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Out from the depths

It wasn't all that long ago that crawler cranes were looked upon as the 'dinosaurs' of the lifting industry. Thanks to a recent surge in popularity among European users, however, the jaws of antiquity are loosening their grip on these gentle giants.

C&A reports.

"The industry generally, is very aware of the existence of modern, hydraulic crawler cranes and the benefits of using them," says Robert Law of AGD Equipment, the UK crawler crane hirer and distributor for the Japan-built IHI crawler cranes. "The latest changes in escorting wide loads has also aided the demise of the mechanical crawler crane, as the hydraulic versions have retractable undercarriages, which makes transportation easier.

"AGD has been the IHI dealer for 15 years, but at the beginning it was hard going, as we had to firstly establish the hydraulic concept in addition to establishing IHI as a manufacturer."

There are currently 204 IHI crawler cranes in the UK and Ireland, which AGD believes is the greatest population of any hydraulic crawler crane manufacturer and "from 3-tonne mini crawlers up to 120-tonne lattice boom crawlers, it is certainly the widest range," he says. IHI also claims credit for the first zero tail swing mini crawler unit, the 3-tonne capacity CCH30T. At the other end of the capacity

chart, the company will be adding a 50-tonne unit to its line in 2005.

"The CCH30T was developed for the UK market," says Mr Law. "We had received an excellent reception for the bigger CCH50T and asked IHI to develop a smaller version with a longer boom and zero tail swing for congested sites."

AGD will shortly be expanding its own rental fleet with the addition of three, 50 tonne CCH500Ts taking the total up to nine such units, and a further 30 tonne CCH300T, all of which will be ready for rental by the end of the year.

"There has certainly been an arousal of interest in crawler cranes, especially telescopic crawler cranes, which offer greater versatility with quicker set-up times," says Mr Law. "We are finding more and more jobs now for crawler cranes, which would have often been done by mobile or tower cranes in the past."

Winds of change

"Modern crawlers are certainly having their day at the moment considering that, traditionally, the all terrain has generally been the preferred crane of choice," says

Christian Schorr-Golsong, marketing director of the Germany-based producer Terex-Demag.

"There is now a steady climate in Germany for crawlers, mainly due to continued investment in the growing wind energy sector." It was largely to meet this demand that Terex-Demag launched its 350 tonne capacity CC 2200 and 300 tonne capacity CC 2000-1 earlier in the year.

"Crawler cranes show distinct advantages over mobile cranes in this sector," says Hermann Ulferts, owner of German rental company, Ulferts & Wittrock. "With big lift capacities and optimal load distribution, these cranes are able to work in unsecured areas and

on mobile cranes was their shorter set-up times," says Mr Schorr-Golsong, "but we reacted to this by significantly reducing them. A 300 tonne unit complete with main boom can be ready for operation within just four hours, whereas a telescopic crane in the same class would take considerably longer."

The assembly of the counterweights, boom extensions and lift enhancing mechanisms, such as Terex-Demag's SSL boom technology, of mobile cranes takes time. The argument that crawler cranes take too long to assemble no longer stands. "The manufacturers have fulfilled our wishes," says Dirk Bracht, managing director of another of Germany's crane rental companies, Franz Bracht.

Also quick to react to the wind energy craze was Liebherr. In direct competition with Terex-Demag, the company also made the most of the bauma stage earlier in the year with the presentation of the new 'narrow-track' LR 1400/2-W crawler unit. The unit also targets wind turbine park construction, but offers a larger capacity at 400 tonnes.

The unit was a joint-development project between Liebherr and the



One of Kobelco's latest crawler releases first seen at bauma earlier in the year – this 135-tonne capacity CKE1350 has been put to work by owner Benelmay on one of Europe's largest construction sites, the Deurganckdok container terminal in Antwerp.

can be driven between sites without the need for dismantling the crane."

"In previous times, one of the main reasons why the market focused

UK's largest crawler crane hirer Weldex, who took delivery of the first model in January. The unit features two slew rings, one for turning the crane's upper, and one for

turning the crawler tracks. Dubbed the 'W' system, the technology enables fully rigged cranes to travel between wind turbine erection sites without the need for dismantling and re-erecting the crane. When the crane is being driven and arrives at a point where it needs to turn, the crane is jacked up, the tracks are slewed to the desired direction of travel, the jacks are then raised and the upper then slews in the conventional way, allowing for 90 degree turns.

The 'W' system, has a centre section of the undercarriage which provides a track width of just 4.8 metres, instead of the usual 8.7 metres on the normal LR 1400, and to compensate, outriggers set in a cruciform pattern extend to 11.5 metres for lifting.

Liebherr told C&A that it is expecting big things from the UK market in the coming months in terms of its crawlers with several big wind farms currently in the planning stages of construction.

The company also looked to its lower capacity crawler line earlier in the year with the launch of 200 tonne capacity LR 1200. With the option of a fixed or luffing jib, the unit combines a 53-metre main boom and 95 metres of luffing jib. "In all combinations, the LR 1200 combines outstanding load capabilities with very compact dimensions and a maximum transport width of just 3 metres," says Vera Hentschel at Liebherr Nenzing. "The option of free-fall winches with the unit also allows accommodates clamshell and dragline applications."

Another of Germany's crawler crane producers, Sennebogen, has also made a significant mark on the UK market in recent times,



Liebherr's 400 tonne capacity LR 1400/2 crawler crane - a joint development between Liebherr and UK crawler crane hirer Weldex.

knocking up sales of 40 machines, the majority of which have been snapped up by the UK's larger civil engineering contractors.

"Many other medium and smaller companies have also taken not only our crawler lattice boom machines, but also units from our Crawler-Telescopic range," says Phil Hodges of EH Hassell & Sons, the UK and Ireland distributor for Sennebogen. "The size of machines has been varied, but sales have mainly comprised units from 33-tonne up to 80 tonnes capacity lattice boom units and 15- to 40-tonne telescopic crawlers."

Most recently, EH Hassell & Sons commissioned the first new 100-tonne Sennebogen 6100HD 'B' series crawler magnet crane for Brambles Industrial Services at the Port Talbot Steelworks. "This is the first of two new 6100HDs destined for the arduous duty cycle work," says Mr Hodges. "The machine will be working '24-7' on bailing duties in one of the Port Talbot bailing pits."

The steady acceptance of the modern crawler crane throughout Europe is also reflected in the 2004 sales figures of The Japan-based producer, Kobelco. "We have achieved excellent results in Europe," says Jos Verhulst, sales manager at Kobelco Cranes Europe. "This year has been the best year of the last ten, and we expect our market share to be even higher than our worldwide market share of 30 percent by year-end."

Recent sales include the delivery of ten, 80-tonne capacity CKE800s to Sarens of Belgium and De Kil and Adrighem in The Netherlands, and two 250-tonne CKE2500s to Shanghai, China, for a joint-venture between Mammoet and Havago, which takes the latter company's CKE2500 tally up to seven units in just 12 months.

Kobelco's CKE and BME crawler series comprises 11 basic models, which can be configured and adapted for a wide range of applications. The company says that the CKE series is particularly suited to general civil engineering, foundation and construction work, and also clamshell, foundation (piling, hydraulic/mechanical diaphragm wall bucket), dragline work and heavy-duty erection applications as found in the power and petrochemical industries. The CKE range offers lifting capacities up to 400 tonnes at a 4.5-metre radius and a fixed jib length of up to 100 metres, while the larger models, from 90 tonnes up, can also be equipped with a luffing jib of up to 132 metres.

The two models in the BME series are equipped with 20/25 tonne pull winches and are designed for heavy-duty cycle work, foundation work, pile driving and grab work.

"From an international perspective, Kobelco's crane sales are rapidly developing," says Mr Verhulst. The company recently formed an OEM agreement with Manitowoc for the supply of Kobelco cranes up to 120 tonnes in Manitowoc's red company colours and brand name for distribution by its dealers in the Americas.

Manitowoc presented its Model 15000 earlier in the year, the first Manitowoc unit to be built outside of the company's native US. Built at the firm's Wilhelmshaven facility in Germany, the 250-tonne unit is based on the popular Model 999 and was developed for the European and Asian markets. The crane's lattice boom conforms to the standard European shipping width of 3 metres, while the optional luffing jib can be neatly stowed inside the main boom when being transported.



Terex-Demag targeted the wind energy sector with the launch of its 350 tonne capacity CC 2200 at bauma 2004.



Early this year, German producer Sennebogen launched what is now the flagship model of its Star Lifter crawler line, the 180 t capacity, the 5500 SL

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AGD supplied Amec with this modified 80-tonne capacity IHI DCH800 to accommodate Amec's Soilmech RT3/ST crane attached rotary bored piling rig and a Casagrande casing oscillator for pile installation work for a bridge on the new A1/M1 link contract in Wetherby. A 35-tonne IHI CCH350 was also supplied for service duties.

Earlier in the year Amec appointed AGD as its preferred supplier for all its crawler crane hire requirements throughout the British Isles. The three-year agreement covers cranes from 3 to 1000 tonnes. The larger cranes will be handled via a strategic alliance formed with Sarens UK.

Economic choice

According to Remo Arcangeli, senior sales manager of Manitowoc Crane Group, big crawler cranes should be the preferred choice over mobile cranes for economical reasons.

"If only small capacities are required, then the advantage lies with mobile cranes," says Mr Arcangeli. "But, today's crawler cranes have become increasingly easier to transport and set up." Manitowoc's 250-tonne Model 15000 complete with a 60-metre boom can be set up in less than three hours, according to Mr Arcangeli.

Taking this lift height and a capacity into account when considering an equivalent mobile crane, you are looking at least a 400-tonne capacity unit, so even on certain short-term operations, the crawler crane offers an economical alternative.

For Glen Tellock, president of Manitowoc Crane Group, the capacity of the crane is not necessarily the issue here, rather, what the crane has to offer as a total lifting solution.

"Europe, particularly in the central and northern parts, is a very tough market, but where Manitowoc stands up is by being able to offer a more customised, tailor-made crane package depending on the type of user and the work that the crane will be required to do," he says.

"Applications change, so it is important that the Manitowoc product, through technology and optional features, provides the flexibility to change with them. I do not believe that one size fits all."

Earlier in the year, Manitowoc developed a new luffing jib for its 136 tonne Model 555, and also an additional fixed jib, which significantly extended the maximum lift height and lifting radius of the 555 to 118.8 metres and 74.6 metres respectively.

"The European crawler market is not a big one, but European customers are a little more global than in some other markets, so it is important for us to have a presence here. Traditionally, we have a very solid product with lower overall ownership and maintenance costs and a re-sale value that holds very well."

Market decline

Since 1999, the European crawler market has declined by up to 70 percent, but according to Mr Tellock, the market for crawlers under 150-tonnes capacity during the next 18 to 24 months will be the one to watch out for.

"For larger crawlers" says Mr Tellock, "mature markets tend not to improve so much, so it will be to the opportunistic markets, such as infrastructure development within the new EU countries that crawler producers will be looking to in the future."

A Grey day in Southend-on-Sea

In its November 2003 issue, C&A reported on the collapse of the jib of a Sumitomo SC350 crawler crane on a Southend job site. 12 months on, HM Inspector of Health and Safety, Gordon Crick, explains what went wrong.

The incident involved a grey import crawler crane being operated without either a CE marking, or a valid Declaration of Conformity as required by the Supply of Machinery Safety Regulations 1992.

An inexperienced crane dealer had imported the crane from Japan, after which time it was significantly modified and upgraded. It left the importer without indents to the hoist levers being removed, which allowed the levers to return to creep mode, rather than neutral. Also, no EC Declaration of Conformity was issued.

The crane, similar to the Sumitomo crane pictured, was owned and operated by an experienced crane operator with over 40 years experience in the business. As required by the Lifting Operations and Lifting Equipment Regulations 1998, a competent person carried out a thorough examination and test of the crane and issued a certificate. However, no check was made to ensure the crane had an EC Declaration of Conformity.

After import and modification the crane was used on a number of sites. On the day of the incident a qualified driver drove the crane that had six months experience operating a variety of hydraulic cranes.

Following the incident, the HSE began a thorough investigation and breaches of law were identified. HSE inspectors took careful account of all circumstances relating to the incident, and decided, in line with the Code for Crown Prosecutors and the Health and Safety Commission's Enforcement policy Statement, that prosecution action was not in the public interest. The investigation, however, exposed a number of specific failings, which the industry should take note of.

These include;

- The supplier failed to ensure that a technical file was prepared and did not remove the indents to the hoist levers. An EC Declaration of Conformity was not issued on the crane leaving his yard.
- The crane operator should have asked for the indents to be removed and insisted on the issue of an EC Declaration of Conformity.
- The crane operator should have ensured the driver had a specific handover briefing on the way this particular crane worked.
- The competent person who carried out a thorough examination and test failed to check that the crane had an EC Declaration of Conformity.
- Several principle contractors checked documentation for this crane, but none asked whether it carried a valid CE marking.
- The individual sub-contractor hiring the crane should have checked the level of experience the crane driver had on this type of crane.
- The driver of the crane should not have left the cab of his machine without going through the necessary checks to ensure it was safe to do so.

This case illustrates the severe financial loss and business interruption that can result from operating machinery that does not comply with the Supply of Machinery (Safety) Regulations 1992.

Importers of machinery from outside the EU, which is not CE marked and does not conform to the standards laid down by these Regulations must ensure that it complies before being sold, or risk investigation and prosecution under these Regulations.

The industry must take this as a timely reminder that HSE will use full range of its power if there are further incidents of this type in future.



US firm takes new Cat-based Favco crawler



Bernard Construction Company in the US has taken delivery of the first Favco 60T crawler crane for work on what is currently the largest active dam construction project in the US, the Saluda Dam near Columbia, South Carolina. The new 60-US ton (54-tonne) capacity Favco crawler is based on Caterpillar Model 325 excavator power module, on top of which sits a 105 foot (32 metre), four-section telescopic boom.

An optional 33- to 57.4-metre (10- to 17.4-metre) offsettable telescopic lattice boom increases the overall tip height to over 172 foot (52.4

metres). From the unit's Caterpillar cab the operator uses a single joystick for swing, boom elevation, telescopic main hoist and auxiliary hoist functions, while foot controls are used for travel functions.

The unit's tracks can also be extended from 9 foot 9 inches (2.94 metres) in the stowed position, to 14 foot 7 inches (4.46 metres) at full width and for transportation the crane's overall weight can be reduced from 117,000 lbs (53 tonnes) in working mode, to less than 100,000 lbs (45.3 tonnes). Power is provided by a quad turbocharged 168-hp Cat diesel engine

First Model 18000 arrives in Asia

The first Manitowoc Model 18000 crawler crane to enter into Asia has been put to work on the construction of a power plant in Kwangyang, South Korea, by the unit's owner Chunjo Construction Co for main contractor Dae Lim. The 750-tonne unit is being used to lift numerous structural elements of the plant, which, on completion, will provide power to the Kwangyang works, the largest steel mill in the world, operated by Posco.

The unit has already completed the biggest lift of the project, which involved the hoisting of two 240-tonne generators at a radius of 15.7 metres. Other lifts have so far included two 171-tonne gas turbines and the crane will also be required to lift several heat exchanger coils, the largest of which will weigh 197 tonnes. The Model 18000 has been rigged with 61 metres of main boom and a 27.4-metre luffing jib, a configuration that will remain for the crane's year-long stay on site.

"We've also used the crane for a variety of smaller lifting tasks, so it's really provided us with a single solution for lifting duties on a large part of the project," says Chang Hwan Jang, president of Chunjo Construction. "Its ability to cover such a wide range of lifting duties combined with its ease of transportation and relatively compact dimensions make it an ideal choice for work on industrial sites such as this one."



Leibherr claims rites to first fully automatic hydraulic crawler

Leibherr claims that it has produced the first ever fully automatic hydraulic crawler crane. Allocated the HS 855 HD and recently employed to assist in the construction of 17.4-kilometre drinking water tunnel at Hofoldingen Stollen near Munich, the 90-tonne capacity unit is a modified HS 855 HD Litronic crane whereby all functions can be controlled by sensors and limit switches.

Application of the rope excavator is also automated through pre-programmed operating processes, the initiation of which is the only human intervention required. For the removal of material from the shaft of the water tunnel the unit has been fitted with a bucket, developed by German company Bilfinger and Berger, at the end of the hoist rope that automatically closes when the rope is raised and opens when the rope is lowered.

As the lifting cycle occurs two to three times an hour the unit's diesel engine is automatically switched off during idle times. During the loading/unloading cycles, the crane adheres to pre-determined positions



and a maximum swing radius, which cannot be exceeded.

The unit is also fitted with two, 25-tonne winches and a 400 kilowatt diesel engine to handle the 15-metre cubed water buckets weighing 34 tonnes when filled.