

Crawler telescopic on the right track

In recent years telescopic crawler cranes have probably been the fastest growing sector of the full size crane market - at least in terms of new product introductions. This is a real turnaround, as for many years this sector was beyond niche, with only a few specialist players in the market, as most crane buyers preferred wheeled telescopic and lattice boomed crawlers. And as new lattice crawlers became ever easier to transport and rig, the telescopic crawler seemed even less viable a proposition. However small crawlers - up to about eight or 12 tonnes - began to find favour with rental companies in Japan and gradually elsewhere. This minor trend - spurred on by the increasing popularity of spider cranes - seemed to encourage buyers to take a more open minded view towards telescopic crawler cranes.

As the demand for mobile cranes to have longer booms and greater capacities grew while remaining fully road legal and compact - so their set-up time and logistics to get to site increased, narrowing the gap between an All Terrain and a telescopic crawler in terms of transport and set up costs. Other advantages of the telescopic crawler also began to be appreciated such as their smaller working footprint, pick & carry duties and ability to travel

on site while rigged. Initially capacities ranged from 20 to around the 80 tonnes or so, but Liebherr appeared to blow that wide open with its 1,200 tonne LTR 11200 and its 100 metre boom in 2009. The LTR 11200 has recently been discontinued, but remains the largest capacity telescopic crawler ever made. Its 'baby' brother the 220 tonne Liebherr's LTM 1220 is currently the largest made.



The 100 tonne Link-Belt TCC 1100

C&a telescopic crawlers



A 100 tonne Liebherr LTR 1100

Liebherr says that it ceased production of the LTR 11200 because most customers preferred the LTM 112000-9.1 All Terrain and more recently the 750 tonne LTM 1750-9.1 for turbine installation work. The higher wind turbines are also better suited to lattice boom crawlers in the 600 to 750 tonne class than a 1,200 tonne telescopic. A few high profile telescopic boom collapses due to wind/swinging loads also put some buyers off, with the notion that a cable supported lattice boom was more tolerant of such conditions.

So why are telescopic crawler cranes increasing in popularity in the lower capacity ranges? The number of models on offer between 40 and 150 tonnes has blossomed as have the number of companies producing them. Two of the main reasons is that they are relatively easy to transport and are ready to work in a relatively short space of time. Once on site the crawler undercarriage provides low ground bearing pressures and decent pick & carry duties. Add in a compact operating footprint and the absence of outriggers pads and mats or need for temporary access roads and the economics begin to look very good for many applications.

History lesson

Telescopic crawler cranes have been around for a good deal longer than many people realise, although in the early days most crane buyers simply did not understand the point

of them. After all the whole purpose of a telescopic boom on a crane was that it could travel on board with the crane and then extend quickly once on site, ready to work in minutes without the need for boom rigging or additional people and vehicles - perfect for quick lifts and creating the 'taxi crane' market. The down side of course was that capacities simply did not compare with the lattice equivalents. For many years a 25 tonne telescopic was no match whatsoever for a 25 tonne lattice crane. A crane that had to be transported to site on the back of a truck was likely to stay a while and so it made no sense at all to equip it with an inferior telescopic boom. For jobs where there was a compelling reason for a telescopic boom crane, the Rough Terrain

Sennebogen surprised many with its 120 tonne 6113E with 40 metre full power boom





A 25 tonne Marchetti available in the UK from AGD Equipment

crane moved faster, was lighter and less expensive.

Crawler cranes do however offer very low ground bearing pressures and can handle more challenging terrain than any wheeled crane. They are also more adept at travelling with their booms and jibs in place and are more stable for pick & carry applications.

However another fact likely to have slowed the development of telescopic crawlers was their substantially higher price compared to the abundant cheap small lattice crawler cranes on the market - both new and used - while plenty of rental companies owning older crawlers in their fleets were happy to rent them out at very keen prices especially on long-term contracts.

Rental companies only purchased a telescopic crawler for specific customer requirements, such as jobs where a crawler crane with telescopic boom was essential such as on larger tunnel contracts, or where a crane had to move back and forth through an area with overhead obstructions. While most telescopic crane manufacturers dabbled in the market, producing the one-off specials, they tended to use existing superstructures bolted to an existing chassis. Grove was one of the first in the market as far back as 1967, along with Coles in the UK and Kato in Japan. The market developed slowly with a few specialist manufacturers entering

the market in the early 1980s such as Spandek-Mantis in the USA and IHI in Japan.

Both companies took the product more seriously, finding that there was demand for crawlers with heavy duty telescopic booms for heavy wall construction or in Japan duty cycle work, including pile driving. The relatively short main booms featured substantial overlaps between sections and heavy duty wear pads that could cope with abuse, allowing the booms to cope with lifting and travelling with the chassis out of level. The designs were driven by the principal that it was unrealistic to think users would try - let alone be able - to level a crawler crane to within one degree on most job sites. These super tough booms were useful bases for jibs and other applications such as clamshell and grapple work or pile driving - applications that were normally a no-no for telescopics. Contracts that needed a crawler crane for a wide range of lifts with short and long booms also found that telescopics could compete on duties as they could retract their booms in seconds to handle heavy loads, while lattice booms would have to be re-rigged which was time consuming and costly.

The principle participants in the market have all launched new cranes in the last year or two, here is a brief round up.



A Cranemaster Mantis 200RS



A Tadano Mantis 15010 from AmQuip carrying out general construction duties

Mantis

Mantis telescopic crawler cranes were launched in 1979 after manufacturing company Spandek acquired the rights to the Turtle Telescopic cranes and introduced a nine and 11.9 tonne models. The company went on to introduce further models and also entered the special mobile cranes for re-railing and recovering locomotives as well as a number of other special heavy duty cranes. Spandek was acquired by Tadano from the Mitchell family in December 2008 and is gradually being integrated into the business. The crawler crane line now ranges from 27 to 120 tonnes.

Since acquiring Spandek, Tadano as done very little with it apart from working on raising quality and reliability levels to those found

in its other cranes - a process that can take a long time if the company's acquisition of Faun is anything to go by. However, earlier this year Tadano invested \$2.5 million to expand the Mantis crawler crane plant in Richlands, Virginia in anticipation of stepping up production as it begins to market the products more widely.

In spite of this Tadano does not seem to be in any particular rush and clearly the traditional Mantis buyers were already happy. For the North American market, Mantis has a range of eight models from 30 to 130 tons but it is only the largest GTC-1200 which is a true global Tadano-type machine. Apart from the GTC-1200 the Tadano offers three other machines internationally - the GTC 300, 400 and 700EX - with capacities of 27, 40 and 70 tonnes. Given the well-established



The new Grove GHC75 lifting on a gradient



The Grove GHC130 tilting cab



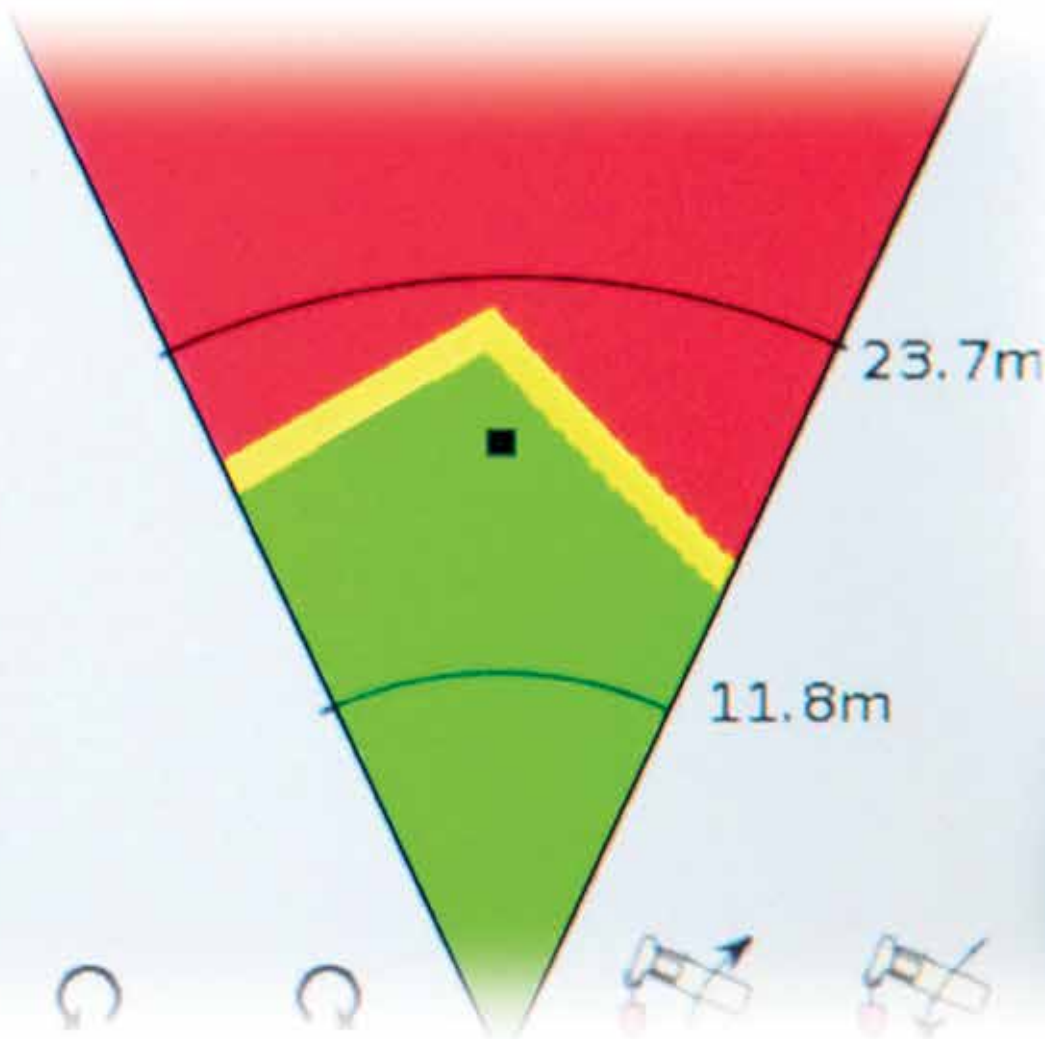
MAIT launched the 28 tonne T28 last October



At the smaller end - a Maeda LC 383

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Mantis name in North America it may be many years before they are completely absorbed and rebranded as Tadanos as has now happened at Tadano-Faun.

Smaller end of the market

Japanese spider crane company Maeda is re-engineering its mini crawler crane line, and changing the nomenclature from LC to CC. The LC was originally used because the cranes used a Komatsu LC excavator undercarriage. The new CC models will be built on Maeda undercarriages and use tier 3B/4 compliant Isuzu engines. Hence the LC1385 will be replaced by the CC1485 and the 4.9 tonne capacity LC 785B will become the CC985.

The first CC1485 was scheduled to be shipped at the end of 2015 and has been sold to Heli in Belgium, with the second and third units sold in the UK to mini crane rental company NRC and another un-named user. So far the LC1385 has had limited success, however the change of engine is attracting more interest. The new CC1485 will be lighter as it dispenses with the front blade but even so still weighs

almost 15 tonnes leading to more costly transportation.

Liebherr line-up

Now that the world's largest telescopic crawler crane - the 1,200 tonne Liebherr LTR 11200 - is no more, the company's current range comprises the 60 tonne LTR 1060, the 100 tonne LTR 1100 and the 220 tonne LTR 1220. The company has confirmed that it will not launch any new telescopic crawler cranes at Bauma, saying that it is quite happy with the existing three model range, with sales particularly good in the USA, Germany, Australia, UAE, Russia, Belgium and the UK.

The company produced its first standard series production telescopic crawler - an LTR 1100 in 2005. However, it had built a telescopic crawler previously - a one-off special of its 800 tonne LTM 1800 for a Japanese company in 1990 - using the crawler base from its LR 1550 lattice crane. The LTR 1100 followed a similar route - combining the LTM1100 AT crane superstructure with the undercarriage of the lattice boomed LR1100, while full production



Liebherr LTR 11200



Link-Belt 1100



Hartinger Liebherr LTR 11200



A Maeda LC 1385



Fussey Piling with its new 50 tonne Sennebogen 653R

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Weimann's Liebherr LTR 1100 lifting pre cast concrete sewage pipes



machine, its development was spurred on by another request for a special.

The LTR 11200 followed a similar route using the 100 metre boom and superstructure from the LTM 11200-9.1 All Terrain crane. It was primarily aimed at the wind turbine erection sector however as explained above, increasing hub heights have meant that other cranes are now better suited to the task than the LTR 11200. Wind power plant manufacturer Enercon suggested Liebherr develop the telescopic crawler crane on a narrow track crawler chassis, which is optimised for travelling in a fully assembled state on the narrow roads typically found on wind farms. The extended crawler width is 4.8 metres and for full crane operation the LTR 11200 is supported on a cruciform outrigger base of 13 metres by 13 metres. The boom systems with Y-suspension as well as the fixed and luffing lattice fly jibs were well-known from the LTM 11200-9.1 are also incorporated in the crawler version of the 1200 tonne capacity crane.

One issue with using a 'thoroughbred', high strength, thin walled boom designed for road going All Terrains on a crawler chassis is how well it will cope with the dynamic loading of pick and carry applications and the side loadings that can occur in typical crawler type work. Mantis' design, as we have already mentioned,



The new 125 tonne Link-Belt TCC-1400 is the company's largest telescopic crawler.

Sennebogen 653E



allows for some mis-use almost factoring in that it will be abused and operated when off level. Crawler cranes with these long booms are more for specific lifting jobs, with substantial drop off of duties when operating out of level, and if used in this manner when fully extended are likely to buckle.

Sennebogen

A year ago, German crane and material handling manufacturer Sennebogen unveiled its new 120 tonne telescopic crawler crane - the 6113E. Earlier hints from the company suggested the crane would have a 100 tonne capacity, but Sennebogen increased this by a further 20 tonnes making it 50 percent bigger than its previous largest crane, the 80 tonne 683. While Sennebogen manufactured its first telescopic crawler crane in 1978, this was more of a special, it began series production units in 1992 and now has a six model range running from eight to 120 tonnes.

The 6113E has a four section, 40 metre, full power boom with a three stage telescopic cylinder and a choice of an eight or 15 metre jibs and 12 metre lattice boom extensions, its maximum system height is 70 metres. The 6113E can also pick & carry 100 percent of its load and can work - with



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A Liebherr LTR 1060 on loading duties



Marchetti makes a very nice 25 tonne machine which is perfect for restricted access sites. The smallest Sennebogen is 40 tonnes. Both make a 70 tonner, but they are quite different machines - the Marchetti has outriggers, is much lighter and has a longer boom. The Sennebogen range is also more diverse with models including 40, 50, 70, and 120 tonnes".

This year AGD has sold a total of eight Sennebogen telescopic cranes, including two 40 tonne 643Rs to the British Antarctic Survey and one to the CITB training centre. Fussey Piling has taken a 50 tonne 653R, while BPH has purchased a 653R plus two 70 tonne 673Rs. CLR Plant took a 673R, while AGD has added four 643Rs and two 653Rs to its rental fleet. Two 25 tonne Marchetti Sherpinas have also been sold with four 70 tonne Sherpa joined the AGD rental fleet.

"The demand for telescopic crawlers continues to increase," says Law. "The advantages of telescopic crawler cranes continue to be fast set up times, single truck deliveries, no rigging area required, smaller foot print and they are easy to fold up when close to roads and railway lines etc."

Grove badged Sennebogens

The growth in the popularity of telescopic crawler cranes particularly in North America encouraged Manitowoc to find a quick solution for its lack of product, by announcing a long-term strategic

partnership with Sennebogen at the start of 2015. It branded three new cranes - the 50 tonne GCH55, the 70 tonne GCH75 and the 120 tonne GCH130 - with 30.4, 36 and 40 metre main booms. The cranes are based on Sennebogen's standard 653, 673 and 6113 telescopic crawler cranes and will be built alongside them at the Sennebogen plant in Straubing, Germany. The Grove badged units are sold exclusively in North and South America, and will be fully supported by Manitowoc Crane Care.

The initiative looks like a good move for both companies, with Sennebogen benefiting from the strong Grove/Manitowoc distribution network in the Americas. While Manitowoc will have a high quality product to compete with the Tadano Mantis and Link-Belt telescopic crawler cranes.

These are not the first Grove telescopic crawler cranes in addition to its early efforts, its Italian distributor Cerioli mounted 70 and then 80 tonne Grove superstructures to locally sourced crawler chassis in Italy in the mid to late 1980s.

Link-Belt expands range

The other major North American manufacturer is Link-Belt which expanded its four model range - the TCC-450, TCC-500, TCC-750 and the TCC-1100 with capacities of 40, 51, 70 and 100 tonnes - when it launched the new 125 tonne TCC-1400 last summer. The TCC-1400 is a long boom crawler crane, with a six section 59.5 metre pinned boom, plus three part bi-fold swingaway lattice extension that takes the maximum tip height to 78.9 metres. Reduced load charts are available for the crane working at up to four degrees off level.

New features include an electronic inclinometer providing a digital readout of the cranes angle, a new auto idle feature for improved fuel economy, a centralised lubrication system and hydraulic pressure readouts in the cab. The normal transport weight for the new crane is just under 44 tonnes and wide base jacks help unload the crane and provide a stable base for self-assembly. Tapered axles instead of traditional stub axles make side frame/track installation easier

Another addition

In October Italian crawler and foundation crane manufacturer MAIT launched the 28 tonne T28 telescopic crawler crane, designed to be transported fully assembled



Sennebogen 673



Grove GCH55



A Hartinger LTR1100 helping with a turbine installation

reduced capacity - on slopes of up to four degrees. The hydraulically extendible undercarriage uses eight metre long tracks with maximum 900mm wide pads. The overall width ranges from 3.95 to 6.3 metres. Sennebogen claims that the 6113E uses 30 percent less space when working than a similar capacity Rough or All Terrain crane. The cab can be inclined by 20 degrees, with the option of a 2.7 metre elevating cab, with 30 degrees of tilt. Power is provided by a Cummins diesel in either Stage 3a or Stage 4F configurations. Central lubrication is standard. In the UK the recent appointment of AGD Equipment as its distributor has paid off, with sales increasing steadily.

Marchetti

AGD is already the Marchetti dealer, however according to managing director Robert Law: "there is little conflict between the two ranges,

at 39.5 tonnes. The main boom is stubby 23.4 metres, while power comes from a Tier 4 Cummins.

In summary

Before selecting a telescopic crawler crane there are several critical factors to consider, such as ground conditions, the need for pick & carry duties and the type of work it will be used for - lifting and placing loads from a decent level base or heavy duty tasks on poor ground. The good thing is that there is now plenty of choice.



A Tadano Mantis GTC-1200.



The 70 tonne Marchetti Sherpa at the Westfield shopping centre in London

Link-Belt TCC-1100 for fabrication

Daveco Welding in Alberta, Canada has taken delivery of a 100 tonne Link-Belt TCC-1100 telescopic crawler crane to handle fabricated modular components at its 32 acre facility in Wainwright.

The company - started by David Faas and wife Connie in 1981 - fabricates modular components used in oil terminal and pipeline facility upgrades. The TCC-1100 is able to travel throughout the Wainwright facility handling the larger finished components - weighing up to 68 tonnes - while smaller cranes such as the 50 tonne Link-Belt RTC-8050 Series II Rough Terrain, handle the box section and I-beams that make up the assemblies. The TCC-1100 is able to pick & carry the finished items to the holding area and then load them aboard the transport. For the largest lifts, the TCC-1100 joins with the 90 ton HTC-8690 Link Belt truck crane in a tandem lift.

"Since we needed a crane to lift components that never seem to be on a set schedule, we looked at purchasing our own cranes as a way of controlling costs," said Faas. "We are not paying rent on a machine when we aren't sure exactly when we will need it. With the advent of the larger components we are now building, we are using the cranes every day and gaining better control of our fabrication flow because they are readily available. The cranes are nice and easy to operate and we have had good luck with the dealer ES&S so we stayed with Link-Belt."

C&a telescopic crawlers



The 100 tonne Link-Belt TCC-1100 and 90 ton HTC-8690 truck crane tandem lift a 20 tonne metre skid at Davco's yard in Wainwright



The TCC-1100 places a fabricated I-beam on to a trailer

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Alpine chairlift

The 60 tonne Liebherr LTR 1060 telescopic crawler crane owned by Swiss crane company Clausen has completed its second contract on the Matterhorn, helping construct a top station for the new Hörnli/Hirli chairlift, which replaces a 50 year old T-Bar lift, in the Zermatt ski area, at an altitude of 2,900 metres/9,500ft.

Last autumn the same crane was used on a 2,000 metre mountain railway

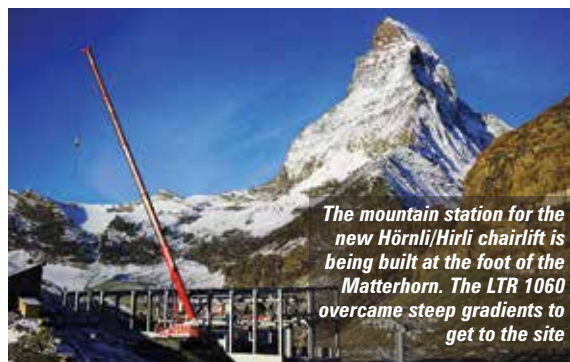


The LTR 1060 had to tackle gradients of up to 45 degrees

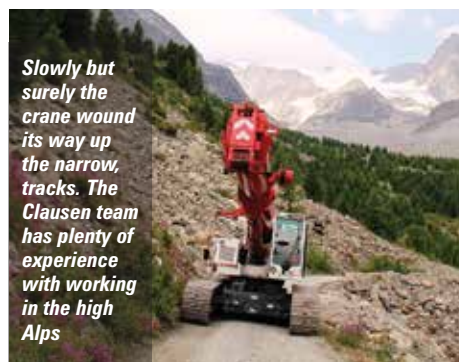
contract travelling up gradients of 40 percent. As before the biggest challenges involved getting to site up rough hiking paths. In mid-September Clausen transported the crane up a tight Alpine road to Stafelalp, at an elevation of 1,900 metres and around eight kilometres from the station. The LTR 1060 then covered the remaining distance under its own power, taking around five hours to get there. The biggest

hurdle was a two kilometre stretch with a gradient of 45 degrees. Once on site, the crane helped install the steel structure for the new station. It also helped assemble the drive motor, before pick & carrying the 16 tonne unit from the assembly site to the station, before lifting into place. After three weeks on the job, the crane tackled the downhill journey to Stafelalp.

The crane spent three weeks working at an altitude of 2,900 metres installing the steelwork and drive motor



The mountain station for the new Hörnli/Hirli chairlift is being built at the foot of the Matterhorn. The LTR 1060 overcame steep gradients to get to the site



Slowly but surely the crane wound its way up the narrow, tracks. The Clausen team has plenty of experience with working in the high Alps



When work was completed the LTR 1060 had to tackle the difficult descent

Building bridges

German structural and civil engineering company König Bau has purchased a new Sennebogen 643 to carry out a wide variety of lifting tasks, including bridge building projects. With a 30 metre full power boom, the crane is able to place most formwork and structural elements on the company's projects. The crane's first job was a new bridge to Hohenleipisch. The operator said that the crane's stability, compact dimensions and freedom from outriggers were major advantages compared to All Terrain cranes.



König Bau using a new Sennebogen 643 telescopic crane is used for a variety of lifting tasks.

Sennebogen 6113 on warehouse construction

One of the first Sennebogen 6113 telescopic crawler cranes - launched at the end of 2014 - is being used by Max Bögl in Germany on warehouse construction in the Tauernfeld/Deining industrial zone near its base in Neumarkt in der Oberpfalz, where the crane is lifting steel components up to 12 tonnes in weight. It is shortly due to go to work on a wind turbine contract where it will be required to lift its maximum load of 120 tonnes.

The 6113 has load charts for operating on inclines of up to four degrees, although it needs to be level to lift at full capacity. The tilting cab provides improved visibility, while the 'SENCON' control and diagnostic system supports the operator in everyday operations, allowing fine adjustments directly from the control panel.

The operator said that the crane's ability to telescope loads with its full power boom and pick & carry duties, convinced him the first time he used the crane, that it was the right machine for him. "It can move heavy parts anywhere on site safely. At the same time, the 40 metre boom allows me to operate over an extensive area from a central position," he said. "The crane is also quick and easy to transport thanks to the self-assembly system and the telescoping undercarriage provides impressive stability, even on dynamic work."



The new Sennebogen 120 tonne telescopic crane is being used by Max Bögl to lift steel and pre-cast concrete elements



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