





SPIDER, ARTICULATED, MINICRAWLER OR TRAILER?

The market for small lightweight cranes - spider, mini crawler, articulated and trailer - has become increasingly crowded as innovative products are developed and new companies enter the space. The spider crane dominates in terms of sales and working population, having grown from a tiny niche product 30 years ago to becoming almost mainstream as more companies appreciate its capabilities, particularly its ability to get much closer to the load than All Terrain or truck cranes and work in tight spaces or indoors. Mini crawler cranes and trailer cranes have been around for as many years but remain a niche product - although there are signs of growing interest in both. We take a look at the latest products and developments in this varied market sector.

The spider crane originated in Japan in the 1970s, and for the first 10 or 15 years remained a local peculiarity. Swedish distributor Kranlyft can take credit for introducing the concept into Europe and North America when it began distributing Maeda cranes in the 1990s. It remained an expensive oddball product until competition spiced up the market in the form of GGR with Unic and Italian producer Jekko (initially Imai). Since then, it has transitioned from being dismissed by most crane rental companies as a niche 'toy' into a mainstream lifting device.

Previous issues of C&A have outlined the ongoing developments with Japanese companies such as Unic and Maeda at the forefront, with Jekko and Hoeflon from the Netherlands increasingly taking a more prominent role in terms of innovation. Hoeflon in particular now produces a range of cranes that are more compact and lightweight, while companies such as Kegiom and BG Lift from Italy and more recently SPT from China are also expanding the sector.

Spider crane development is generally evolutionary although there have been a few more unusual developments such as the 3.2 tonne

capacity Unic URW345, or 'Pop Up' crane as GGR dubbed it when launching it at Bauma 2022. Its key difference is its rising boom pivot point which enables the entire length of the chassis to be used for base boom stowage. The riser then elevates, almost vertically, raising the boom pivot point to a height of more than two metres, while moving it forward towards the centre of the chassis. This is similar to Jekko's new JCX80 mini crawler crane, but more on that later.

NEW SPIDERS

Several new spider crane products have been introduced over the past year or so including the all-electric version of BG Lift's four tonne capacity M400 compact spider crane, which







features a four section main boom with a three section articulated jib for a maximum tip height of 21.1 metres, at which point it can handle 750kg, or 170kg at its maximum radius of 17 metres.

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Without the jib, the crane has a maximum hook height of 14.8 metres with a 1,900kg capacity. Alternatively, it can handle 420kg at a radius of 12.1 metres. The crane has an overall stowed width of 1.2 metres, an overall length of 4.25 metres and is 1.96 metres high, with an all up weight of 4,300kg.

UNIC DUO

Unic launched two new cranes at Bauma this year - the eight tonne URW-806-3 and four tonne UM445. The 806-3 has been developed from the URW-706-2 and features a six section boom with a maximum capacity of eight tonnes at 1.7 metres radius, and takes 1,350kg to its maximum lift height of 19.5 metres, or 800kg to 25.2 metres on the jib. At its maximum main boom radius of 18.6 metres, it can handle 200kg, with a few more metres possible with the jib. Stowed dimensions are 5.6 metres long, 1.67 metres wide and 2.18 metres high. Overall weight is 8,520kg with power coming from a Kubota diesel. The electric version is slightly heavier.



The UM445 has a five section 11 metre main boom and is rated at 1.8 metres, while managing 1,840kg on the fully extended boom and 880kg at 16.4 metres lift height on the jib. Its maximum radius is 9.8 metres at which point it can handle 490kg or 100kg at 15.7 metres with the jib. Transport dimensions are 3.1 metres by 750mm with an overall height of 1.95 metres, and 3,830kg overall weight. Power comes from a 160Ah lithium-ion battery pack that can be charged during operation, with a charging time of three hours on 200 volts or 6.2 hours on a 100 volt supply. The first unit was purchased by Irish rental company Liffey Crane Hire.



Last year Chinese spider crane manufacturer SPT launched the European version of its new 2.98 tonne S7 spider crane through its European master distributor, German spider crane and glass handling specialist Uplifter. The crane features a four section main boom topped with a three

handling specialist Uplifter. The crane features a four section main boom topped with a three section telescopic luffing jib for a maximum tip height of just over 17 metres with a capacity of 600kg. The jib can luff down to horizontal with the boom at its maximum elevation of 80 degrees. In this position it has a jib tip capacity of 400kg at a radius of six metres and a hook height of just over 11 metres. Maximum radius is 14.5 metres with a

capacity of 100kg.

The crane has an overall width of 770mm extending to just over a metre for additional stability when travelling. Overall length is 3.9 metres and overall height 1.95 metres. The outrigger set up is flexible with each leg having five positions, ranging from parallel to the chassis to 90 degrees to the chassis, with automatic levelling. Maximum footprint is 4.7 metres by 4.7 metres. Total weight with jib installed is 2,900kg allowing it to be transported by a two axle equipment trailer.



Power comes from a Kubota diesel, and a single phase plug-in electric motor for working inside while a radio remote controller with large LCD colour display is standard. The direct control panel on the crane also has its own LCD colour display panel.

MAEDA

It is surprising that spider crane pioneer Maeda produces machines that are not available for the home market. Its latest spider crane - the 2.8 tonne MK3053C - has been sold internationally since 2024, but only recently made available in Japan.

The MK3053-C features a five section main boom with a three section telescopic jib for a maximum tip height of 16.95 metres at which point it can handle 50kg. It can also take it out to the maximum radius of 14.5 metres.

Maeda has also just announced that it is ceasing production of the 1.72 tonne capacity





MC174CRM. On its website it said: "Due to the considerable time that has passed since the launch of MC174C and the resulting difficulty in procuring parts, we have decided to end production."

JEKKO

At Bauma Jekko launched several new products including two spider cranes: the SPX532.2 - an update of the SPX532 - and the 2.8 tonne SPX328 EVO+ with Integrated Electric Jib which, says Jekko, is a "totally brand new concept of tool/crane integration." The SPX328 EVO+'s electric jib is fully integrated into the crane's systems, using the crane's battery for power and the radio control for operation, thus eliminating the need for a separate battery while being directly connected to the crane's Load Moment Indicator (LMI). SPX328 The new SPX532.2 is an update of the SPX532 and although visually similar to its predecessor.

it features a slightly lighter boom, Autec remote controls and sturdier outriggers with nine, rather than five fixed positions. The unit has a 10.3 metre main boom and a 5.1 metre jib offering a maximum tip height of 17.3 metres. Using just its main boom, it can lift 1,450kg at an 11.8 metres tip height, 500kg at a 9.4 metre radius and 100kg



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to its maximum 14.8 metre radius. It also offers a pick & carry capacity of 400kg. Overall width is 770mm, height 1.97 metres and overall length 3.15 metres. Overall weight is 2.52 tonnes.

MINI CRAWLERS

The mini crawler crane - a shrunken version of a telescopic crawler - dates back in one form or another to the late 1960s. Key features are a cab and no outriggers and most smaller models are based on a mini excavator platforms.

The market took off in the 1980s and 1990s particularly in the UK with the locally built Starlifter and AGD Equipment which distributed



IHI models. However European demand appeared to fade away around the millennium, and most Japanese manufacturers pulled out of the market. Maeda has kept the concept going with its CC range, with the market picking up again as China's Sunward and Italy's Jekko entering the market.

JEKKO JCX80

Missed by many at this year's Bauma was Jekko's new eight tonne JCX80 - the first of a new mini crawler crane range. The lithium battery powered crane has a maximum tip height of 26.1 metres and a maximum radius of 17.3 metres.

On the main boom, tip height is 16.2 metres at which point it can lift four tonnes and 560kg at its maximum 13 metre radius. The crane is just under five metres long - 5.34 metres with jib - two metres wide and 2.34 metres high, making it ideal for tight workspaces. The crane has 360 degrees slew and its tracks can extend 700mm for increased stability when working. It is also possible to remove the two tonne counterweight to bring the weight down to under 10 tonnes for transport.

The main boom elevates to a full 90 degrees - which Jekko calls 'Tower mode'. The boom pivot point can also rise to three metres in height, for working on some tight sites. It also provides a 35 degree negative boom angle allowing it to reach 5.5 metres below ground level at a maximum





radius of 11 metres.

A five section, 10.7 metre telescopic jib with a three tonne maximum capacity is optional and can be fitted with either a hook or winch. With jib installed, the maximum radius increases to 25.2 metres with a 300kg capacity or it can achieve an up & over height of 16 metres with 12 metres radius. The crane has 106 metres of 8mm wire rope on board.

TOWER MODE

In 'tower mode' tip height is 17 metres and with the jib horizontal it can handle 500kg at a 10.2 metre radius, one tonne at 6.5 metres or three tonnes at 2.5 metres.

The crane also offers a pick & carry chart, but not in tower mode. The LiFePO4 lithium battery has enough power for more than a day's work with the energy recovery system on the winch and brakes topping up the battery while working. The onboard fast charger can be plugged in while the crane is working.

The crane is operated by radio remote control - unlike the traditional mini crawlers - and includes self-diagnostics and emergency stop button. A spare battery is stored on the machine.

An integrated camera system monitors the crane, load and winch, using Al for improved control and prediction capabilities. Jekko has also formed a partnership with Danish telematics company Trackunit to develop J-Link adding remote fleet management, monitoring system and diagnostics.

GGR'S OTHER RANGES

UK based crane sales and rental company GGR the European master distributor for Unic cranes - offers a wide range of crawler cranes from the





990kg capacity Almac T-Crane 1060 to the 10 tonne Sunward SWTC 10.

Sunward Europe has two mini crawler cranes in a range that extends to 50 tonnes - the five tonne SWTC 5D and the 10 tonne SWTC 10. Maximum lift heights are 16.5 metres and 21.5 metres respectively while they weigh 10.9 and 20.5 tonnes respectively in working mode.

GGR offers a 'sight and sound' hook based monitoring system for the SWTC 10, which allows the operator to see the load and hear all that is going on in the load area. The system is particularly useful where the operator's view of the load is obstructed, such lowering into shafts. Features include a 113 degree wide-angle lens,19.2 volt battery pack with up to 12 hours operating time, a 1080p resolution auto-focusing sensor with audio from the sensor to the cab, and



an in-cab AC or DC powered 10.1 inch HD monitor with built-in speakers. The unit records on loop for up to 30 days.

ARTICULATED SPIDER CRANES

The spider and mini crane have been joined in recent years by a new breed of machine, the tracked articulated crane which has gained in popularity over the past eight years as more manufacturers join in. The concept adds an articulated loader crane to a heavy duty tracked undercarriage, combining the versatility of an articulated loader crane boom, with the manoeuvrability and rough terrain ability of a mini crawler crane while saving weight through the use of outriggers.

Sales of all types of articulated crawler cranes have generally been slow but are starting to improve as end users begin to identify projects

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that would benefit from their specific skill set. Jekko launched its tracked JF545 in 2017 after Fassi acquired a stake in the company in 2016. The JF545 had a maximum capacity of 15.5 tonnes, a maximum tip height of 30 metres and could handle one tonne at 25 metres. Overall width is 1.84 metres, and overall length is 5.45 metres. Around about the same time, fellow Italian company Brennero/BG Lift introduced its





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14.5 tonne CWE 525 which had a maximum tip height of almost 33 metres and maximum radius 29.4 metres with a 580kg capacity and could raise the jib 20 degrees above the horizontal.

Since then both companies have expanded their ranges - BG Lift now has two larger models - the CWE 525 and M 4000 - while Jekko has four models - the JF990, the upgraded JF545.2, JF365 and the JF235 with the recently added electric version.

Whilst BG Lift describes its M 4000 as a lightweight compact crane, it has a maximum capacity of 40 tonnes and a maximum radius with the optional jib of 42.5 metres! The crane weighs just under 28 tonnes excluding accessories and is 7.39 metres long, 2.26 metres wide and just over three metres high. Its CWE 525 is in comparison compact, even though it has a 14.5 tonne capacity and weighs 13,200kg. Maximum radius with the 6S hydraulic jib is 29.4 metres and maximum lift height 32.5 metres.



PALFINGER'S MODULAR CONCEPT

Another product towards the top end of this market, is Palfinger's PCC range. Introduced in 2018 it includes three models - the 18.2 tonne PCC 57.002, the 22 tonne PCC 71.002 and 30 tonne PCC 115.002. Although not overly popular, it has some enthusiastic followers. GGR in the UK has recently taken two PCC 115.002 into its rental fleet.

The main difference between the Palfinger's and the other articulated cranes is that the PCC models can be separated into three modules - the tracked chassis, superstructure and counterweight - for easier transportation or gaining access through restricted areas. The



GGR in the UK has recently taken two Palfinger PCC 115.002 into its rental fleet

superstructure can self-load onto a truck using its outriggers and be operated in this position without its chassis, or it can be truck mounted.

The superstructure module of the PCC 115.002 with jib and winch weighs 25 tonnes, while the chassis weighs 10 tonnes. The crane also has the ability to 'shift' forwards or backwards using its outrigger beams stowed parallel with the chassis, allowing it to pass under low overhead obstructions or to load itself into a container. The cranes have overall widths from 1.9 to 2.1 metres, overall heights between 2.8 to 3.66 metres or 2.1 to 2.36 metres without the chassis. Overall length ranges from 5.9 to 7.45 metres.

LITHIUM JF

The most recent Jekko JF is the lithium-ion battery powered version of its 6.15 tonne JF235CL. The model has the same features and lifting performance as the diesel JF235 with a five section boom and a maximum tip height of just over 15 metres, at which point it can handle 5.4 tonnes. The maximum radius with the boom horizontal is 12.7 metres with a capacity of 1,280kg. A five section luffing jib can be installed to take the maximum tip height to 25 metres with a capacity of 485kg.



Being emission free, the new electric model is aimed at indoor operation and features a 48V lithium-ion battery pack with Battery Monitoring System integrated into the machine's electronics. The battery provides enough power for up to 10 working hours on a 35 percent duty cycle.



The crane can be recharged with both single phase (230V) or three phase (400V) chargers, can be fully recharged from zero in 6.5 hours and can continue to operate at full power while recharging. The crane is able to be used with a wide range of accessories including a 1.5 tonne winch, mechanical extensions or jibs, a range of man baskets and manipulators, while hydraulic accessories include rotors, clamps, and chain saws

Jekko also launched a new second generation version of its 15.5 tonne JF545 articulated tracked crane, the JF545.2 last year. The key improvement on the new model is its Variable Speed Engine Management system which matches the engine speed to the function operated, and is said to provide faster, smoother and more precise operation along with reduced fuel consumption. The operator can also choose from three working modes - Eco, Normal or Power - each with a different performance characteristic, suited to different applications. Engine information such as RPM, fuel levels and the time remaining before needing to refuel are shown on the crane's seven inch touch screen display panel which is waterproof to IP66 levels and features a new, more intuitive interface and a wider set of functions.



The crane's engine is equipped with a new DPF filter with automatic management for lower emissions, while a three phase plug-in electric motor is available for working indoors or in noise/emission sensitive areas. The hydraulic system has been redesigned and now incorporates a dedicated electric powered hydraulic oil cooler.

In terms of the crane's structure, the three section outriggers have a greater number of set up configurations. When stowed the crane has an overall width of 1.84 metres, an overall height of 1.83 metres and is 5.83 metres long. New options include a low temperature pack with a pre-heating kit for counties with extreme cold and a work platform that offers a maximum working height of 32.2 metres and a platform capacity of 200kg.

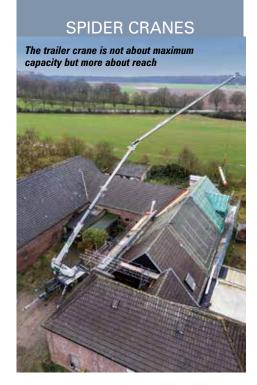




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TRAILER CRANES

One of the more niche crane sectors is the trailer crane with three German manufacturers - Böcker, Paus and Klaas - being the main players. It is no coincidence that these manufacturers have a major feature that unites the equipment - aluminium booms. Bocker and Klaas have perfected their use over many years on their truck mounted cranes. The trailer cranes are mounted on a wheeled chassis that weighs less than 3.5 tonnes and can therefore be towed behind a larger 4x4 vehicle.

Like their truck mounted siblings, the trailer crane is not about maximum capacity, but more about reach. Paus' largest of two models - the PTK 31 - has an aluminium main boom with hydraulic extendible jib giving it a maximum extension of 30.5 metres and it can lift 1,200kg to almost eight metres radius, 350kg to 15 metres and 100kg to 24.5 metres. Transport length is 8.8 metres and width is 1.96 metres.

The latest trailer crane from Paus is its top of the range 2.5 tonne PTK XX with a maximum tip height of over 35 metres. The crane also features Paus quick change 'Multi-jib system.

The compact single axle trailer chassis of the PTK XX is equipped the same Paus wheel drive used in the PTK 31 which can manage steep inclines. As



with the PTK 31, the PTK XX measures just two metres wide.

KLAAS

The largest Klaas trailer crane is the 1.5 tonne capacity K400 with a 34.3 metre hook height. Klaas launched its first battery electric crane - the K280 E - in 2023 based on crane the original model launched two years earlier. The specifications are mostly the same as the original, with a maximum capacity of 800kg at up to a six metre radius and a height of 21 metres. The three section main boom and fixed offsettable jib provide a maximum tip height of just over 26 metres. Maximum radius is 22 metres at which it can handle 250kg up to a height of around four metres.

The power pack is said to provide a full day's work, even when using the self-propelled drive function or heavy use. Recharging times are not given apart from the fact that it will go from zero to full charge overnight on a standard 13 amp socket. It claims that for more typical applications it has enough power to drive into position and run several days between re-charges. The outrigger beams are pulled out manually with several widths available, while the long throw hydraulic



jacks are equipped with auto levelling. The crane's stability is constantly checked and monitored via the ASC system, which also takes wind speed into account.

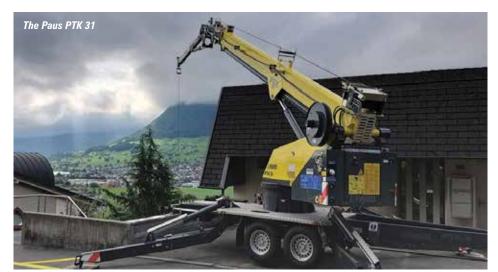
ELECTRIC BÖCKER

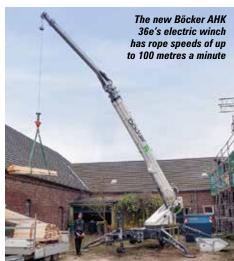
The new Böcker AHK 36e electric trailer crane - with a maximum lift capacity of 1,500kg - has extremely low energy consumption thanks to a new, high efficiency drive and completely newly developed electric winch. This combined with a 12.2kWh battery ensures at least 10 hours use in typical applications. It also recovers energy when the load is lowered via the cable winch and feeds it back into the battery. The electric winch has rope speeds of up to 100 metres a minute. During or after operation the crane can be charged with a 230 volt household socket.

The AHK 36e has a three section boom topped by a three section luffing jib, and two metre extension for a maximum tip height of almost 35 metres at which point it can handle 250kg out to a radius of 23.1 metres and a height of 21 metres. Two tonnes maximum capacity can be taken to a radius of 5.4 metres, while 1,000kg is possible at 10 metres radius. German rental company Hüffermann Krandienst recently took delivery of the first AHK 36e with a direct drive electric winch, its 33rd Böcker crane.

The crane features 360 degree continuous slew, a main boom elevation of 85 degrees and jib articulation of up to 162 degrees. Overall dimensions are 9.2 metres long, 2.3 metres wide with a height of 2.9 metres while the overall weight is 3,500kg. Standard features including work lights, outrigger warning lights and a hook camera.

The crane can also be fitted with the PK 250-D work platform attachment giving a maximum working height of 29 metres with platform capacities of 250kg at 15.8 metres outreach or 100kg at 18.8 metres. ■









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