



Manitowoc: Performing near you

The 200 t (220 US t) Model 14000 joins Manitowoc's celebrated line of lattice-boom crawler cranes, offering an 86 m (282 ft) main boom and 113.7 m (373 ft) luffing jib. The Model 14000 features the exclusive EPIC® with Can-Bus control system enhancing the performance of all crane functions. Crane setup is optimized using FACT™ connection technology to reduce assembly times.

For more information about the Manitowoc Model 14000, go to: www.mcgads.com/1143

 **Manitowoc.**

Little & Large

The increasing diversity and range of products on the market is clearly shown this month as we take a look at both telescopic and lattice boom crawler cranes. From compact telescopics to the highest capacity lattice boom crane ever, Mark Darwin takes a look at the latest developments and machines on the market.

Steady and increasing growth in global demand over several years means that all crane manufacturers and rental companies are busier than ever. Hidden in the general clamour for lifting equipment has been the relatively rapid rise of the compact telescopic crawler crane (the next step up from spider cranes).

Mini me

After several false dawns, the small telescopic crane finally looks like it has escaped from its 'specialist' and 'niche' status and is now beginning to break into main stream hire fleets.

Kranlyft, distributor of Maeda mini cranes in the UK, sold several of its 4.9 tonne capacity LC785 units at last month's Vertikal Days reflecting increasing interest in this type of product. The Maeda seems to be capturing all the headlines, but it is not the only mini crawler crane available. Other machines in the UK and Ireland include 4.7 tonne and 8.0 tonne capacity Hitachi's from NRC Plant, while Valla produces several models from a two tonne fixed boom model to three fully slewing models up to 12 tonnes lift capacity. Peter Hird has several of them available for hire.

The Maeda LC785 is selling well reflecting increasing interest in the mini telescopic crawler.



AGD Equipment was the first company to enter this market with IHI and still has the largest rental fleet with both Kato and IHI zero tailswing machines. It has also added two larger telescopic crawlers taking its total to 20 units. Sparrow Mini Cranes purchased the production rights to the Starlifter range of compact cranes from Sandhurst Manufacturing several years ago but since then only a few units have been built - mainly to order - a classic case of manufacturing and rental not mixing. The company also offers models from IHI, Komatsu and Maeda.

One of the early pioneers in this sector was Stratford-upon-Avon-based AGD Equipment which claims to have launched the concept in the UK at the 1991 SED exhibition with the IHI mini cranes.

Although a high cost unit, AGD sold two, three tonne machines to utilities contractor J Murphy and over a period of time a further six, five tonners. However, the market never developed as anticipated and its stock of three tonne, zero tail-swing units just didn't find customers. The market just wasn't ready for this type of machine.

And it wasn't just the UK that didn't appreciate the features of the mini crane because IHI cut the range after the crash in the Japanese market in the late 1990's.

But now, almost 20 years on, the mini telescopic crawler crane is beginning to take off with a product

C&a crawler cranes



An IHI CCH500T working as a service crane lifting casings for a Stent piling rig working alongside the railway in Rugby. The unit was specified in order to mitigate the risk of the boom falling over the live line and has a slew restrictor fitted in order to stop the operator from inadvertently slewing over the railway.



Liebherr is the only major crane producer with a large telescopic crawler.

offering that has changed little over that period - low overall operating weight, compact width and height dimensions, lifting capacities to about eight tonnes and a lift and carry facility that gives them a significant advantage over the growing mini spider crane sector.

Big spiders

A machine such as Unic's new URW 706 - currently the largest spider crane on the market of which the first production unit was bought by City Lifting - has tremendous performance for its size. A six tonne lifting capacity at three metres, 22.7 metres maximum lift height, with extension jib, a total weight of around eight tonnes and dimensions of just 1.6 metres wide, 2.2 metres high and 5.6 metres long. But to achieve this impressive lifting performance it has to set its outriggers giving a 6.5 metre by 6.6 metre footprint.

With a conservative quoted lifting capacity of eight tonnes, the Hitachi 160 LCT weighs nearly twice as much but has a footprint of only 2.49 metres wide by 3.9 metres long with an overall height of 2.9 metres and in the right conditions can lift and carry up to six tonnes.



The 8 tonne capacity Hitachi is proving very popular

"When we first started with small telescopic crawlers we used to call them the homing pigeons because they kept on going out to site for trial and returned home the same day," said NRC managing director Rod Abbot. How things have changed. NRC currently has a waiting list for these machines and has 10 arriving just before the end of the year. A new engine version of the machine is also due and a new 5 tonne telescopic crawler will be launched at SED next year.

End-users in the know realised a while ago how good these units performed around site. However the rest of the industry is now starting to appreciate the advantages and want the compact cranes. What is unusual is that with such a demand, there are so few manufacturers.

The introduction of two new Maeda machines including the larger capacity LC1385M-2, which may well have a seven or eight tonne rating at two metres - will help the supply problem a little but there is little else at the moment.



The Maeda LC1385M-2 has a 16 metre boom that can lift 2.6 tonnes to full height.

The Maeda is a similar size and weight to the Hitachi and has a 16 metre, five section main boom that can lift 2.6 tonnes to full height. The load chart restricts pick and carry to a maximum of two tonnes, but it can lift 440 kg to almost 16 metres radius.

Quick set up

The larger telescopic crawler machines are very different beasts altogether but are also increasing in popularity. Their attractions include easier transportation and the ability to quickly stow their booms to pass under overhead obstacles while benefiting from always using the optimum boom length configuration for each lift.

The main advantage for these larger units compared to their lattice boomed cousins is the set-up speed. On restricted inner city sites, the telescopic crawler crane does not need a large rigging area to set up, so it can be ready to work

within minutes of offloading. Being self-contained it also saves on transport costs, particularly attractive for short term contracts. This quick set up time also means that the crane is available for lifting for the entire hire period, resulting in cost savings for the user. Hirers promoting this rapid 'availability to work' time see big returns on the hire rates - which can be up to 50 percent higher for a similar lift capacity lattice boom machine. A win win situation.

The concept is still very niche, reflected by the relatively few manufacturers offering such a product but interest is growing. Years ago, a 60 tonne capacity telescopic was needed to have the performance of a 40 tonne lattice crane. However over time, the performance difference has closed so that a 50 tonne telescopic is the equivalent to a 40 tonne lattice and they are getting closer and closer.

Price was also against the telescopic crawler, but it would now appear that a 40 tonne telescopic may even be about £10k cheaper than a 40 tonne lattice. No wonder telescopic cranes are on the increase.

As Hitachi Sumitomo UK dealer, NRC has been offering these machines for about 10 years and says that the signs are good for a big increase in popularity. It has put in an order for 10, 40 tonne SCX400T telescopic crawler cranes and is hoping for a range which will include 5, 8, 20, 40, 65 and 85 tonne machines.

NRC has 10 of these 40 tonne SCX400T machines on order.



The 65 tonne capacity Marchetti Sherpa Logicrane has radial outriggers allowing self leveling.

One company that offers nothing else is US-based Mantis cranes which produces the Spandeck line up. While the company has looked at the European market a number of times, demand in North America is currently keeping the company's production facilities humming. Mantis takes a different approach with its cranes developing booms that can cope with side and shock loadings that would quickly ruin a regular telescopic lift crane boom. The company argues that with its heavy duty undercarriages its cranes are often used off-level, while pick and carry on uneven ground creates all sorts of dynamic loads that are transferred to the cranes boom and other components.

Heavy duty work

Mantis takes the line that rather than hide behind a statement that the crane must be used on perfectly prepared ground it builds its crawler cranes to handle the treatment that its customers' applications inevitably deliver. In addition, although its cranes all have telescopic booms, its customers look to use them for duty cycle work, including clamshell and auger work, so once again all components must be sized and specified to handle the stresses and strains from this type of work. The Mantis telescopic crawler range currently runs from 27 to 63 tonnes although a 100 tonner has been on the drawing board for some time and is due for launch at ICUEE this month. A special 100 tonner was produced recently for re-railing applications with 600mm ground clearance, four motor drive, four miles per hour maximum travel speed and incredible gradeability. The new model will incorporate

many of the re-railers features.

Back in Europe Italian crane producer Marchetti - itself a niche manufacturer - launched an unusual tracked telescopic machine at this year's Bauma. The Sherpa Logicrane CW65.42L has a 65 tonne capacity and a 42 metre maximum length boom. However it has a narrow width of 2980mm before extending its tracks and also has radial outriggers allowing the unit to self-level giving increased lifting capabilities. With jib, its maximum boom height is 56.5 metres.

In fact Italy is home to a number of telescopic crawler crane manufacturers, including TCM and Terex. Its Bendini subsidiary launched two new mid range models at last year's SAIE exhibition in Bologna, giving the company three models, the base model TCC40 and its sister machine the TCC45 which offers a slightly higher nominal capacity at 45 tonnes and a longer full power boom, and the 60 tonne TCC60.

One of two machines launched by Terex Bendini at last year's SAIE exhibition was the base model TCC40.



Supersize me

Recent additions to the lattice crawler cranes have been varied and from all over the globe, from Germany to the USA, Japan and more recently China. The most recent big crane launches include the massive 3,200 tonne capacity Terex Demag CC8800 Twin (see separate story), the Sany range of Chinese crawlers now available in the UK from exclusive dealer Watson and Hillhouse and Liebherr's 600 tonne LR1600/s and at the other end of the spectrum its 40 tonne HS825 HD duty cycle crane. Link Belt has also launched a new crawler - the 75 tonne 138 HSL - although it is targeted at the US market. Another Chinese manufacturer Zoomlion is looking to bring product in through its new UK and Ireland dealer Crowland Cranes.

The larger capacity machines - 320 and 400 tonners - are currently going through CE approval with a new 900 tonne machine to be launched in Nanjing, China next January. There are also rumours circulating that a 1200 tonne machine may also be on the cards.

Like many Chinese cranes, prices are competitive and delivery times are relatively short but quality and reliability are yet to be proven. However all Sany machines have Cummins engines and hydraulics system from either Rexroth or Kawasaki. The Sany marque looks set to become much more popular. It has already sold three excavators, three truck mounted concrete pumps and a trailer mounted concrete pump in the UK. Crowland Cranes is expecting a 70 tonne Zoomlion lattice boomed crawler crane which is currently being tested and modified for the European market. The company also says that a 200 tonne lattice crawler should arrive early next year. In the mean time, Crowland is building a new parts warehouse.



Linkbelt has launched its 75 tonne 138HSL targeted at the US market

The Italian crane market differs from the rest of Europe in that more contractors own their own cranes and look at on-site performance over road going ability. As a result there are more Rough Terrain and telescopic crawler cranes sold than in the rest of Europe combined. Most industrial buildings are made of concrete rather than steel and cladding, and many sites produce wall sections on site and then tilt-up. The telescopic crawler crane is ideal for this sort of work.

The only major crane producer with a large telescopic crawler is Liebherr with its LTR1100 which was launched almost two years ago. The unit was its first telescopic boomed crawler crane to go into standard series production. Liebherr had built a telescopic crawler crane before, producing a one-off special version of its 800 tonne, LTM1800, using the crawler base from its LR1550 lattice crane for a Japanese company in 1990. The new model was also the result of a request for a one-off unit combining the LTM1100 All Terrain crane superstructure with the crawler undercarriage from the lattice boomed LR1100.

This time however Liebherr considered that the resulting product might have a much wider appeal, particularly given the increasing popularity of telescopic crawler cranes in Europe.

McNally/Windhoist took delivery of the first machine about a year ago. With a six section, 53 metre main boom the LTR1100 can handle 10 tonnes to 12 metres radius and lift 1.8 tonnes at the maximum radius of 48 metres. Fully rigged it weighs 102 tonnes.

Liebherr say that the advantage of such a crawler crane is its manoeuvrability, particularly on rough terrain and of course it can pick and carry its full capacity.

McNally bought the machine for use predominantly for erecting the large mobile cranes it uses on wind farm assembly work as well as an assist crane for tailing in the longer wind turbine elements. It believes that the LTR1100 will prove to be an ideal lifting tool on major windfarm work primarily as the LTR1100's crawler undercarriage features hydraulic track width adjustment, allowing the crane's five metre overall width (with 900mm track pads) to be quickly reduced to 3.5 metres, making it ideal for even the narrowest of windfarm roads/tracks.

Overall, the LTR1100 looks like a very useful crane and has so far sold a handful in Europe. While the capacities in the mid range of the chart are only half that of its lattice cousin, it compares more favourably at longer radii and of course it is a lot easier to handle.

Watson and Hillhouse is now bringing in the full range of Sany equipment including crawler cranes.



In May, Watson and Hillhouse were appointed exclusive UK agents for the full range of Chinese manufacturer Sany equipment including drilling rigs and hydraulic crawler cranes. The crane range is impressive and currently includes machines from 50 to 400 tonne capacities. All units from 50 to 250 tonnes are now CE marked and are available for sale in Europe. Watson and Hillhouse has ordered and sold its first machine - a 50 tonner - although as we went to press, the company was not willing to name the customer although delivery was scheduled for mid October.

Hitachi's SCX800 is selling 'like hot cakes'.



crawler cranes C&a

70 tonne and a 200 tonne Zoomlion crawlers will be available in the UK shortly from Crowland Cranes



"Our aim is to have a rolling order with the factory enabling deliveries either from stock or at worst four months if not in stock," said Crowland's Peter Issitt. "The factory is also sending engineers to stay with us in the UK to monitor and report the modifications we complete and also to report any possible quality improvements that can be made."

Enteco is another crawler crane range now available in the UK through new dealer P S Webb. However the Italian-made heavy-duty cycle cranes will initially be targeted more at the foundations market as this is the dealer's area of expertise.

Liebherr unveiled its new HS 825 HD Litronic 40 tonne hydraulic duty cycle crawler crane at Matexpo 2007 in Belgium this September, claiming that it is the most powerful crane in the 40-tonne market segment.

Designed as a universal duty cycle crawler crane, it aims to provide maximum productivity for demanding applications including dragline bucket, clamshell, diaphragm-wall grab or casing oscillator, as well as straightforward lifting tasks.

Liebherr claims its new 40 tonne HS 825HD is the most powerful in its class.

With a transport weight of 37 tonnes the standard telescoping undercarriage offers a transport width of three metres with 700mm crawler pads. The crane has a main boom of 47 metres and is powered by a six cylinder Tier III Liebherr engine. Standard equipment includes 16 tonne free-fall winches with maintenance free multi-disc brakes and fully proportional controls with simultaneous operation for rapid cycle work.

An additional equipment option is a GSM modem that enables the transmission of operating and process data and online remote diagnosis on the machine.



Liebherr is also expanding the larger end of its lattice boom crawler crane range with a new 600 tonne model LR 1600/2. With a load moment of 8,085 tonne metres it is based on the larger LR1750 design and is targeted at the wind turbine installation market. The first production units should ship in the first half of 2008.

The new LR1600/2 has a 600 tonne capacity and is targeted at wind turbine installation.



The company says it has fine tuned every aspect of the crane to ensure lower, cost efficient transport and erection and can be practically set up without the need for an assist crane to place 3MW turbines on top of 100 metre towers.

The new crane achieves its maximum lift capacity of 600 tonnes at 10 metres radius on a 48 metre main boom rigged with the derrick system.

The maximum 180 metre reach is made up of a 96 metre main boom with an 84 metre luffing jib, with a derrick boom system in place. Liebherr says that this set up is ideal for plant construction, enabling the crane to work over the top of tall buildings.

The derrick boom can be extended up to 36 metres and equipped with maximum derrick ballast of 350 tonnes either suspended without a guide or with a ballast trailer and

guide. The suspended ballast can be adjusted from 10 to 18 metres radius under full load. This provides a relatively compact footprint for large loads at shorter radii.

For transport the cranes crawler carbody, superstructure and 'A' frame, weighs 74 tonnes and is only 3.2 metres high so that it can be carried on a one metre high semi low-loader. The weight can be reduced by 57 tonnes if the 'A' frame is removed. The crane is also fitted with a new wider cab which offers a second seat and includes three Liccon monitors.

Whatever the size or boom configuration, crawler crane manufacturers are continually trying to make it easier to set-up, transport and operate their machines. Telescopic booms have an enormous advantage in this area, but even the largest lattice boomed machines are closing the gap as engineers become ever more ingenious in designing the cranes from scratch for easy transport and erection.

It certainly looks as though after 20 years of trying, the mini telescopic crane has finally come of age. Whether or not its larger brothers will follow, only time will tell.

The Italian-made Enteco heavy-duty cycle cranes will initially be targeted at the foundations market.



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Boom BOOM

Terex Demag's new CC8800-1 Twin is an impressive crane. Claiming to be the world's largest lattice boom crawler crane that can travel with a load, the machine was shown for the first time at its hand-over ceremony to new owner Al Jaber Heavy Lifting earlier this month.

Steve Filipov president of Terex Cranes likened the Twin to a 'fine red wine - the longer you wait, the better it gets' - a reference to the eight years taken to develop the crane in association with Al Jaber to meet the increasingly demanding needs of a continually changing lifting industry.

The end result appears to have been worth the wait giving a crane that is based on the tried and tested components of the CC8800-1 yet with the addition of the double boom gives a 3,200 tonne lifting capacity and a maximum load moment of 44,000 metre tonnes. This combination gives erection savings in terms of time and space when compared with ring lift cranes and jacking towers.

Alex Mullins, general manager of Al Jaber Heavy Lifting, outlined the long and at times, difficult birth of the Twin.

"In 1999 the largest crane was the 600 tonne capacity CC12600, but due to the changing heavy lifting sector, we could see a demand for a crane with a 2,000 tonne lift capacity," said Mullins. "So we put this to various manufacturers but only Demag responded positively offering a CC5800 (1,000 tonne) mounted on a ring attachment. Although we rejected this, Demag responded with a CC8800 which in 2002 looked to be a good solution."



Alex Mullins of Al Jaber Heavy Lifting explains the evolution of the CC8800-1 Twin.

"Changing markets and requirements meant that by 2003 the capacity had to be upped to 3,000 tonnes with a redesign of the ring attachments. By 2005 Al Jaber asked for a modular design along the lines of the CC8800-1, so that it would be easily transportable with the heaviest component being 60 tonnes and widest 3.5 metres."

Terex - Demag had in fact first had the twin boom idea in 1999 based on the CC2800, but it was too costly and the capacity too small.



The twin boom configuration can increase the lifting capacity by almost a factor of four over the standard CC8800-1

However, over the following years, it had worked with Al Jaber proposing various ring type machines until arriving at the final version.

Twin Power

The main feature of the Twin is its double main boom arrangement which increases the lifting capacity of the CC8800-1 by a factor of almost four in certain configurations. Like the main boom, the luffing fly jib and the Superlift mast are also doubled up and connected by cross-bracings and all winches and hook blocks are provided in pairs. The undercarriage has been extended by a three metre connecting structure

to 14 metres wide, which is the base for the 10 metre diameter integrated circular track with roller system. The front superstructure of the CC8800-1 is doubled whereas the rear frame has been incorporated unchanged.

The counterweight carrier and two Superlift trays of the CC8800-1 are connected into a patented Twin counterweight system of 1,740 tonnes, allowing the counterweight to be easily adapted to the requirements of the lifting job and achieve the full manoeuvrability of the crane.

Boom boom

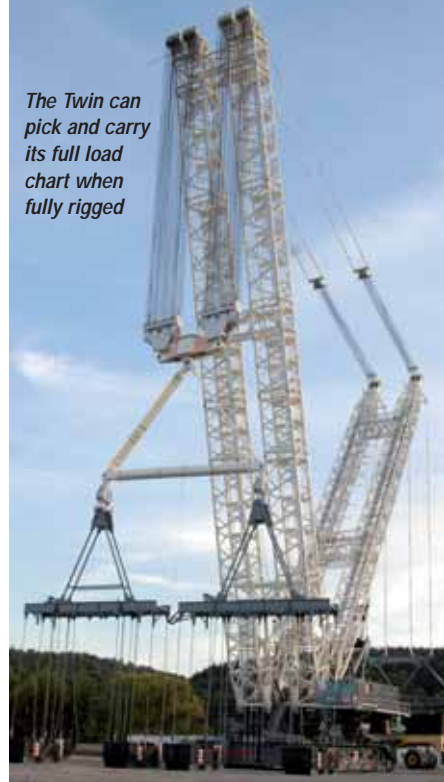
Although only rigged to 68 metres at the handover ceremony, the main boom can be extended up to 117 metres long and can be combined with a luffing jib of the same length, resulting in a maximum hook height of more than 235 metres.

For erecting components in petrochemical facilities, a Vessellift is available. Made up of parts of the luffing fly jib, this makes it possible to erect distillation columns of 100 metres in length and weighing up to 1,800 tonnes.

With transport and assembly as simple as a single boom machine, the parallel boom arrangement reduces rigging times as procedures are just doubled.

The Twin also uses the familiar touch screens and joysticks of the

The Twin can pick and carry its full load chart when fully rigged



But the main advantage of the Twin is that it can theoretically pick and carry its full load chart and is mobile when fully rigged. Unlike ring cranes and lifting platforms which impede construction site operations while they are erected on site, the Twin can be erected away from the site and also collect a load and carry it to its final destination.

The format is obviously right as Terex-Demag has firm orders for two more machines and longer-term expects as many as 10 operating around the world.

CC8800-1 Twin Facts and figures:

- Max capacity:** 3,200 tonnes
- Max load moment:** 43,900 tonne metres @ 18 metre radius
- Ability to travel with full load**
- Max transport width of components:** 3.5 metres
- Max component weight:** 60 tonnes
- Max lift on full boom:** 246 tonnes @ 117 metres
- Total rigged weight:** 3,250 tonnes

The main boom can be extended up to 117 metres long and can be combined with a luffing jib of the same length, resulting in a maximum hook height of more than 235 metres.

