

Telescopic crawler benefits

Over the past few years the telescopic crawler crane has become increasingly popular. Crane rental companies and customers are now appreciating the quick and easy setup, the ability to cope with tougher ground conditions and the very useful pick & carry capability when compared to All Terrain or lattice crawler cranes. The past years has seen some interesting launches. We take a look at the latest developments and products in the market.

Although telescopic crawler cranes have become increasingly popular in recent years they have in been around for around 60 years or so, produced in very small numbers by a number of manufacturers including Grove, Coles and Kato. The telescopic crawler's main advantage is that

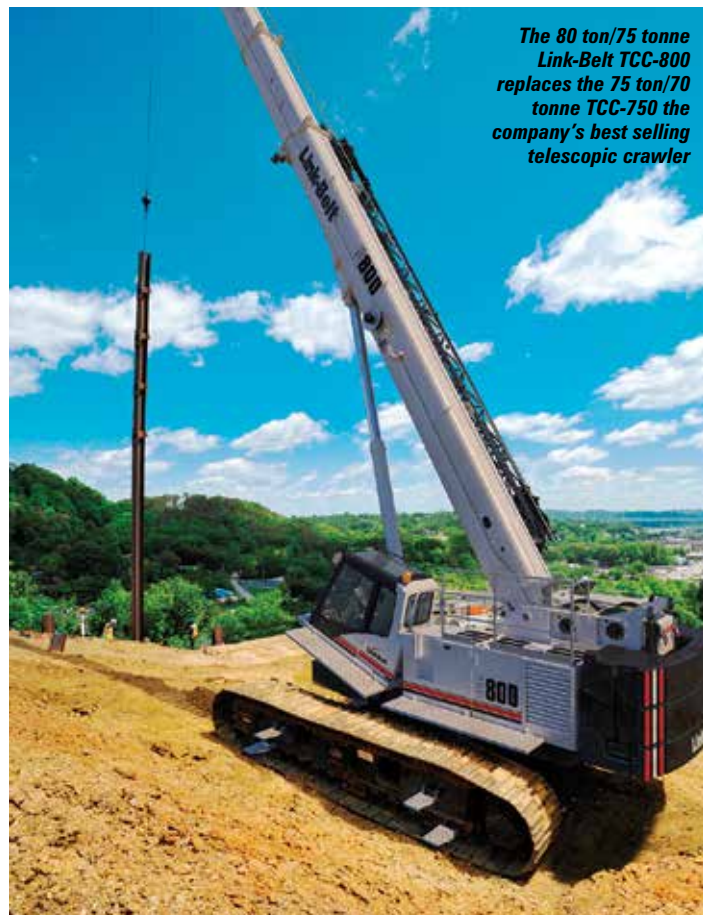
the boom does not need to be rigged allowing rapid set-up once on site, while the boom can be retracted overnight, giving it the ability to adapt to lifts requiring different boom lengths or for passage under an overhead obstruction.



Tadano GTC-2000



The new Link-Belt TCC-800 has a four section 36.5 metre full power boom with a 56 metre maximum tip height with the new SmartFly swingaway extension



The 80 ton/75 tonne Link-Belt TCC-800 replaces the 75 ton/70 tonne TCC-750 the company's best selling telescopic crawler

This makes it a more feasible product for shorter term contracts, where the saving in set-up time is of most benefit. Clearly however transportation to and from site is more of an issue in terms of cost and planning than a truck or All Terrain crane, which means telescopic crawlers are best suited to medium to long term contracts. Increased demand in recent years has resulted in a substantial growth in new product development in the sector, with more mobile crane manufacturers taking an interest in the market resulting in a wider range of products with improved lifting performance, design, versatility and choice - all helping to increase take up still further. This trend has continued over the past year with several new product launches, many of them at Conexpo. While the most popular capacity range is between 60 to 80 tonnes there has been increased interest in larger capacity models - the largest telescopic crawler currently available being the 235 tonne Link-Belt TCC-2500. Link-Belt has focused more than most on telescopic crawlers and now

boasts a five model range from the 45 tonne TCC-500 to the 235 tonne TCC2500.

75 tonne Link-Belt

In the summer of 2018 the company announced the upgrade of its 100 tonne TCC-1100 tele crawler to the 110 tonne TCC-1200. It retained the 1100's full power 45.7 metre five section boom and the lattice extension with maximum tip height to 64 metres. At Conexpo the company unveiled its latest model, the 80 ton/75 tonne TCC-800 to replace the 75 ton/70 tonne TCC-750, the company's top selling telescopic crawler since it was introduced in 2008.

The new TCC-800 has a four section 36.5 metre full power boom with a 56 metre maximum tip height with the new SmartFly swingaway extension installed. The SmartFly extension makes it far easier, quicker and safer to install and stow, and can be carried out from the ground. The TCC-800 also offers an optional one or two piece 10.6 to 17.6 metre jib.

New variable track position software - dubbed 'V-CALC' - monitors the actual track position, feeding information into the Pulse 2.0 crane management system which selects the correct load chart for the actual configuration. A new cab with 20 degrees of tilt and a Stage V dual compliant Cummins diesel is said to provide improved fuel economy, quieter operation and better cold start capability.

Other improvements include pressure read out on all hydraulic circuits and a 'Total vision' camera package with right side, winch and rear view cameras giving the operator improved visibility during setup and lifting. Single axis or joystick controls are available both offering the operator a choice of foot or hand controls for travel operation.

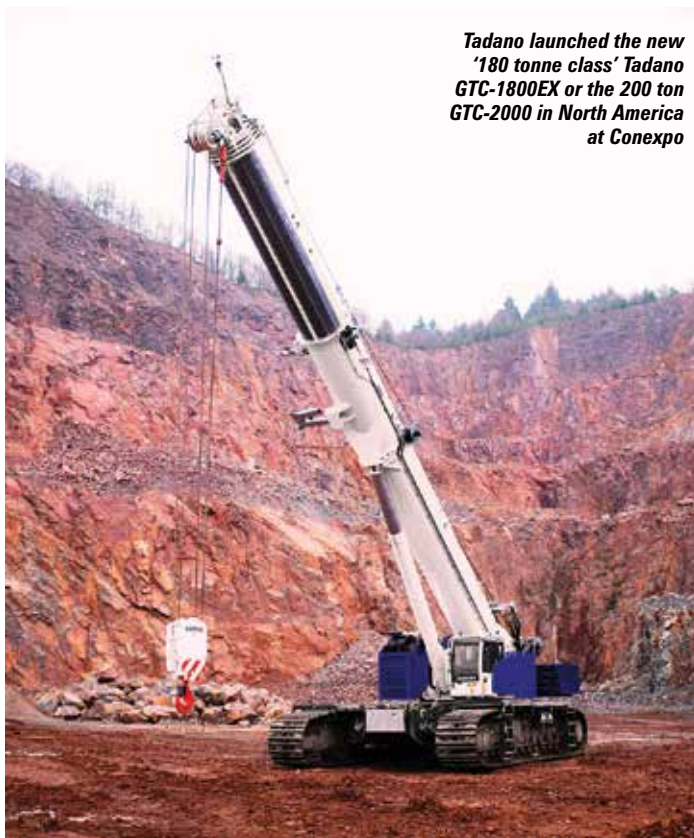
Other features include 19 mm grooved drums with 254 metres rope capacity, 7.6 tonnes maximum line pull and 147 metres a minute maximum line speed. The TCC-800 can work on slopes up to four degrees and can self-assemble with 17,463kg counterweight. The crane can be moved in two loads in most jurisdictions, with the main unit weighing 45.4 tonnes with side frames attached, extension, hook block and ball, lifting sheave and full tank of fuel. Clearance height on a trailer is below 3.9 metres and a wireless remote control system

is an option. The new crane will begin field tests shortly, with first shipments scheduled for later this year.

Tadano Mantis, Demag teles

At Bauma last year, shortly after Tadano had announced its acquisition of Demag Cranes, Terex showed a scale model and revealed brief details of a new 160 tonne telescopic crawler that it was developing. Given the timing of the acquisition many wondered whether this would ever see the light of day, given Tadano's GTC range of telescopic crawlers, although at the time the Demag concept was larger than Tadano's largest model, the 120 tonne GTC-1200. However since Bauma, the Demag crane has progressed into the new '180 tonne class' Tadano GTC-1800EX or the 200 ton GTC-2000 in North America. Although detailed specifications are not yet available Tadano says the GTC-1800EX has a 60 metre main boom, a maximum capacity of over 150 tonnes and a maximum load moment of 590 tonne/metres - so a bit shy of the headline 180 tonne rating? Hopefully Tadano is not falling into the old Terex nomenclature trap of 'class' groupings rather than actual nominal capacity. Interestingly the new crane will now be a Tadano, on the basis that the Tadano brand is already strongly associated with

Tadano launched the new '180 tonne class' Tadano GTC-1800EX or the 200 ton GTC-2000 in North America at Conexpo



The GTC-2000 before self installing its tracks



The GTC-2000 has 50 percent gradeability, 420mm ground clearance and weighs just under 150 tonnes



telescopic crawlers while Demag crawler cranes have always been large lattice boomed models.

At the same time as Terex showed off the model of the Demag crawler, Tadano Mantis had been developing its own larger telescopic crawler crane which it also launched at Conexpo. The 145 tonne GTC-1600 at first glance looks similar to the new Demag designed model, in terms of sample capacities etc. It will be interesting to compare the rest of the specifications with both are available.

Tadano GTC-2000

Tadano telescopic crawlers are built in the USA, so one main difference with the new GTC-2000 (GTC-1800EX) is that it will be built by Demag in Zweibrücken, Germany. Tadano says the model 'fits in with its long tradition with telescopic crawlers', and is a logical step in terms of its 'One Tadano' corporate strategy and 'strengthens cooperation between German and American colleagues in the Tadano group'.

Obviously given its design background the GTC-1800EX uses the Demag IC-1 Plus control and IC-1 Remote telematics system technology. The new crane sort of slots into the bottom end of the gap in the market between the 130

and 220 tonne capacity sectors. It has three standard track positions of 3.5, 4.75 and six metres but also features variable track width that can be set up to fit the space available, including asymmetrical configurations. The tracks can be adjusted both when stationary or while traveling. The Demag IC-1 Plus control system automatically calculates a load chart based on a number of monitored factors including ground incline, slew position and the position of each track. It is also able to pick & carry and telescope loads.

Tadano says the load charts are 'excellent' even when lifting on slopes of up to four degrees. Provisional figures suggest it can lift 34 tonnes at a radius of 12 metres when working on a four degree slope with 30 metres of main boom. The 60 metre main boom can be extended from five to 23 metres for a maximum system length of 83 metres. The crane has 50 percent gradeability and 420mm of ground clearance, while its maximum weight is just under 150 tonnes.

Keeping the transport height and width of the base crane to three metres makes transport easier. The heaviest part weighs 47 tonnes although this can be reduced to 42 tonnes by removing extension



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Model	Max. Lifting Capacity	Boom	Boom Extension	Max. Sheave Height	Max. Radius	Engine (carrier, superstructure)	Gear
ATF-140-5.1	140 t	12.8 m – 60 m	3.8 m – 32 m	95 m	72 m	390 kW (530 HP), 129 kW (175 HP)	10 x 6 x 10 (optional 10 x 8 x 10)
ATF-200-5.1	200 t	13.2 m – 60 m	1.8 m/5.8 m – 36 m	99.5 m	80 m	390 kW (530 HP), 129 kW (175 HP)	10 x 8 x 10 (optional 10 x 6 x 10)
ATF-220-5.1	220 t	13.2 m – 68 m	1.8 m/5.8 m – 36 m	107.5 m	84 m	390 kW (530 HP), 150 kW (204 HP)	10 x 8 x 10 (optional 10 x 6 x 10)

www.tadano.com

beams used to adjust the track width. Tadano says a great deal of thought has gone into setting up the crane safely, with most of the assembly carried out via remote control or from the cab.

Power is supplied by a Stage V/ Tier 4 Final MTU diesel capable of running in ECO mode for optimum fuel consumption, while a Power Boost feature ensures simultaneous operation of several functions at high output or speed. The GTC-1800EX's primary and auxiliary hoists are identical and both feature 245 metres of rope storage, with a line pull of 13.9 tonnes. The crane should be available later this year.

Tadano GTC-1600

Testing of the new Tadano Mantis GTC-1600 will continue through the summer with the start of sales planned for the end of the year. The introduction takes the GTC range to six models.

The crane has a six section, 61 metre main boom topped by an 18 metre bi-fold swingaway extension which offsets up to 40 degrees. Two seven metre inserts take the maximum tip height to 92.4 metres. The crane features variable track width extensions and up to four degrees out of level capability with automatic load chart switching. The crane is fitted with the company's Opti-Width feature which allows for stepless track widths which it says can increase capacities by up to 30 percent when compared with cranes that can only operate symmetrical track extension.

The crane is powered by a Tier 4 Final/Stage V Cummins diesel with throttle control by either auto-idle, adaptive throttle or by foot pedal control. The two speed track drive has a maximum speed of 2.4kph and 52 percent gradeability. Standard track width is 900mm



The GTC-1600 has a six section, 61m main boom

with optional one metre wide semi grousers available.

The GTC-1600 has integrated two stage carbody jacks that provide increased lifting height for loading and unloading and can self-install its counterweight from a remote controller. Hydraulic quick couplers on the track drive hoses allow simple, tool free track frame removal and handling. All GTC models offer pick & carry capacities through 360 degrees and automatic load chart switching for moving on slopes.

Larger tele crawler for Grove

At Conexpo Grove launched its latest telescopic crawler, the 127 tonne GCH140, which as with the other models in the range is built by Sennebogen. The model features a 52.1 metre six section pinned boom and 15 metre offsettable bi-fold swingaway for a maximum tip height of 70 metres. The crane's 'level' load chart is good up to 1.5 degrees, with load charts available for slopes of up to four degrees and it has the ability to pick & carry its full load chart. The tracks have three positions - fully retracted, mid extension and full extension - all of which have load charts available.



The new Tadano Mantis GTC-1600 should be available by the end of the year



The Grove GCH140 a 52.1 metre six section pinned boom and 15 metre offsettable bi-fold swingaway for a maximum tip height of 70 metres

The crane can be transported in four loads and can self-install its counterweight and tracks. The cab tilts up to 20 degrees and features a large, air suspension heated seat, climate control system, seven inch screen for viewing the hoist, rear and right side camera feeds, an intuitive graphical RCL system and electronic load sensing joystick controls. A choice of Cummins Tier 4 Final or Tier 3 diesels are available with ECO and Auto Idle modes for improved fuel efficiency. As with other Grove/Sennebogen cranes they will only be available in the Americas.

It has been more than two years since Sennebogen itself launched a new telescopic crawler unveiling the updated 70 tonne 673 R-HD early in 2018.

Largest mini crawler

Although a different sector of the telescopic crawler crane category, it is worth noting that the mini crawler crane is also enjoying an increase in popularity and the machines are slowly getting bigger. Last year Maeda launched its largest mini crawler to date, the 8.1 tonne CC1908S-1. The crane has a five section, 19.4 metre boom that provides a maximum lift height of 20.1 metres and 26 metres with jib. Maximum radius is 19.2 metres while it can pick & carry a 3.5 tonne load.

Overall width is 2.49 metres, and the crane weighs 19.4 tonnes with the optional jib in place. Features include a short tailswing, a fully enclosed air conditioned cab with link slide door, a 10 inch touch screen monitor display, boom slew limit setting, surround view camera and monitor, extra wide roof window with standard sun shade and visor. Power comes from a Yanmar EU Stage V and EPA Final Tier 4 compliant fuel efficient diesel driving a hydrostatic transmission. Options include a 1.5 tonne hydraulic jib, a new two tonne



Maeda's largest mini crawler to date - the 8.1 tonne CC1908S-1

Last year XCMG delivered its first 55 tonne XCG55TE in Europe



searcher hook and dozer blade.

Chinese crawlers for Europe?

A number of Chinese manufacturers produce telescopic crawler cranes but few are actively marketed outside of the region. However last year XCMG delivered the first unit of its 55 tonne XCG55TE telescopic crawler crane in Europe.

The new crane was sold and delivered by XCMG's Bulgarian dealer, Ingconsult, for work on the TurkStream pipeline project, a natural gas pipeline running from the Russian Federation to Turkey. The 55 tonner is the first XCMG tele crawler to be fully compliant with the European Machinery directive 2006/42/EC and includes a five section 41 metre main boom, plus a 9.5 to 16 metre bi-fold swingaway extension, with 15 and 30 degree offsets. The overall stowed width of the European machine is 3.36 metres, with an extended overall width of 4.8 metres. Total counterweight includes 17 tonnes on the superstructure and 5.2 tonnes of carbody ballast. It can take its 55 tonne maximum capacity to 3.5 metres, handle 3.5 tonnes at 20 metres radius or 500kg at 42 metres radius. The crane can also travel with its maximum capacity.

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Cofferdam work

Contractors in the Netherlands and parts of Belgium were some of the first to embrace the telescopic crawler crane concept, due to the soft - often reclaimed - ground conditions. As a result they are very popular in the region.

The first of Sennebogen's new 16 tonne 613 E - the smallest in the company's range which extends to 130 tonnes - has been purchased by Dutch rental company Bultena Verhuur for a project in Werkendam, the Netherlands. Supplied by its dealer Van den Heuvel, the 613 E is being used on the new Blankenburg highway intersection in Vlaardingen being constructed by Baak consortium for Rijkswaterstaat. The new A24 motorway connects with the A20 near Vlaardingen and the A15 near Rozenburg which when finished should reduce traffic on both roads and improve the connection from the port of Rotterdam to the Randstad conurbation which includes the four largest Dutch cities - Amsterdam, Rotterdam, The Hague and Utrecht - and their surrounding areas.

Included in the works is the construction of the 945 metre long Maas-Delta tunnel constructed using cofferdams - temporary dams allowing certain areas to be drained - which are made up from a combination of walls and heavy tubular piles with sheet piling in between. Being able to pick & carry its load chart the 613 E is used to place the anchor rods that hold the cofferdams together. Its compact dimensions - less than 2.5 metres wide, 2.75 metres high and just over seven metres long - allow it to work in areas where space is at a premium. The crane features Sennebogen's Multicab which can be raised by 1.75 metres to give the operator an improved view of the sheet pile wall and the entire excavation pit, very important on this site. The crane is also fitted with the Sencon display which shows all the lifting data and intervenes if the maximum values are exceeded.

Bultena Verhuur has grown steadily since 1990 extending its coverage from northern Netherlands to include all of the country and Belgium. It added crawler and mobile cranes to its fleet in 2018.



The 613 E has the standard 1.75 metre elevating Multicab

The smallest Sennebogen telescopic crawler crane 613 E is used in Vlaardingen to suspend anchor rods in coffer dams



C&A crawler cranes

Most of Brady Crane Service's work is dismantling and assembling drill rigs



Oklahoma oil rigs

Brady Crane Service of Healdton, Oklahoma works mostly in the oil & gas sector unloading and assembling drill rigs. A fully functioning rig is made up of 80 truckloads of materials and components, so the cranes involved in assembling and dismantling them work long hours. In less than six months Brady's new 100 tonne Link-Belt TCC-1200 has logged more than 560 hours, while its 100 tonne TCC-1100 has done more than 2,000 hours.

"We use three cranes, two to tear the rig apart at the old site and a third to begin assembly of the rig at the new site," says Brady Crane Service's Robin Watts. "Once we have most taken down we will switch and put two at the new site to build up substructures."

Brady is currently erecting a triple box rig, which was transported 120 miles from the previous site to Lindsay, Oklahoma. The TCC-1200 is being used to load and unload trucks, then pick & carry everything, from the derrick to the doghouse, to the draw works.

"We use the TCC-1200 for every single component of the drilling rig which can weigh anything from 225kg to 45.3 tonnes, which we manage with tandem lifts. Substructures are a tandem lift and a larger capacity All Terrain crane is brought in and stays on one end with the load while the TCC-1200 picks and carries the substructure from its drop off point, travelling around the centre point of the rig."

"We can mobilise the 1100 and 1200 quickly since no outriggers are involved. You can pick & carry the full chart. Whatever we lift - as long as it is within the load chart - we know can move with it, as long as the crane is level of course. The heaviest single load for the TCC-1200 is the blow-out preventer which weighs 32.6 tonnes but up to 2.5 tonnes of mud can build up during operation, so having a crane capable of handling that extra weight is important."

Components can weigh anything from 225kg to 45.3 tonnes.



The TCC-1200 is being used to load and unload trucks, then pick & carry everything



Steel erecting in Australia

Australian crane rental company Tutt-Bryant Heavy Lift & Shift - part of the Singapore-based Tat Hong group - is using its new 127 tonne Link-Belt TCC-1400 to lift structural steel at BHP's South Flank iron ore mine, 80 miles northwest of Newman, Pilbara in Western Australia. The iron ore deposit is 16 miles long and requires significant mining infrastructure and operations. Overall the project is valued at \$3.8 billion and is scheduled to be operational next year.

"It's about testing the telescopic crawler and assessing the market acceptance rather than a big Rough Terrain or All Terrain," says national operations manager Malcom Smith. "We do believe this machine will sell itself and in time, we hope to move up into the 225 tonne category by purchasing a bigger crane in the future."

"There are a number of reasons we chose the Link Belt TCC-1400. It is the best in class in terms of capacity and boom length, it is also very flexible in the way it is transported, and the self erection features and its ease of use are second to none. But the availability was also a factor. The machine was a stock item and we had a requirement for a specific machine with that sort of boom length for the South Flank project. It will be on site for about 12 months, or maybe longer."

Tutt-Bryant has also transferred two 100 tonne TCC-1100 telescopic crawler cranes to the site from its parent's Singapore base, while the TCC-1400 was shipped from Sydney to Perth where training was completed.



The 127 tonne Link-Belt TCC-1400 lifting structural steel at BHP's South Flank iron ore mine



The TCC-1400 has a 59.5m main boom with a 78.5m tip height

Munich underground pipe-jacking

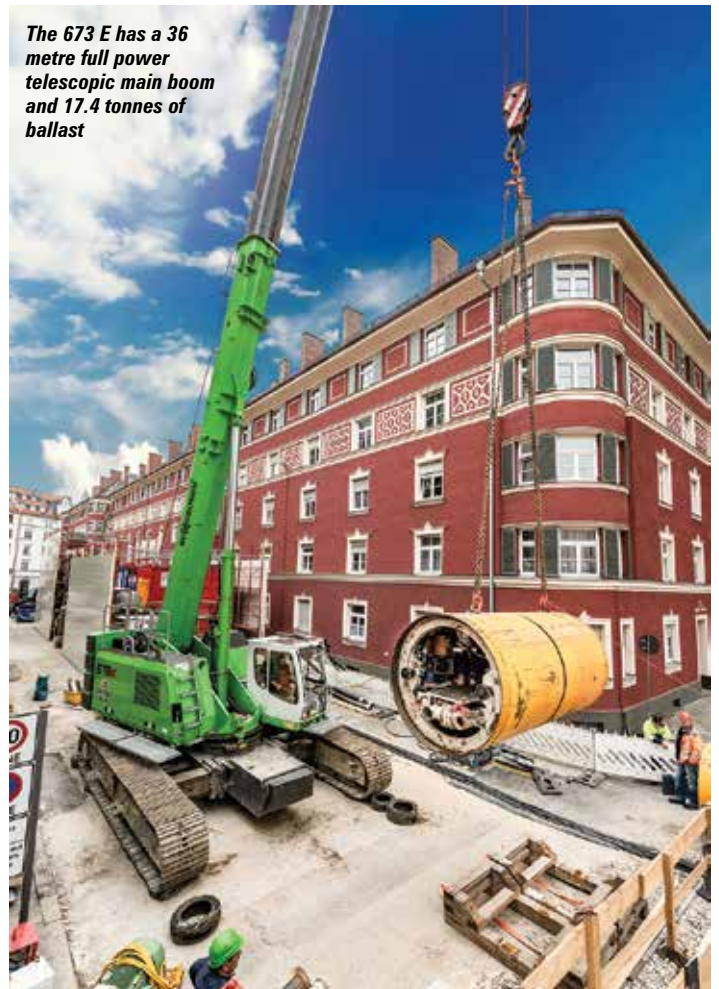
Wadle Bauunternehmung of Essenbach in Bavaria, Germany has experienced high demand for its 70 tonne Sennebogen 673 E telescopic crawler, particularly for underground construction applications. Most recently the machine has been working on a Munich inner city building site carrying out all the lifting jobs on a 178 metre underground micro tunnelling project. Work continued around the clock on a tight 10 day schedule.

The 673 E has a 36 metre full power telescopic main boom and 17.4 tonnes of ballast. It was used for unloading the steel reinforced concrete pipes from the delivery trucks and lowering the drill head into the excavation pit.

Klaus Gerhardt, Wadle's senior site manager says: "We really value the machine's flexibility in these building site applications. Transport is easy, attachments can be fitted quickly and being able to control the adjust the boom length via a joystick means that we can react to different tasks on site with very little hassle."



The 70 tonne Sennebogen 673 E is in high demand for underground construction applications



The 673 E has a 36 metre full power telescopic main boom and 17.4 tonnes of ballast



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Telescopic Boom Lifts

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Articulating Boom Lifts

BA24RT(24m) **BA28RT**(28m)

