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AT THE HEART OF INFRASTRUCTURE DEVELOPMENT

In an ever changing world, crawler cranes play a key role in major infrastructure construction projects and repairs. Whether it's roads, bridges, railway lines or petrochemical construction, replacement, repair or maintenance, crawler cranes are typically at the centre of things, while new developments such as wind power introduce new challenges for crane design.

A very early Link-Belt crane from the 1900s

In our last crawler crane feature we highlighted renewed interest in the larger lattice crawler cranes. This year there seems to be a greater focus on small to medium lattice cranes as well as telescopics. We have also seen some acquisition activity, while one company is celebrating 150 years in business. There have also been several new cranes and some older, almost 'vintage', crawler cranes still performing at the highest levels, while new electric powered cranes are becoming more prevalent. Finally, anti-dumping allegations have reached the crawler crane market. Yes, it has been a varied and busy 12 months.

LINK-BELT ADDS NEW MODELS

Founded in 1880, Link-Belt Cranes is one of the oldest crane companies still in existence. At Conexpo, it introduced two new crawler cranes, the 160 tonne TCC-1800 telescopic and the 181 tonne 248IV lattice crawler. Later this year C&A will cover Link-Belt's history in greater detail, including some amazing early photographs - some of them more than 100 years old.

The TCC-1800 fills the gap between 226 tonne TCC-2500 and 127 tonne TCC-1400 with shipments due to begin after the summer. Crawler crane product manager Michael Dawson says:

"Having identified a growing customer demand for telecrawler models between 150 and 200 tons, we developed the TCC-1800 to fulfil this segment and answer customers' specific requests."

The TCC-1800 has a 13.3 metre to 60.1 metre greaseless six section main boom with a 16.8 metre bi-fold hydraulically offsetable SmartFly with up to three 5.5 metre lattice extensions, achieving a maximum tip height of 95.8 metres.

Power comes from a Stage V/Tier 4 Final Cummins QSB6.7 HVO-compatible diesel with auto-idle function to reduce fuel consumption and noise. An Auxiliary Power Unit provides essential cab systems such as climate control, crane displays, radio and lighting without needing to start the main engine.

Standard design features include a centralised grease point and electrical locations, a wireless rigging remote, fall arrest anchors, and slew boundary poles. New dual axis controls provide free slew and auto brake capabilities.

The in-house designed Pulse 2.0 Rated Capacity Limiter - used on other Link-Belt cranes - is designed to interface easily with the crane's other features. Using the 10 inch touchscreen display, the operator can set ground bearing pressure alarms or use fine metering for precise picks. Integrated within the display are the onboard diagnostics to keep the TCC-1800 running at peak performance with straightforward Wi-Fi updates and remote troubleshooting.

Maximum tip height fo the TCC-1800 is 95.8m

The new 160 tonne TCC-1800

Link-Belt says that the design priorities included easy transport and full self-assembly. In transport mode, the TCC-1800 weighs less than 49 tonnes including boom, main and auxiliary wire ropes, a 109 tonne hook block, and the three metre hydraulic offsetable SmartFly.

The TCC-1800 is Link-Belt's first model to include independent extension cylinders for each track, allowing a smooth extension and retraction of the tracks to enable the Variable Confined Area Lifting Capacities (V-CALC), giving a full range of track positions, nine different 360 degree load charts with pick & carry and including counter rotation.

NEW 248|V BUILDS ON A CENTURY OF INNOVATION

The second new Link-Belt crane is the 181 tonne 248|V lattice crawler, which should be available for shipment this autumn. It is said to build on the heritage of Link-Belt's 248 models, which have proven popular over the past 20 years, while incorporating new features to improve efficiency and versatility.

One of the main advances is the new HSL-2 Load Moment Limiter with a 12-inch touchscreen display, which is also featured on the smaller 218|V. Its telematics link provides real time geometrical data with images and operator alerts, including wind speed, tilt angles and ground bearing pressures for conventional and luffing applications. It also provides installed counterweight sensing, along with step guided calibrations with advanced diagnostics, allowing operators to make decisions more quickly.

Link-Belt launched its 181 tonne 248|V lattice crawler at Conexpo.

Link-Belt says that customer feedback played a key role in shaping the design of the 248|V, such as including the APU, already mentioned on the TCC-1800, which the company estimates can significantly extend the service intervals for the engine. The unit has sufficient power for true multi-function simultaneous operation of slew, all three winches as well as boom luff. Other features include reduced glare LED lighting, fall arrest anchors and wider steps. A slew fencing system restricts superstructure rotation to predefined limits and a new hydraulic superstructure counterweight removal/installation system is said to speed setup and dismantle times.

APPLICATION VERSATILITY

The 248|V offers conventional boom lengths from 16.8 to 86.9 metres and fixed jib lengths from 9.14 to 30.48 metres for added reach. Other attachments include a 27.2 tonne heavy duty extension and power pack mounting lugs on the upper frame aid pile driving and vibratory hammer work. Quick-reeve button style wire rope terminators simplify rigging and reduce setup time. A newly engineered 7.62 metre base boom section remains in place for transport, within the 41,050kg transport weight, saving a truck.

For projects requiring extended reach, the 248|V has a new 43.5 tonne capacity luffing jib, with lengths of 25.9 to 56.4 metres and a luffing range from 88 to 65 degrees. An optional three metre tip extension adds a little more reach as well as load line separation when needed.

LIEBHERR ADDS TO ITS LR 1400

Another crawler crane making its US debut at Conexpo was Liebherr's 400 tonne, LR 1400.1 SX which was launched at Bauma last year but shown for the first time with a derrick boom and suspended counterweight option for heavy lifts at longer radii and long boom combinations. The counterweight can be increased or reduced by adding or subtracting 10 tonne counterweight slabs, without the need for an auxiliary crane.

The suspended counterweight radius feature's Liebherr's VarioTray variable counterweight system, its position is monitored at all times, with automatic load chart selection. When it is set down on the ground, an automatic interlock prevents slewing, travelling, or varying the counterweight radius.

Liebherr's LR 1400.1 SX was shown at Conexpo with a derrick boom and suspended counterweight

As a multipurpose crane, the LR 1400.1 SX is typically used on infrastructure expansion or replacement, including bridges or tunnels, stadium or factory construction with steel or precast concrete elements and even for barge applications.

NEW ASSISTANCE SYSTEMS

A gradient travel feature helps improve safety when working on or near slopes. The crane's control system automatically calculates the crane's centre of gravity and warns the operator before the crane leaves a safe area. While travelling, the operator receives information about the permissible and actual gradient and the crane's overall centre of gravity at all times. If necessary, the boom angle can be altered so that the machine remains safe.

The ground pressure visualisation of the LR 1400.1 SX calculates the current ground pressure in real time and compares it with predefined safety limits for the respective jobsite. The ground pressure is displayed in the operator's cab so that the operator is constantly aware of whether the machine is in or is approaching a critical area. The ground pressure of the crane can also be reduced using ground pressure reduction plates. The plates can be lowered during lifting to significantly increase the crane's

Liebherr LR 1400 and LR 1300 at Conexpo

ground contact area, reducing ground pressure by more than half. They are also handy when raising long booms from the ground. When erecting or lowering the boom, the 'Boom up and down' assistant indicates if and when the crane is approaching a tipping point and automatically stops operation before the operator unintentionally enters an unsafe zone. The operator no longer has to operate the main boom and jib winches separately, the controlled folding of the jib begins at the press of a button and the speed of the laying down procedure is controlled with a single joystick. During the process, the 'Boom up and down' assistant chooses the safest method for laying down the boom.

LR 1300.1 SX STILL GOING STRONG

After 18 years, Liebherr's most popular crawler crane - the 300 tonne LR 1300.1 SX - is still going strong. Introduced at Bauma 2007, the global operating population will shortly reach 1,000 units. The very first unit - sold to Maxim Crane Works in the USA - is currently carrying out maintenance work at the Four Corners power plant in Farmington, New Mexico. One of 38 units in the Maxim fleet, the company recently placed an order for another dozen cranes.

Vice president Greg Bellcoff said: "We see significant growth for this unit over the next four to five years. Our customers use the LR 1300.1 SX for renewables such as wind, steel erection, petrochemical, refining and all manner of commercial construction."

The LR 1300 was developed at Liebherr Nenzing using design principles from cable excavators manufactured at the site since 1980. The company said that the development team focused on balancing high capacities with easy mobility and assembly. The crane has evolved over the

The first LR 1300.1 SX at Maxim Crane

The Maxim team with the 18 year old LR 1300

years with new operator assistance systems including vertical line finder, horizontal load path, 'Boom up and down' assistant, various operating modes and ground pressure visualisation.

300T ELECTRIC CRAWLER

Liebherr unveiled the LR 1300.2 SX Unplugged battery powered version at Bauma last year, which has similar performance with zero on-site emissions. The crane features a 438kW electric motor and 392kWh battery pack, providing up to 13 hours of operation without mains power. Liebherr says that complete battery charging takes between 4.5 and 8.5 hours, depending on the available power supply, with the crane remaining fully operational during charging.

While performance and capacities remain the same as its diesel counterpart, the new model includes seven different boom configurations with a maximum main boom of 110 metres, and a maximum system length of 196 metres - 83 metre boom plus 113 metre luffing jib. The crane's lifting capacities can also be boosted with a 30 metre derrick boom and 120 tonnes of suspended counterweight.

A gradient travel aid system assists with slope monitoring, while a special operating mode has been developed for working on barges. The system includes load curves for off-level angles of zero to three degrees - with corresponding load moment protection.

TELESCOPIC CRAWLERS

Not so long ago, telescopic crawler cranes of any capacity were a fairly rare sight on most construction projects - now they are a critical item of equipment, particularly on major utility, infrastructure and maintenance projects - the main reasons being ease of transport and set up combined with the ability to quickly and easily retract and lower its boom. Maximum lifting capacities currently top out at around 250 tonnes since Liebherr stopped supplying its 1,200 tonne LTR 11200 - although the majority of those sold range from 80 and 100 tonnes, more than enough for most highway or bridge contracts.

Liebherr extended its 'unplugged' crawler crane range with the 300 tonne battery powered LR 1300.2 SX at Bauma last year

NEW TADANO GTC

Tadano is adding a new 60 ton/54.5 tonner to its GTC range of telescopic crawler cranes which have maximum capacities from 50 to 160 tonnes. The GTC-600-2 is essentially an upgrade of the current 50 tonne GTC-550, which it replaces.

The new GTC-600-2

The PVE American CC200

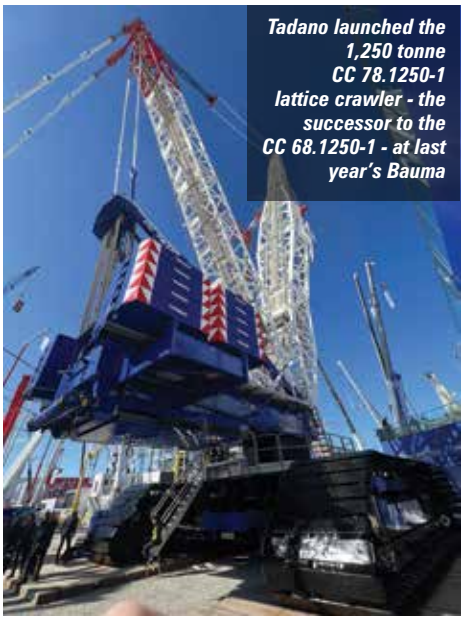
The GTC-600-2 features a 34.7 metre four section full power boom, topped by an 8.8 metre to 15.3 metre bi-fold swingaway extension with up to 45 degrees of offset. Key chassis features include: Opti-Width variable track width with automatic load chart selection to suit the actual width selected - from 3.5 metres fully retracted to 5.2 metres fully extended - along with out of level charts for 0.5, 1.5, 2.5 and four degrees as well as full pick & carry capacities.

The new crane also features an improved slewing system with closed loop hydrostatic drive for smoother more precise control and the latest Tadano AML-C Rated Capacity Indicator with the possibility for the operator to set work zone limits for slew angle, height and radius with soft stops as operation approaches these pre-set limits.

The GTC-600-2 is powered by a Tier 4f/Stage IV diesel, while options include a 'Heavy Configuration' with a 12,791kg counterweight package for improved capacities at longer radii. The new crane weighs 45.3 tonnes and can be transported on a single truck in 'ready to work' configuration.

Built at the Tadano Mantis plant in the USA, it will initially only be marketed in North America. Mantis chief operating officer, Reagan Bull said: "Our latest addition to the GTC Series provides incredible value for users. It's the only 60 ton telecrawler that is transported on one truck. The GTC-600-2 will excel in core applications such as bridge/heavy civil, power transmission and foundation construction, while being appealing for general lift crane markets as well."

The new GTC-600-2 at Conexpo - sold to Exact Equipment



Tadano launched the 1,250 tonne CC 78.1250-1 lattice crawler - the successor to the CC 68.1250-1 - at last year's Bauma

LARGER TADANO LATTICE CRAWLER

At last year's Bauma, Tadano launched the 1,250 tonne CC 78.1250-1 lattice crawler, unveiled as the successor to the CC 68.1250-1, but redesigned, upgraded and enhanced for wind energy and heavy infrastructure work. It features a 224.5 metre maximum hook height when equipped with a 15 metre fixed jib, at which point it can handle up to 140 tonnes. It also benefits from a 3.5 metre boom base, with a choice of crawler shoe widths of two and 2.4 metres and dual Mercedes engines.

North American crane rental company Maxim Crane Works ordered the first two cranes, with chief executive Paul McDonnell saying: "We are committed to providing our customers with cutting edge lifting solutions. The specifications of the CC 78.1250-1, including its exceptional lifting capacity and transport efficiency, made it an easy choice for our fleet. We can't wait to have this crane available to work on critical projects."

DUTCH AMERICAN

At Conexpo Dutch manufacturer PVE Cranes, in partnership with its distributor Atlantic Coast Cranes & Machinery, launched a new 200 ton (181.4 tonne) lattice crawler - the PVE American CC200. The new crane combines PVE's European crane platform with a Cummins Tier 4F power, Rexroth hydraulics, advanced telematics and self-assembly systems engineered for North American lifting and transport requirements.

The CC200-1 features a 75 metre main boom and a 48.8 metre luffing jib for a maximum tip height of 123.7 metres.

NEW SANY CRAWLERS

Sany America launched two new crawler cranes - the 300 tonne SCA3300A lattice and 100 tonne telescopic SCA1100TB. The SCA3300A has an 86 metre maximum main boom length and a 42 metre fixed jib. The maximum system length is a 62 metre main boom topped by a 63 metre jib. Features include a new, more comfortable cab, with photochromatic windshield and 20 degrees of tilt, real time centre of gravity monitoring and

Sany launched its 300 tonne SCA3300A at Conexpo

The 100 tonne SCA1100TB features a five-section, 53.1 metre full power boom

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Lifting operation
LR 1250.1 unplugged

low ground pressures. Optional APU saves energy and reduces emissions.

The 100 tonne telescopic SCA1100TB features a five-section, 53.1 metre full power boom which Sany claims is the longest in its class, topped by a 10 to 17.5 metre bi-fold swingaway extension with 30 degrees of offset and a maximum tip height of just over 72 metres. The crane features three track widths, 360 degree surround view monitoring, Cummins power and optional APU. The first unit has been purchased by Bigge Crane & Rigging.

IPS CRANES ACQUIRES AMERICAN

Earlier on we mentioned Link-Belt's extensive history, however, another classic American crane brand is American Hoist & Derrick, which was formed in 1895. Acquired by Terex in 1998 it has largely been dormant over the last decade or two. But at Conexpo, it was confirmed that US rail crane manufacturer, refurbishment and re-manufacturing company IPS Cranes had acquired the design rights, technology and product support business for American crawler crane products, along with the Terex-American crawler crane models that followed. The deal includes the cranes and all boom and jib components, but not the third hoist drums and their components. IPS has been producing replacement lattice boom sections for Terex since 2019.

The Terex crane models covered by the deal include the HC50, HC165, HC60, HC165-1, HC80, HC230, HC110, HC275, HC110-1, HC285 and HC120. The original American hydraulic models include the A100HC, HC125, HC150, HC185 and HC210.

An American inspired Terex HC 110

In a way, this is a 'coming home' for American, as IPS Cranes was established by Tom Holly in 1988 as a spin-off from American Hoist. He had managed its prototype test division and bought that business out when the American facility closed. In 2001, IPS acquired American & Ohio Locomotive Cranes, and in 2013, built its first new crane. Earlier this year, it acquired Markload, a load monitoring system manufacturer.

The American Hoist facility in 1895, with one of its first cranes

A BIT OF HISTORY…

Terex acquired American in 1998 for $27 million from a group of investors who had acquired it in 1985. They decimated the business after closing the American facility and historic base in St Paul, Minnesota where it had been building cranes since 1895, relocating to Wilmington, Delaware, losing almost all of the skills and knowledge of its employees. Production never really got going in Delaware and was moved to Conway, North Carolina, when Terex took over.

The long break in production virtually killed off a once proud name in the crane business. Terex did, however, go on to introduce American inspired hydraulically powered lattice boom models under its own name and had some success, those models are the ones included in this transaction. ■

LAMPSON'S MILLENIUM 4100

During Conexpo, US crane rental and heavy lift company Lampson International offered tours of its Millenium 4100 Series 2 crawler crane at the TransWorld Manufacturing's yard at the other end of the Las Vegas Strip. As well as seeing the modern take on a classic Manitowoc 4100, visitors were able to chat with Lampson safety/QA director, Bruce Stemp and Travis Cameron, one of the lead engineers involved in the crane's development. The pair explained the engineering behind the crane, providing insights into its design and answering questions.

The crane is based on a Manitowoc 4100 Series 2 crawler crane, which was launched in the late 1970s and featured a maximum boom length of 282ft/86m and a system length of up to 373ft /113.8m with a luffing jib. Maximum capacity was enhanced to 230 tons/209 tonnes and was typically powered by a Cummins NTA-855 diesel. The crane gained a reputation for its reliability and is still well supported thanks to strong demand for replacement parts and services, in spite of it having been out of production for more than 30 years. The original Manitowoc 4100W was launched in 1968, and both models were produced up until the early 1990s.

The new Lampson Millenium 4100 has been thoroughly modernised. It still utilises the original structure but with updated mechanical and safety features. The new powertrain comprises an environmentally friendly Tier 3/4i Cummins diesel, driving the latest Comer drum planetaries, which increase single line pulls by up to 70 percent with a choice of two rope diameters - 28mm or 32mm.

The slew system has been converted from mechanical to hydraulic drive, while the original hydraulic driven boom luffing hoist has been retained. Operating controls have been updated, with computer enhanced electronic joysticks controlling all crane operating functions - as different from the original as it is possible to get! Oh, and the free-fall hoist control has gone. The control system allows tandem drum operation and is equipped with a standard LSI load monitoring system.

Lampson says: "The crane meets or exceeds the capabilities of all cranes in the 230 ton/200 tonne class, as well as being offered at a more economical price point". And by using the original Manitowoc Ringer heavy lift attachment, which is still available, the capacity can be increased to 300 tons/272 tonnes. The crane also accepts the Manitowoc Tower attachment.

TADANO

CC 78.1250-1

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NEW

A CLASS OF ITS OWN – REDEFINED.

Engineered for the toughest lifting challenges, the CC 78.1250-1 sets new industry standards. It delivers up to 140 tonnes at a staggering 224.5-meter hook height – and up to 1,250 tonnes rated capacity. With this performance, it dominates heavy-lift applications, including infrastructure, the petrochemical industry, and the expanding wind power sector.

Its reinforced 3.5-meter base ensures maximum stability, while adjustable crawler shoe widths and an optional PC kit provide unmatched adaptability on any terrain.

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"THE LAMPSON"

The first new Millennium 4100 was delivered to Roen Salvage Company in Sturgeon Bay, Wisconsin, who christened it 'The Lampson' during the handover ceremony. The crane will be used on complex marine, industrial, and heavy construction projects.

MORE ABOUT LAMPSON

Neil and Billie Jane Lampson established their company Neil F. Lampson, Inc in 1946 as a small crane rental and drayage firm in Kennewick, southeast of Seattle in Washington state. In 1975 they introduced a large, tracked transporter, while the first Transi-Lift crane arrived in 1978. Today the company is run by second generation family member Bill Lampson.

Beyond its crawler crane fleet, Lampson International is best known for its Transi-Lift heavy lift cranes up to 3,000 tons/2,720 tonnes, which compete with the largest crawler cranes on the market, and the small to medium heavy lift machines built by Sarens and Mammoet. It also runs a substantial heavy haulage fleet, including crawler transporters ranging from 400 to 4,000 tonnes and hydraulic platform trailers used to move oversized components across complex project sites.

In addition to equipment, Lampson provides specialised engineering services to support complex lift operations, including lift planning, custom rigging solutions, steel mat rentals, and load testing services. ■

MILLENNIUM 4100 - MAIN SPECS

- Max capacity - 209 tonnes (230 tons)
- Max single line pull main hoist - 25 tonnes (55,000lbs)
- Max single line pull auxiliary hoist - 25 tonnes (55,000lbs)
- Max main boom - 79.2 metres (260ft)
- Max main boom and jib - 70.1m/230ft boom plus 18.3m/60ft jib
- Max rope storage main hoist - 670m/2,200ft of 28mm OR 548m/1,800ft of 30mm
- Max rope storage Aux hoist - 670m/2,200ft of 28mm OR 548m/1,800ft of 30mm rope
- Attachments Manitowoc Ringer and Tower without need for modifications
- Meets Fed OSHA requirements for Man Basket suspension - No Freefall

STOP PRESS: NEW TELECRAWLER

Raimondi owned Terex Rough Terrain Cranes, is set to re-enter the telescopic crawler crane market with the 70 tonne TTC 70, designed and built at its Crespellano headquarters in Italy. The move comes almost 14 years after Terex withdrew from this market.

The TTC 70 can handle its maximum capacity at a 2.5 metre radius, or 64.5 tonnes at three metres. The crane has a 36.8 metre four section heavy duty main boom, with 15.6 tonnes capacity on the fully extended boom at a radius of up to eight metres or take 2.2 tonnes to the maximum radius of 34 metres. Load charts exist for superstructure counterweights of 18,000kg or 5,000kg, along with fully retracted or fully extended track widths and slopes of up to four degrees.

An optional eight to 15 metre swingaway with up to 40 degrees of offset takes the maximum tip height to 54 metres, at which point it can lift 3.2 tonnes. The maximum counterweight is 18 tonnes on the superstructure plus two four tonne carbody counterweights, one at the front and one at the rear.

The crane has an overall stowed width of just under three metres, which extends to a maximum of 4.8 metres. Overall stowed length is 13.6 metres, while the overall height is just over three metres. Total weight without counterweights is 44,500kg, making it relatively easy to transport on two trucks.