Established players

Terra Engineering's Grove GHC130 installing an emergency coffer dam in Wisconsin

Over the past 10 years, telescopic crawler cranes have moved from a niche product to an increasingly accepted part of the global crane industry, offering a compelling alternative to smaller lattice crawlers and Rough Terrains. Will North reports.

The telescopic crawler crane market emerged out of two main markets. In Japan, powerful, relatively short boomed machines have long been used for foundation work and similar applications. Cranes in the USA have also been used for this sort of work, as well as for pick & carry tasks such as tilt-up construction and placing preformed concrete pieces on transportation infrastructure projects. They are also used widely in utility work such as high tension cross country transmission lines with pylon installation or replacement.

In Europe, Marchetti and Sennebogen both took a more modular approach, offering similar telescopic boom cranes on a choice of wheeled or tracked carriers.

A steadily growing choice

Today, buyers in Europe and North America have an increasingly wide range of cranes and suppliers to choose from. They can select from more than 30 different models with nominal lifting capacities that extend from Marchetti's 25 tonne Sherpina, through to Link-Belt's 230 tonne TCC 2500. Boom lengths on these cranes now range from 25 metres on Sennebogen's 633E (distributed in the Americas by Manitowoc as the Grove GHC 30) to 68 metres on the big Link-Belt.

In Europe and North America, nine manufacturers or brands are truly active, including: Tadano, Link-Belt, Liebherr, Sennebogen, Marchetti, HSC, and, most recently, Sany, plus the Sennebogen built Groves in North America.


A Sennebogen from the AGD fleet shows how telecrawlers can adapt to internal use

Some of these companies, such as Tadano's Mantis operation, which dates back to the 1970s, along Link-Belt, Marchetti and Sennebogen, have been offering this type of crane for a great many years and have helped take the product from being ultra-niche to the more mainstream, to the point where larger manufacturers moved into the market.

Growing sophistication

As the segment has developed, crane designs have changed and improved. The earliest telescopic crawlers typically used four plate box section booms, while end users tended to work with relatively short boom lengths and radii for ground work and for tilt-up construction. The products on offer were well suited for their needs and were cost effective. The more recent international breed of telescopic crawlers are aimed at a wider range of applications, including more typical lifting work where space might be limited, or when lifting and moving the load is a benefit. Manufacturers have almost completely shifted over to more sophisticated formed booms. In western markets, only one manufacturer, Link-Belt, offers a model with a traditional four plate box type boom with its TCC-500, and this is in the process of being superseded by the TCC-550 which boasts a slightly longer formed boom.


The original Mantis cranes still fetch good money

But what has made these cranes so successful? A key draw is the speed with which they can get to work, in most cases being able to drive off or jack themselves free of a transport trailer, install their counterweight and be ready to start lifting. As you move up in capacity the cranes are transported without tracks but working from their jacked base, they can install them quickly and relatively easily. Unlike a lattice boom crane, they do not need to wait for boom sections to be delivered and then rigged. Unlike Rough Terrain cranes, they do not need to set up outriggers to carry out a lift and have far better pick & carry abilities.

They are also well suited to tough travel and working conditions. Many can cope with grades of 70 percent or more. They can often pick & carry their full load charts and can usually lift on slopes of up to three or four degrees. Add in variable track widths combined with modern control and monitoring systems and you have a machine that can work within a limited footprint with a fully optimised load chart for its actual configuration.

When they first came into regular international series production, these cranes were often seen as an alternative to lower capacity lattice boom crawlers, with the added benefit that they could pull the boom in to pass beneath an overhead obstacle and stow it at night. But the advantages of the current crop of machines, including vastly improved load charts, mean that they should now be seen as a class of their own.

Buying into the market

Perhaps one of the most significant changes came in 2008, when Tadano acquired Spandeck Mantis. In the years since the Japanese company has helped dramatically improve the build quality and sophistication of the Mantis product. It was also able to combine its experience in designing and manufacturing longer formed booms with the Mantis heavy duty crawler crane expertise. This led to a wider product range, and the introduction of cranes with longer booms. As part of the recent 'One Tadano' programme the Tadano Mantis branding which has been in operation for the past 10 years or so, will simply become Tadano.

Another important move came with Tadano's acquisition of Demag from Terex, which mostly involved lattice boomed crawlers. Engineers at the Demag plant in Zweibrücken had been working on a new high capacity telecrawler however and showed a model of the proposed crane at bauma 2019, dubbed the TCC-160. With the acquisition complete, the crane was brought to market in 2020 as the '180 tonne class' Tadano GTC-1800 in Europe, and the GTC-2000 in North America. The actual maximum capacity is 156 tonnes at three metres.

The Tadano GTC-1800

Breadth of options

With the integration of Mantis and Demag into the Tadano business, the company now has one of the widest ranges of telescopic crawlers on the market, with capacities ranging from 35 to 180 tonnes. Tadano has long taken the approach of marketing regional variants of its machines with different model numbers, and its telescopic crawler line is no different, split between North American and European models, with some models only offered in North America.

While no new models have surfaced this year, Tadano has notched up some sales breakthroughs. In February, the company announced that it had delivered the first US built, CE certified 80 tonne GTC-800EX telescopic crawler crane in Europe to German customer Auto-Krandienst Jaromin. General manager Olaf Jaromin highlighted the crane's performance when working at an incline, aided by its automatic track position and slope angle monitoring systems. The crane went to work on its first job, in Essen, Germany, lifting materials for pipe ramming. All of the Tadano telecrawler models are built at the Mantis facility in Richmond, Virginia, with the exception of the new 180 tonne GTC-1800EX (GTC-2000 in America), which is built in Germany.

Cranes in this class have in recent years built a strong position in the wind energy market. But that's not how Saller used its unit in Rostock. The German company was hired to install tall concrete columns, and other concrete pieces, for a

Telecrawlers are in a class of their own

Saller set up its Tadano GTC-1800EX at its maximum six metre track width to build a warehouse in Rostock

The GTC-1800EX lifts beams from the delivery truck

With slings replaced by a lifting rod, the beams are turned to the vertical…

…and installed in the ground

Saller installed 210 columns and 2,400 concrete components for the warehouse

warehouse. The columns were delivered to site in pairs on a low loader, lifted off by the 1800EX, rigged for a vertical lift and then tilted up and placed into prepared holes. Saller installed 210 of these columns, some of them up to 17 metres high and weighing up to 25.7 tonnes.

Bespoke to series production

Liebherr has, in previous decades, built one-off telescopic boomed crawler cranes, usually involving the combination of a modified All Terrain superstructure with one of its tracked crane undercarriages. This included the 2009 launch of the 1,200 tonne LTR 11200, which matched the upper from its biggest All Terrain crane with one of its crawler crane carriers. The first unit was custom-built for a particular client, working on wind turbine installation. The idea was that the crane's ability to quickly retract its boom made travelling across soft ground to the next turbine foundation faster and easier. Interest was such that it added the model to its standard product line. However, after some initial success it quietly dropped the model when upgrades were required. This may have been due to turbines becoming higher and components larger and heavier. It also followed a couple of boom side loading incidents. The market is now largely served by a new range of lattice boom cranes, which may themselves eventually be replaced by other lifting innovations. However, large telescopic crawlers have established an important role in this market, unloading and moving components on turbine erection sites, and as assist cranes.

In the more common capacity ranges, Liebherr's first model was the 100 tonne LTR 1100, developed in 2005. Like its custom-built predecessors, this crane was a chimera, with the top of an All Terrain and carrier of a lattice crawler. It has

Photo courtesy JoachimKohlerBremen

The 1,200 tonne Liebherr LTR 11200

since been joined by a larger model, the 220 tonne LTR 1220, and two smaller models, the 60 tonne LTR 1060 and, in recent weeks, the 40 tonne LTR 1040.

North Atlantic treaty

Manitowoc has always focussed on lattice boom crawler cranes, but growing demand for telescopics a few years back, caused it to take the segment more seriously. Rather than developing its own product range from scratch, the company negotiated an agreement with Sennebogen to sell 'tweaked' versions of the German manufacturer's telescopics as the Grove GHC range. Grove itself had previously built one-off telescopic crawler cranes for specific clients or sold its truck mounted crane superstructures to distribution partners for crawler mounting. The Grove GHC cranes are only offered in North and South America, where Sennebogen has not actively marketed its tracked cranes in the past. Today there are seven Grove GHC models, from the 30 tonne GHC30 up to the 127 tonne GHC140.

This summer saw an interesting development in the relationship between Sennebogen and Manitowoc, with the launch of the new Grove GHC110, a 100 tonne crane named for its capacity in US tons. It is the first crane that Sennebogen has built for primary launch under the Grove brand, well before a direct counterpart was available in the Sennebogen product line. While the Straubing, Germany based company has not yet confirmed it, a Sennebogen equivalent is expected to be unveiled in the new year.

The GHC110 enters a competitive part of the market. Liebherr still offers the previously mentioned 100 tonne LTR 1100, launched more than 15 years ago, Link-Belt has the 110 tonne TCC 1200, and Sennebogen and Grove have the slightly larger 120 tonne 6113E/GHC130. There are also a fair number of Chinese built 100 tonne telescopics.

The GHC110 is the first Grove badged telecrawler that does not have a Sennebogen counterpart

The new crane was launched at the Utility Expo in Louisville, Kentucky, this September. The choice of event indicates a key and growing market for this type of crane. The new Grove is expected to be popular for work in alternative energy applications, road and bridge construction, and barge work. JJ Grace, product manager for the GHC line, said: "It's like a tough younger brother for the GHC140, our biggest model, which was revealed in 2020. It's a perfect fit for contractors who need stout load charts and high manoeuvrability."

The crane is designed to cope with rough ground and open sites. It can pick & carry its full load chart, and as long as the ground will support it, travel with it. It also has load charts for lifting on slopes of 0.6, 1.5, and four degrees. Unloaded, it can travel at gradients of up to 36 percent (20 degrees) but has a theoretical maximum gradient for travel of 57 percent (30 degrees).

The chassis is equipped with 900mm wide track pads, with the width being easily adjusted to intermediate or fully extended positions, and used asymmetrically, allowing for working in tight spaces without sacrificing capacity. The crane is equipped with a five section 47 metre main boom, with a standard 15 metre extension, providing a tip height of almost 65 metres. Options include a fully integrated work platform and remote controls.

Making it smaller

As the market has grown, one might expect most new developments to come from the higher capacity ranges. But, in fact, the lower capacity classes remain the most competitive, with nine cranes offered from 25 to 51 tonnes.

One of the most recent entries into this part of the market comes from Liebherr, in the form of the 42 tonne LTR 1040, essentially a reduced counterweight version of its 60 tonne LTR 1060. The new crane drops 10 tonnes of carbody ballast and loses 10 tonnes from the superstructure counterweight. The base machine weighs just 43.5 tonnes, including its full 5.6 tonnes of counterweight.

The LTR 1040's safety features are designed with upcoming revisions to EN13000 in mind

Liebherr's latest model is the LTR 1040, a stripped down version of its LTR 1060

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The company says that in spite of the counterweight reduction, the new crane is a highly competitive 40 tonne machine, and is a good deal easier to transport and set up than the 60 tonner. It retains the 40 metre boom of its big brother, topped by a 16 metre bi-fold swingaway extension which can offset by up to 20 degrees and takes the maximum tip height to more than 58 metres at which it can handle four tonnes. Booms of this length only become the norm at the 70 tonne mark.

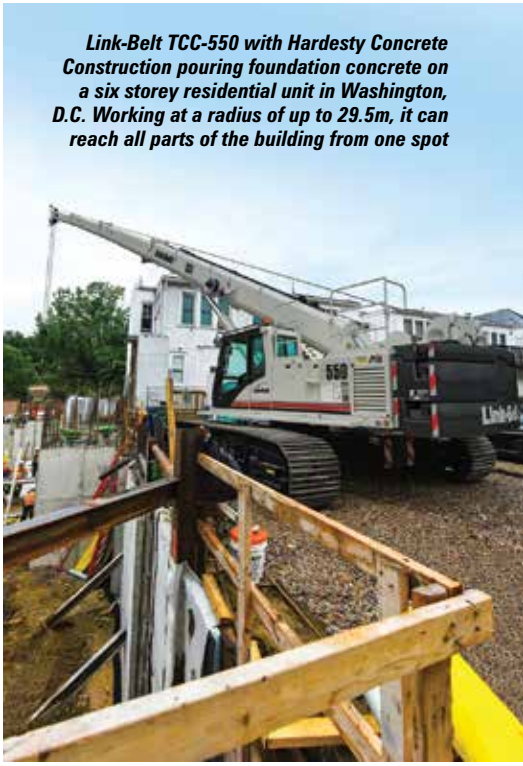
Liebherr control systems increasingly incorporate a wide range of load charts for different jobs and site conditions, especially with its VarioBase outrigger set up and monitoring feature offered in its All Terrains. A similar approach is taken on this crane in terms of variable track widths which extend from three metres to 4.8 metres, with several intermediate positions, while charts for slopes of 0.3, 0.7, 1.5, 2.5 and four degrees are built in. The crane also has full pick & carry capabilities and can travel at gradients of up to 46 percent (25 degrees).

The new model has another advantage that will appeal to customers buying the crane now for a specific type of work or project, but who may find in a few years' time, that the work has changed, and that a larger crane is needed. Liebherr says that the LTR can retroactively be upgraded to the 60 tonne LTR 1060.

Thinking beyond the box

While Link-Belt currently produces the largest and longest boomed telescopic crawler on the market - the 230 tonne TCC-2500 with 68 metre boom - it has also focussed on the lower end of the market with its most recent new product launch, the 50 tonne TCC-550. In some ways it is a return to the company's roots in this market, one of the first telescopic crawlers from the Lexington plant was the TCC-450 launched in 2008 and based on a model launched in 2005 by Hitachi Sumitomo. The TCC-500 was added in 2014.

The TCC-550 features a new 35.1 metre four section full power boom



Link-Belt TCC-550 with Hardesty Concrete Construction pouring foundation concrete on a six storey residential unit in Washington, D.C. Working at a radius of up to 29.5m, it can reach all parts of the building from one spot

Manufacturer	Model	Capacity	Boom length	Crawler widths* Retracted	Intermediate	Extended	Transport weight†
Marchetti	CW25.35 Sherpina	25t	26m	2.50m	N/A	2.90m	25.5t
Sennebogen (Grove)	633E (GHC30)	33t	25m	3.00m	3.70m	4.50m	33.0t
Tadano	GTC-350	35t	27m	3.00m	–	4.81m	32.4t
Liebherr	LTR 1040	42t	40m	3.00m	N/A	4.80m	38.5t
Marchetti	CW45.32L	45t	32m	2.98m	N/A	4.50m	41.0t
Sennebogen (Grove)	653E (GHC50)	50t	30m	3.00m	3.70m	4.50m	50.2t
Tadano (US)	GTC-550	50t	35m	2.48m	–	5.20m	45.5t
LinkBelt	TCC 500	51t	34m	3.49m	4.12m	4.63m	45.2t
LinkBelt	TCC 550	51t	35m	3.50m	4.10m	4.60m	45.3t
Marchetti	CW55.40L	55t	40m	2.98m	N/A	4.60m	52.8t
Tadano	GTC-600	60t	36m	3.27m	–	4.92m	63.4t
Liebherr	LTR 1060	60t	40m	3.00m	N/A	4.80m	62.6t
Sany	SCE600TB	60t	46m	2.99m	N/A	4.00m	44.3t
Tadano (US)	GTC-700	63t	36m	3.27m	–	4.92m	43.8t
HSC	650 TLX	65t	30m	4.03m	N/A	4.79m	57.6t
Marchetti	CW65.40L	65t	40m	2.98m	N/A	4.60m	60.8t
Sennebogen (Grove)	673E (GHC75)	70t	36m	2.98m	3.90m	4.80m	69.8t
Marchetti	CW70.42L	70t	42m	2.98m	N/A	4.60m	56.5t
LinkBelt	TCC 800	75t	37m	3.50m	4.50m	5.20m	45.1t
Tadano	GTC-800	80t	43m	3.49m	–	5.32m	79.9t
Sany	SCE800TB	80t	47m	3.49m	N/A	5.10m	86.0t
Tadano (US)	GTC-900	81t	43m	3.59m	–	5.42m	49.9t
Grove	GHC110	100t	47m	3.60m	4.30m	5.10m	42.5t
Liebherr	LTR 1100	100t	52m	3.50m	4.30m	5.05m	56.4t
LinkBelt	TCC 1200	110t	46m	3.63m	4.78m	5.53m	40.4t
Sennebogen (Grove)	6113E (GHC130)	120t	40m	3.95m	5.10m	6.30m	113.7t
Tadano (US)	GTC-1300	120t	47m	3.66m	–	5.80m	48.4t
LinkBelt	TCC 1400	127t	60m	3.63m	4.78m	5.53m	42.5t
Sennebogen (Grove)	6133E (GHC140)	130t	52m	3.95m	5.10m	6.30m	119.0t
Tadano (US)	GTC-1600	145t	61m	3.66m	–	5.80m	43.4t
Tadano	GTC-1800 (GTC-2000 US)	180t	60m	4.50m	5.75m	7.00m	47.6t
Liebherr	LTR 1220	220t	60m	4.50m	5.88m	7.25m	91.3t
LinkBelt	TCC 2500	230t	68m	N/A	N/A	7.21m	48.6t

*Track width to outside edge, with standard trackpads. †Transport weight is for manufacturer recommended loads.

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At 45 tonnes Link-Belt's TCC-550 can travel complete and ready to work

plus an 8.7 to 15.6 metre bi-fold swingaway extension, offsetable by two, 20 and 40 degrees, for a maximum tip height of 50 metres. It has three working track widths of 3.49, 4.12 and 4.63 metres and just over a metre more boom than the TCC-500. Yet it is a few kg lighter at 45 tonnes including 11,340kg of counterweight. This, combined with a 3.01 metre stowed transport width and 3.4 metre overall height, makes it relatively easy to transport intact.

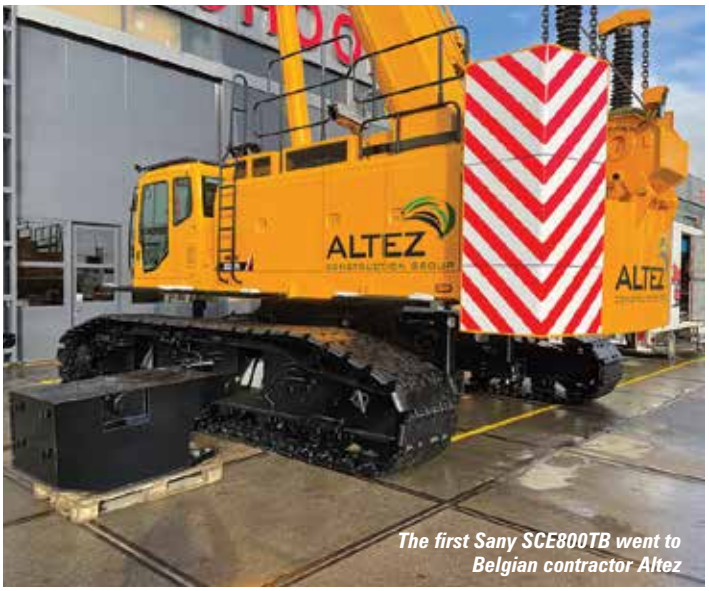
Link-Belt's sister company, HSC Cranes (previously Hitachi Sumitomo), offers one model globally, the 65 tonne 650 TLX. This crane's vital statistics are very much in the tradition of Japanese machines focussed on foundation work: it has a 30 metre boom, the shortest on any crane in this market with 50 tonnes capacity or more.

But that makes for a tough crane, well suited to foundation work and it comes with a 'powerful' hydraulic system, which, combined with its sturdy boom, allows it to be used with a wide range of heavy duty tools. A switch allows the operator to easily flip between crane and drilling machine modes.

Western expansion

So far, we have mostly focussed on North American or European built cranes. This ignores the fact that an increasing number of telescopic crawlers are available from Chinese manufacturers. They include Sany, Fuwa, Zoomlion, Sunward and XCMG, most of which have already offered their products in Europe, but with only a few units delivered. That could well change with UCM/Verschuur now promoting and providing after sales care for Sany telescopic crawlers. The company

Dutch foundation company Van 't Hek using a Sany SCE600TB alongside a piling rig



The first Sany SCE800TB went to Belgian contractor Altez

KeltBray selected a 25 tonne Marchetti 'Sherpina' from AGD for this job, where it needed to be lowered into a basement

showed a 60 tonne SCE600TB at the recent Vertikal Days event in the colours of Dutch company Van Der Vlist.

The company launched another new model, the 80 tonne SCE800TB in February, selling the first units to Belgian contractor Altez, while more recently a unit was delivered to Dutch foundation specialist Van 't Hek. In October the dealer's crane rental sister company M Verschuur added a Sany 60 tonner to its rental fleet. The range of telescopic crawlers Sany offers in Europe will soon be extended in the form of the 130 tonne SCE1300TB.

Artisanal cranes

The telescopic crawler market has been increasingly dominated by the large multi-product line global crane companies. But one manufacturer, Marchetti, takes a different approach. The company offers a range of boom and superstructure options under 70 tonnes, which can be fitted on a choice of chassis. The crawler crane options have been particularly popular with UK sales and rental company AGD, which has done a great deal to popularise the machines, and the broader telescopic crawler crane concept.

One highlight comes at the very bottom end of the range in the form of the 25 tonne CW 25.35 Sherpina. With a 25 metre main boom, this is very much a crane designed for really easy transportation, while offering compact dimensions on site. Its tracks can be retracted to a mere 2.5 metres and stowed for transport it has an overall height of just 2.7 metres and an overall length of 7.13 metres. It can be delivered intact and ready to work on a standard trailer.

At the other end of the Marchetti line up is the 70 tonne CW 70.42L Sherpa. Like its little sister, this is still a compact crane, with a transport width of less than three metres. Perhaps as a result of Marchetti's modular approach, this crane includes one component not offered on any other current telescopic crawler cranes - outriggers. While other manufacturers compete on their ability to work on unlevel ground, this crane can work on almost completely unprepared sites with more significant slopes, travelling across site on gradients of up to 70 percent (35 degrees), and then using its star shaped outriggers to level itself, allowing it to work at full capacity on ground other cranes would struggle to handle.

In summary, the telescopic crawler crane looks to be finally replacing small lattice boomed crawler cranes, those of 80 tonnes or less. At one time this was a substantial and hotly contested market, with cranes particularly popular for the construction of new pre-fabricated housing estates in the late 1950s and throughout the 1960s.

Marchetti's largest model, the CW 70.42L Sherpa, can be levelled on outriggers