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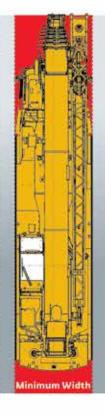
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- GMK4100L-1 2.55 m

Keep on tracking

At the end of last year (C&A Vol 18 issue 8) we compared Rough Terrain and telescopic crawler cranes for work on poor ground. Despite their obvious differences, they offer similar benefits of easy, quick set-up, ability to cope with tough ground conditions, plus pick & carry capability.

The market for Rough Terrains has been sluggish over the past year or two, principally as a result of the economic conditions in the oil & gas sector. Sales however are now beginning to recover. At the same time demand for telescopic crawler cranes has continued to ao from strenath to strenath. albeit from a relatively low, niche base. The telescopic crawler is rapidly becoming a more mainstream product and will be spurred on by several new models that have recently been launched into the market.

Interest in larger capacity telescopic crawlers must surely be based on the increased use and awareness of smaller crawler cranes along with the growth in spider cranes, a concept that began in Japan. These cranes have helped to break down preconceived conceptions encouraging users and buyers to be more open-minded to the benefits of all telescopic crawlers.

Around for a while

Telescopic crawlers have been around far longer than most people realise. In the mid 1960's Grove

put superstructures onto crawler chassis, while in the UK Coles attempted to market a standard product and Kato introduced a product in Japan. In the early days, most crane users did not understand the point of putting a telescopic boom on a slow heavy set of tracks preferring more versatile Rough Terrain or truck cranes. The market for telescopic crawlers was largely limited to a niche end-user purchase, although a few specialist manufacturers - such as Spandeck-Mantis in the USA and IHI in Japan - began to carve out a market from the 1980s.

The whole purpose of the telescopic boom is that it remains with the crane for transport, allowing rapid set-up once on site without the need for booms to be rigged. It was therefore often limited to short term work where the set-up savings were of most benefit. Only a few users appeared to have appreciated the benefits of being able to retract the boom every night, or to travel under overhead obstacles etc. However in recent years there has been enormous development

Sennebogen 653E



and improvement in the lifting performance, design and versatility, choice and cost of telescopic crawlers helping spur on further take-up.

The ready availability of telescopic crawler cranes has also been an issue, with most rental companies only purchasing them for specific customer requirements such as on large tunnelling contracts or where the crane had to work or pass through areas with low headroom. As more rental companies have added telescopics to their fleets the more end users have specified them, and the more manufacturers have entered the market.

New crane launches at Conexpo

At Conexpo in March the telescopic crawler was one of the stars of the show, with several new launches from a wide range of manufacturers. On home turf, Link-Belt showed its biggest telescopic crawler to date, the 227 tonne TCC-2500, which is also the largest telescopic crawler crane currently produced eclipsing Liebherr's 220 tonne LTR 1220. There was also new model from Grove, the latest product of its agreement with German manufacturer Sennebogen, two new models from Tadano Mantis and one from Chinese manufacturer XCMG as well as several smaller mini telescopic crawlers from the likes of Maeda, Jekko and Sunward.

Biggest Link-Belt

Most telescopic crawler crane sales fall within the 40 to 120 tonnes range, with larger models quite rare. Liebherr ceased production of its mammoth 1,200 tonne LTR 11200 around two years ago due to the lack of sales, resulting in its next largest - the 220 tonne LTR 1220 becoming the biggest available. So the launch of Link-Belt's TCC-2500 is quite newsworthy.

Link-Belt has been producing telescopic crawler cranes since 2005 and since then has expanded its TCC range to five models ranging from 46 to 227 tonnes. Initially it aimed the cranes at powerline utility applications, where the low ground bearing pressure and ability to cope with rough ground are ideal. However as their popularity has grown, sales to rental companies and general contractors have increased, not only in North America but also in Australia, Europe, South America and Singapore.

In last November's issue just after the first details of the big Link-Belt were announced we compared it with the Liebherr LTR1220, which showed that in terms of boom and overall reach the new crane stacked up well. A few weeks later US crane and access rental company ALL Erection & Crane Rental showed its confidence in the new crane with an order for six TCC-2500s with deliveries spread throughout this year and into the first half of 2018. All Erection president Michael Liptak



telescopic crawlers



Link-Belt telescopic crawlers have been significant contributors to our fleet. The TCC-2500 just takes everything that is great about Link-Belt telescopic crawlers to a new unmatched combination of reach and capacity."

The TCC-2500 features a seven section, 67.9 metre pinned main boom, which can be further extended with a three piece -3.6/12.1/20.4 metre - bi-fold extension with up to 45 degrees of offset that can be further extended with two 7.62 metre inserts for a maximum tip height of 105.4 metres. Power for the new crane comes from a Tier 4 Final Cummins diesel. The matching main and auxiliary winches feature extra wide drums that allow it to handle its maximum permissible line pull of almost 13 tonnes through the fourth layer of rope and the rear mounted

Maximum line speed is 123 metres a minute.

The TCC-2500 can self-unload and self-install its tracks and counterweight thanks to its standard jacking system with wireless remote controls. Full working track width is 6.21 metres, while twin bar grouser track pads have standard nylon pad inserts for use on more sensitive ground surfaces. The new crane can pick & carry its entire load chart and comes with load charts for slopes of one, two, three and four degrees.

The operator's cab tilts up to 20 degrees and features a new 10 inch full colour touch screen crane interface which incorporates both rated capacity limiter, telematics system, ground bearing calculator and engine data. The display can

auxiliary winch can be quickly removed to reduce transport weight.



be used when wearing gloves and be seen in direct sunlight. Operator visibility is helped by four cameras giving a rear view, blind-side swing view and two individual winch view cameras.

When transporting between jobs, the main part of the crane - less counterweight and tracks - weighs 48.6 tonnes, while the nine-piece superstructure counterweight totals 69.8 tonnes. This allows the entire crane to be transported across most states in eight trailer loads, all seven component loads weighing no more than 20 tonnes.

Grove 30 tonner

At the opposite end of scale Grove recently unveiled its smallest telescopic crawler to date - the 30 tonne GHC30 - with deliveries scheduled from this summer. The new model joins the current three model range that includes the 50 tonne GHC55, 70 tonne GHC75 and the 120 tonne GHC130 with boom lengths up to 40 metres. All four cranes are built by Sennebogen in Germany and are currently only available in the Americas, sold through the Grove/Manitowoc dealer network and fully supported by Manitowoc Crane Care.



Sennebogen has been building heavy duty telescopic crawler cranes for more than 20 years and has its own range of six models with capacities from 16 to 120 tonnes. It entered into the long-term strategic partnership with Manitowoc/Grove just over two years ago. The three larger Grove cranes are based on Sennebogen's standard 653, 673

and 6113. All three can pick and carry 100 percent of their load chart through 360 degrees, making them ideal for applications such as utility projects. A variety of attachments are also available including an auger and pole claw.

As with the 50 tonne Grove GHC55 which was launched in 2015 a few months before Sennebogen unveiled its own version the 653E - it is likely that the company will shortly announce its own version of the 30 tonner as it does not yet have an equivalent model in its range.





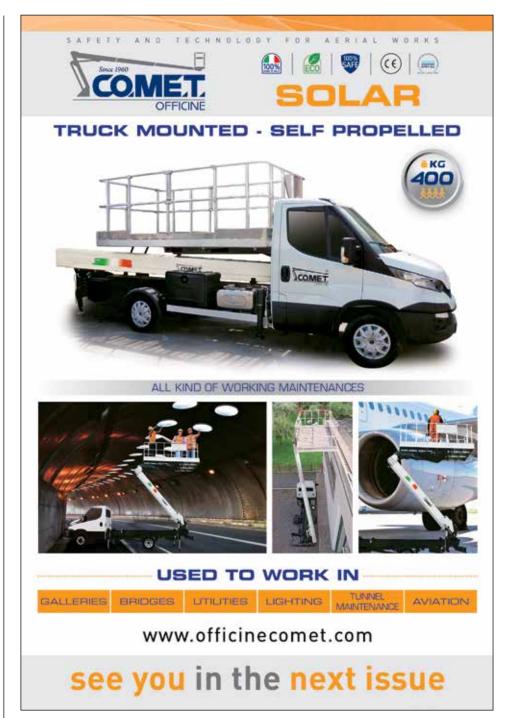




The GHC30 features a three section 25.2 metre main boom with an optional 6.5 to 13 metre offsettable swingaway extension, taking the maximum tip height to 40.2 metres. It can pick & carry 100 percent of its load chart through 360 degrees and lift on slopes of up to four degrees. The crane has an overall transport width of three metres, is 10.6 metres long, with an overall height of just three metres and a tail swing of 3.3 metres. The tracks can be hydraulically extended and retracted and have three working widths of three metres, 3.75 metres anf 4.5 metres with 700mm pads.

The fully assembled crane can be transported on a single truck, ready to work immediately it is unloaded. The 15 degree tilt cab features air suspension, heated seat and climate control system, a seven inch screen shows views of the hoist, rear and right side camera images and a graphical RCL system. Two engine options are available - a Tier 4 Final Cummins with a Tier 3 model for international markets where required.

Product manager for Grove GHC cranes John Bair said: "We talked to a number of dealers and customers about the telescopic crawler line and about how we could expand the range to benefit certain applications. Customers in utility, energy, construction and barge mounted work for example, indicated that a crane with a smaller footprint, which was easy to transport and offered 100 percent pick & carry ability with a robust, full power boom would help increase efficiency on many job sites."





Smaller capacity telescopics?

Given the growth in the larger capacity telescopic crawlers it is surprising that the smaller crawler cranes have not caught on more rapidly. Perhaps this is because of the wider availability and range of spider cranes from manufacturers such as Maeda, Unic and Jekko? Even the smallest mini crawlers are heavier than spider counterparts, due to their more compact footprint and lack of outriggers. They also include an operator's cab, can pick & carry their full load chart and set up in confined areas, while a spider crane's footprint is huge in comparison to its compact travel dimensions. Over the years, there



have been numerous manufacturers of mini telescopic crawler cranes including Maeda, Marchetti, IHI, Sennebogen and Hitachi.

AGD Rentals based in the UK claims



to have been a pioneer in the European mini crane rental market. It is now more than 20 years since it purchased its first 30 tonne capacity IHI CCH300T which proved popular with construction, civil engineering and piling contractors. But while the CCH300T - and its 50 tonne brother the IHI CCH500T - were popular, AGD has been gradually replacing them with new telescopic crawlers in the 25 to 80 tonne capacity range - most with tilting cabs for improved visibility, ideal for work on road, civil and utility contracts.

Three new five/six tonners

Over the past few months three manufacturers - Maeda, Sunward and Jekko - have launched new mini telescopic crawler cranes in the five/six tonne capacity range.

In recent years the Maeda LC

In recent years the Maeda LC series has led the market, originally available with three, five and six tonne lift capacities (the LC385,



LC785 and LC1385 respectively). This range has been redesigned and rebranded as the CC series, reflecting the fact that Maeda is now using its own tracked undercarriage, moving away from one supplied by Komatsu.

Maeda's new CC1485S-1 is an upgraded version of the LC1385 but still retains the six tonne maximum capacity at 2.6 metres and its 16.3 metre five section boom. However the CC1485 uses a heptagonal shaped boom and is 100mm lower at 2.86 metres. Overall weight has also been reduced by more than a tonne to 14,400kg - with rubber track pads - and features the new Stage 3B engine which is said to be 40 percent more efficient. Overall dimensions are very similar but the tail swing has been reduced by 50mm on the new model and its pick & carry capacity remains at two tonnes. Other new features include a new seven inch monitor with LMI and greater space for the operator by removing floor mounted travel pedals.

Sunward's new crawler

Last year's Vertikal Days show saw GGR unveil a small telescopic crawler crane from Chinese equipment manufacturer Sunward, that it hopes will help it break into the European market. The original model was not the right specification and it was back to the drawing board for Sunward. The new crane will feature on the GGR stand at this year's Vertikal Days this month and is hopefully an indication that the new version ticks all the boxes. The new crane, the 4.6 tonne SWTC5C, is the smallest crawler crane in a six model range that includes a 16, 26, 35, 55 and 75 tonner.

The SWTC5C features a lightweight hexagonal five section 15.6 metre main boom and is powered by a Yanmar Euro IV engine. Sunward says that it plans to add a three tonne and a nine to 10 tonne model at the end of next year.

Jekko SPK60

Jekko has also introduced its all-new six tonne capacity SPK60 mini crawler crane with the optional four section telescopic luffing jib, giving a maximum tip height of almost 28 metres. Maximum radius with the jib is 19 metres. The Italian company was formed 15 years ago as a division of Ormet to develop special spider cranes for the international market which it sold under the Imai brand. It then launched a new range of standard models under the Jekko brand in 2006.

The new SPK60 mini crawler crane has several features not usually found in this size category such as extendable tracks to increase

stability and capacity and zero tail swing allowing the machine to work more easily and safely in restricted spaces. The crane can pick & carry up to three tonnes.





Jekko SPK60 cab and remote.





How the new small capacity crawler telescopics compare

	Maeda CC1485S-1	Jekko SPK60	Sunward SWTC5C
Max capacity	6.0t @ 2.6m	6.0t @ 2.0m	4.6t
Boom length	16.26m	17.7m	15.6m
Weight	14,400kg	13,760kg	10,904kg
LxWxH	6,460 x 2,490 x 2,865mm	5,866 x 2,320 x 2,639mm	5,133 x 2,492 x 2,797mm
Max boom & jib	22 m	27.5m	16.12m
Pick & carry cap	2 tonnes	3 tonnes	n/a
Engine	Stage 3B - 40kW	Stage 3B - 53.7kW	Euro IV - 46.2kW
Tail swing radius	1,550mm	1,465mm	1,461mm
Extendable tracks	No	Yes to 2.9m	No

Another feature is that it can be fully operated - including travel - by remote control allowing the operator to be out of the cab and in the most advantageous position for the work being carried out. The SPK60 can be fitted with several optional attachments, which are automatically recognised by the LMI and loads the relevant load chart to the display. The cab features two video cameras for a better view of the working area and a customisable control system.

Major changes have been taking place at the company over the past three or so years and with a growing product line, year on year growth is currently 30 percent. This year it hopes to ship around 300 cranes and move into a new 15,000 square metre facility - 50 percent of which is covered.

The Sunward has a lower maximum capacity than the other two, with a substantially lower overall weight and most likely lower duties through the load chart. On paper the Jekko with its longer boom, greater overall reach and compact dimensions comes out on top.

Tadano adds two more global Mantis crawlers

Tadano Mantis unveiled two new telescopic crawler cranes at Conexpo - the 60 tonne GTC-





600 and 80 tonne GTC-800. Both new cranes have been designed to "meet the needs of the power transmission, bridge, civil and

foundation sectors while expanding the broader appeal of the crane toward the lift crane markets".

Both cranes use the purpose

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designed, Tadano round profile telescopic boom with Tadano winches, jib, hydraulic cylinders, AML-C load moment indicator and Hello Net telematics. Currently only the GTC-800 is CE marked. With Japanese built booms and Tadano design and quality criteria justifying the G designation, we might see the company begin to offer a wider range of these heavy duty telescopic crawlers through its global distribution network.

The larger GTC-800 is already proving very popular with orders placed at Conexpo by US companies Empire and Scott Macon. Empire founders Luke and Paul Lonergan said: "Having seen an increase in rental utilisation and quoting activity with the Tadano Mantis product, we saw the need to position ourselves to better meet the customer's requirements in the Northeast. The new GTC-800's market leading boom length on a crane under 100 tons, along with cutting edge features such as Opti-Width and superior out-of-level charts, make the GTC-800 a definite winner in comparison to the competitors."

The GTC-600 features a full power, four section 36 metre boom, while the GTC-800 is 43 metres. Both cranes offer an optional 10.1 to 17.7 metre bi-fold swingaway extension with offsets of 3.5, 25 and 45 degrees. Maximum tip height is 55.5 metres on the GTC-600 and 60.4 metres on the GTC-800. There is also the option of a 2.5 metre heavy lift jib with a 20.3 and 21.4 tonne maximum capacity that offsets at 3.5 and 30 degrees. The cranes have automatically selected out of level - up to four degrees variable width load charts and full chart pick & carry capability. The 'level' ground load chart is for slopes up to 1.5 degrees.

Both cranes feature Tadano-Mantis' Opti-Width asymmetric track position allowing them to work on a reduced track width on either side, with the position of each track continually monitored by the crane's AML-C system, which sets the optimum load chart for the track positions. The tracks can easily be extended and retracted and the crane can operate in any position. When tracks are set in the middle width, a zoned load chart is said to give up to 50 percent higher capacity than the same track width when in the symmetrical mid track position.

Both cranes are powered by the same Cummins Euro stage IV diesel, while options include a 340kg capacity boom mounted work platform giving a working height of 40.7 metres - almost 50 metres on the extension - and a boom mounted auger system for variable radius drilling.

Chinese crawlers

While Chinese manufacturers are happy to churn out lattice boomed crawler cranes, very few of the major manufacturers produce larger telescopic crawlers. One exception is XCMG with its three new XGC series cranes which includes the 25 tonne XGC25T, the 55 tonne XGC55T and the 100 tonne XGC100T.

A quick comparison of the XGC100T with the Link-Belt TCC 1100 reveals

	XCMG XGC25T	XCMG XGC55T	XCMG XGC100T	Grove GHC55	Link-Belt TCC 1100
Max capacity	25t	55t	100t	50t	100t
Boom length	33m	41.4m	55.6m	30.4m	45.7m
Weight	34.9t	61.2t	104.6t	45.8t	101.2t
LxWxH	12.8 x 2.95 x 3m	12.7 x 2.98 x 3.1m	14.74 x 3.9 x 3.46m	10.7 x 3.5 x 3.18m	15.33 x 3.63 x 3.87m
Max system length	41.15m	57m	74.1m	45.4m	64.3m
Extendable tracks	No	Yes to 4.8m	Yes to 5.9m	Yes to 5m	Yes 5.53m

XCMG has three new XGC series telescopic crawler cranes - this is the 100 tonne XGC100T.

that on paper at least, the XCMG performs well. It has 10 metres more main boom, a more compact overall length, lower overall height but a wider extended track width. The Link-Belt is however slightly lighter and narrower and has a more powerful engine. In fact the XGC cranes all have very good main boom lengths - the XGC55T has a 11 metre longer boom than the Grove GHC55 - although it is 15 tonnes heavier.

New 65 tonne Hitachi Sumitomo

Yet another new crane is the 65 tonne Hitachi Sumitomo 650TLX. Only brief details have been released so far, but they include a four section 30.1 metre hexagonal profile main boom designed to be strong enough for foundation work. As such the crane features a hydraulic

system that can cope with cycle work attachments such as augers and vibro pile drivers, and offers a third winch with free fall option. The overall transport

width is 2.99 metres and the crane can completely self-assemble.

Also worth a mention are the Italianbuilt cranes from Marchetti and TCM. Unusually both manufacturers offer crawler telescopic cranes with outriggers, improved lifting performance for their weights. Piacenza-based Marchetti produces two cranes - the 70 tonne Sherpa 70.42L and the 25 tonne Sherpina 25.35 - the Sherpa having outriggers allowing it to set-up and level, with a 200 percent higher lift capacities than if working on a four degree slope. TCM has four telescopic crawler cranes from 28 to 70 tonnes capacity with two - the 35 tonne RTC 35 and 70 tonne RTC 70 - having hydraulically extending outriggers.







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When US-based contractor Malcolm Drilling was faced with working under a low bridge to drill caissons for a new five-span welded steel box girder bridge project in Glenwood Springs, Colorado, finding the right machine required considerable time and effort. It eventually decided to use a 100 tonne Link-Belt TCC-1100 telescopic crawler crane for the work.

The contract to replace the old Glenwood Springs river bridge which dates back to 1953, involved constructing 26 caissons - drilling a shaft 16.4 metres deep then lowering the rebar cage into the hole before filling with concrete. The resulting piles support the concrete pier caps for the new bridge. The TCC-1100 was chosen because it could pick & carry the 25.4 tonne hydraulic casing oscillator under the existing bridge with an overall headroom height of just 10.9 metres. Once under the bridge the equipment was lifted into place to carry out the caisson construction. When constructing some of the caissons the clearance between the boom head and the girders was just 230mm. The second critical crane requirement was being able to lift a 13.6 tonne rigged pile starter section up and over the oscillator before drilling the shaft.

Access to the jobsite comprises a back-filled access road no more than 13.7 metres wide along the Colorado River and under the bridge. The TCC-1100s boom tip, load capacity and height specifications were key consideration in the crane selection.

Malcolm Drilling superintendent Todd Williams said: "We were constrained with no extra room to move, get the drill spoils out of the way, get the rebar cages to the Link-Belt crane, or to even physically swing and work around ourselves. With so much equipment in such a small space means watching each other's back continually, especially as the concrete was poured after the rebar cages are placed. While pouring continued, the oscillator worked the casings up until the TCC-1100 grabbed and lifted them out of the way."

The new bridge will cross the Colorado River, Union Pacific Railroad and four lanes of Interstate 70 and is scheduled to be completed in May 2018, helping alleviate traffic congestion coming off the scenic I-70 Interstate west of Denver into downtown Glenwood Springs.





Big toys for big buoys

The Tönning Water and Shipping Authority is responsible for the safety on the North Sea waterways along the west coast of northern Germany. This also includes maintaining the large conical-shaped navigation buoys weighing up to six tonnes each that mark the shipping lanes in the water.



The buoys need to be cleaned difficult to see - then they are bi-annually on board a buoy tender ship to remove and repainting. barnacles, mussels and plant

growth. However, if the buoy has been in the water longer or has attracted more barnacles and plant growth its weight in increased and so it sits lower in the water and is more

removed completely for repair

The authority is using a 40 tonne Sennebogen 643 telescopic crane to unload, move, help dismantle for sand-blasting and painting and store the buoys in a facility in Tönning.



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