boom position, displayed to the operator via a very simple graphic. Up to 3,500kg of counterweight can be added or alternatively the space can be used to carry loads.

Jekko's new JF365 is slightly narrower at 1.79 metres and lower at 2.66 metres than the JF545 and it weighs in at 13.2 tonnes. Maximum tip height with the optional L214

jib is 29 metres while maximum horizontal reach of 26.9 metres at which it can lift 356kg. The crane has 360 degrees slew and 45 degree swing out beam and jack outriggers with a maximum footprint of 6.7 metres square. The unit can be half rigged reducing the spread to 4.2 by 4.2 metres.

Palfinger enters market

The advantage of being late into a sector is that it is easier to see what is required to compete with the market leader. Palfinger is set to unveil three new heavy duty, high capacity PCC tracked articulated boom spider cranes at the IAA show in Hannover - the 18.2 tonne PCC 57.002, the 22 tonne PCC 71.002

BG Lift machines use Effer loader cranes



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Each Palfinger PCC crane can be separated into three modules for easier transportation and to gain access into restricted areas

and 30 tonne PCC 115.002. The two larger models will be ready from launch, while the PCC 57.002 will be available in the spring.

Each crane can be separated into three modules - the crawler chassis, the main crane and the counterweight - for easier transportation and to gain access into restricted areas. The crane module can also self load onto a truck using its outriggers and be operated in this position without its chassis. It can also be truck mounted.

Palfinger says the crane is highly adaptable, offers a compact design and the ability to cross all manner of terrain. The crane is also able to 'shuffle' forwards and backwards and by using its outrigger beams allow it to pass through openings without its chassis when headroom is limited or to load itself into a container.

The cranes have overall widths from 1.9 to 2.1 metres and overall heights of between 2.8 and 3.66 metres or 2.1 to 2.36 metres without the chassis. Overall length ranges from 5.9 to 7.45 metres. All models can handle their maximum capacity through 360 degrees and there is some pick & carry capacity. Maximum lift height of the outriggers is just under two metres which allows the crane to level on slopes of up to eight degrees.

A winch is available with a 3.5 tonne capacity on the PK 115.002. Ground clearance is between 200 and 275mm while gradeability is 30 percent with the option of 60 percent with a 17 degree approach and departure angle. Working indoors is helped with a separate battery power pack and additional plastic outrigger pads.

The 30 tonne 103.9 tonne/metre PCC 115.002 has a maximum reach without jib of 23.1 metres, reaching 33 metres with jib at which it can handle 820kg. Outrigger footprint is 7.6 x 9.0 metres and overall weight is about 33 tonnes. The 67.8 tonne/metre PCC 71.002 has a maximum capacity of 22 tonnes. Maximum reach without jib of 21.4 metres or 31.6 metres with jib at which it can lift 470kg. Outrigger footprint is the same as the PCC 115.002, but overall weight is 31.5 tonnes. Smallest is the 18.2 tonne, 52.6 tonne/metre PCC 57.002 which offers 21.5 metres reach without jib and 29.5 metres at which it can lift 470kg. Overall length is 5,900mm, width 1,900mm and total weight about 20 tonnes.

Biggest spiders

The majority of the new articulated crawler cranes have capacities way above regular spider cranes. The 10 tonne Unic URW 1006 and Maeda's eight tonne MC815C remain the two largest traditional spiders.



The compact Maeda CC423 has a 2.93 tonne capacity and 9.46 metre hook height

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The tracked version of the 2.9 tonne Eco 295 has lower ground bearing pressures.



The C10 has a 15 metre five section boom. A larger C30 is due to be launched shortly



Maeda also has its mini crawler crane range topped by the six tonne/16.7 metre lift height CC1485. At last year's Vertikal Days it unveiled the new five tonne CC985S-1 model which can pick & carry two tonnes and has a 16.5 metre pentagonal five-section boom. Powered by an EU Stage 3B/4B compliant engine maximum lift height with jib is 20.2 metres. Features include fully enclosed air conditioned cab, minimal tail swing, two speed winch, hydrostatic transmission, tilt sensor/alarm, rear view camera and seven inch multi-monitor.

At this year's show the company launched its latest model - the CC423 with Stage 3B diesel. A Stage V version available next year. The compact CC423 has a 2.93 tonne capacity and 9.46 metre hook height at which it can lift 1,190kg and a maximum radius of 8.38 metres at which it can lift 200kg, its pick & carry capacity is 1,450kg and the unit has the option of an 850kg searcher hook. The crane has an overall width of 1.66 metres and an overall height of 2.49 metres. Total weight is 4,400kg.

Eco spider crane

Five years ago GGR/Unic launched the green, battery powered Eco 095 and Eco 295 models however they were only available on wheels becoming its first non tracked cranes. Ideal for working indoors they were originally developed for use in environmentally sensitive areas such as food processing plants, but the company has seen growing demand for battery powered and hybrid options for other applications. So a few months ago the company launched a tracked version of the larger 2.9 tonne Eco 295, with the benefits of lower ground bearing pressures and the ability to handle rough ground. As with the wheeled model it employs most of the crane componentry from the standard Unic URW 295.

The tracked crane has a slightly wider overall stowed width but can still easily fit through standard double doors. It is powered by a large 48 volt battery pack, while its standard five section boom offers a maximum tip height of around 9.5 metres which can be extended by

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almost a metre with the offsetting jib. Capacity on full boom is 550kg at up to 4.1 metres radius.

More European alternatives

While the Japanese dominate the market, the number of European spider crane producers has been growing, led of course by Jekko and including Hoeflon, Kegiom, Reedyk, Riebsammen and Van Bouwel.

Business is obviously going well for Dutch spider crane manufacturer Hoeflon Compactkranen which recently opened a new 3,200 square metre headquarters in Barneveld replacing the original 500 square metre building. The company currently has a range of four spider cranes - the C1, C4, C6 and C10. It is also launching its largest crane to date - the C30 - in the near future. It has recently sold two of its four tonne C10's to Mammoet. The C10 has a 15 metre five section boom, topped by a five metre three section hydraulic luffing jib which offsets up to 65 degrees, allowing it to luff to horizontal with the main boom fully elevated providing a radius of six metres at a height of 16.3 metres with a capacity of 317kg. Capacity at maximum tip height of 22

metres is 748kg, while capacity at the maximum radius of 19.8 metres - with boom and jib horizontal - is 209kg. Total weight is 4,700kg fully equipped and overall width is 800mm.

Italian manufacturer Kegiom also has a sizeable range of mini cranes with the largest being its 5000 Cobra. The crane weighs just 2,550kg yet has a maximum capacity of 5,000kg. The optional jib provides a maximum tip height of 16 metres and maximum radius of 14.9 metres at which it can manage 100kg. Outrigger spread is just over five metres although it can be half rigged at 3.8 by 3.7 metres. Transport width is 1.1 metres.

Another Dutch manufacturer Van Bouwel is set to launch the VB-A8010, a larger version of its VB-A5010/3S2 which has a capacity of 1,350kg at 3.1 metres. No load charts are yet available for the 8010 but it is a metre longer at 4.4 metres and 110mm higher at 2.1 metres. Overall width is 990mm while it weighs more than 3,500kg, is available in battery and hybrid formats and can be charged by the engine or a mains socket.



The 5000 Cobra is the largest crane produced by Kegiom



Van Bouwel is set to launch the VB-A8010 - a larger version of the 1,350kg capacity VB-A5010

Coventry water park Lift

The new £36.7 million water park and leisure centre in Coventry, UK has used several spider cranes during its construction. The project is scheduled to open next spring and includes a 25 metre pool, day spa and the main attraction, a maze of nine water slides with features including a mini tsunami, uphill flying boats, a black hole, sphere, looping rocket and space shuttle. Construction of the slides was particularly difficult because of the low ground bearing capacity of the floors and the ceiling height needed to accommodate the leisure structures.

Two spider cranes - an eight tonne Maeda 815C and a 2.9 tonne Unic 376 with jib - have been supplied by rental company Lift Mini Cranes to help with the construction over the past three months. The water park complex is set on three floor levels. The Maeda was lifted by a 60 tonne mobile crane onto a floor six metres up just above the main swimming pool and gym and used to lift the main bulk materials onto the upper floors. Large mats and timbers under the outriggers kept the loadings on the floors to a minimum.

The Maeda was later used to lift the Unic up to the same level and they worked together around the structure lifting and positioning steel brackets and suspended columns - weighing up to 1,000kg - into the roof structure in order to hang each 500kg flume section. The 815C also had to lift the smaller and lighter Unic URW-376 into other constricted positions such as when working on the upper balcony.

Kevin Concepcion of Lift Mini Cranes said: "Both of these cranes used remote control and because of the nature of the work both slinger and operator had to be positioned all over the place. The 815C has a jib and searcher hook stowed on the side of the boom with quick hitch facility so the operator can alternate between them which came in very handy on this project - we don't know how else we could have achieved this result."

The spider cranes were used to hang each 500kg flume section as well as lift and position steel brackets and suspended columns weighing up to 1,000kg



Work was carried out at various levels within the water park



The project includes a maze of nine water slides



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Curtain wall installation

One of the more popular applications for spider cranes is the installation of curtain walling on new build projects. One crane that is often used for the task is the Maeda MC283C which is compact and light enough to fit into a construction elevator and manoeuvring in between columns and walls on the newly constructed floors.

The unit is positioned near the edge of the completed slabs two floors above where the curtain walling is to be fitted. On the floor below are the stack of curtain walling panels. The panels - often weighing up to 800kg - are stored flat and near the edge of the building so that they can be easily lifted into the vertical position on the outside of the building structure.

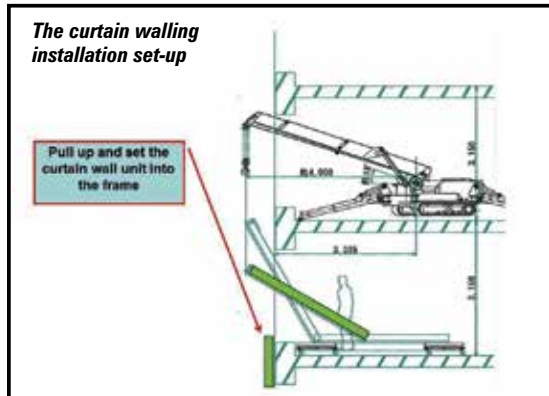
While the crane supports the load, the workers below connect the panel to the building structure. When securely fastened the crane releases the panel and the cycle repeats itself around the building perimeter until the whole floor is completed. The crane then moves up a floor, lifts up the next set of panels onto the floor below and the whole process repeats.



The curtain walling panels are stacked on the floor below the spider crane



The Maeda MC283C is able to set up within the compact space

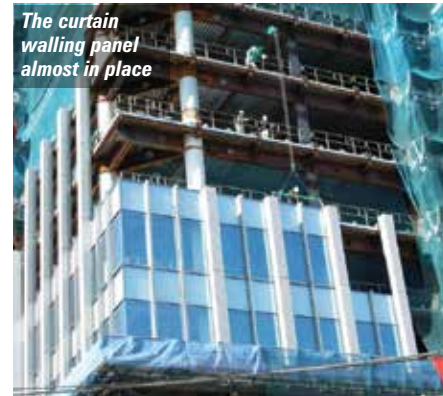


The curtain walling installation set-up

Pull up and set the curtain wall unit into the frame



The panel being lifted into the vertical position outside of the building and ready to slot into the frame



The curtain walling panel almost in place

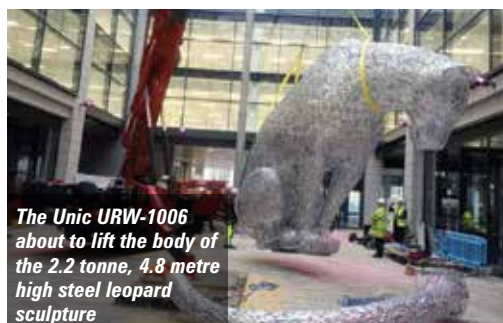
The Poised leopard

A steel leopard sculpture created by sculptor Andy Scott has been lifted into position by a 10 tonne Unic URW-1006 spider crane at the new Marischal Square office, leisure and hotel development in Aberdeen, Scotland. Measuring 4.8 metres high and weighing 2.2 tonnes, the leopard sits on top of a 10 metre high column within the building's atrium.

Named 'Poised', the sculpture is made from small galvanised steel

pieces welded together to create a shimmering mosaic effect. Scott is best known for the Kelpies, the two 30 metre tall horse heads made of steel beside the Forth and Clyde Canal near Falkirk. Muse Developments and Aviva Investors commissioned the sculpture as a centrepiece for the city centre regeneration project inspired by symbols and leopards on Aberdeen City Council's historic coat of arms. Legend says the leopards

were a gift from King James I for underwriting his expenses while he was held captive in England. After 12 months of work in the artist's studio, the sculpture - delivered in three separate pieces



The Unic URW-1006 about to lift the body of the 2.2 tonne, 4.8 metre high steel leopard sculpture



The leopard sits on top of a 10 metre high column within the new Marischal Square office in Aberdeen

- took just two days to install. The Unic 1006 lifted each piece of the leopard into position before lifting the complete sculpture onto the column. At just two metres wide, the Unic was able to move through tight areas and doorways and make

its way to the lift position. The crane features radio remote control with feedback that displays safe working load, actual load, radius and boom length. With a newly revised load chart it can also pick & carry up to 1.5 tonnes.

PCC 115.002 THE SOLUTION FOR PARTICULAR USABILITIES

The crawler crane stands out in particular with the mechanical separability of crane and crawler unit, its compact dimensions, as well as with its exceptional off-road capability. The fields of application of this all-rounder start where the access possibilities of conventional trucks with cranes end.

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