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FEBRUARY 2014
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Welcome to the ConExpo special issue. You might even be reading this in Las Vegas at the industry's big exhibition of the year in the USA. ConExpo 2014 runs from 4 to 8 March and is shaping up to be a spectacular event. In terms of previously unseen machines, crawler cranes will likely take the limelight. Link-Belt's new all terrain is a highlight in the wheeled crane sector and

there is a good showing of rough terrains, boom trucks and truck mounted cranes.

Last year at Bauma, having expected fewer new products, I was pleasantly surprised by the large number and, hopefully, the same will apply at ConExpo. I am very much looking forward to seeing what's new.

New regulations on engine exhaust emissions will be influential. This year sees the introduction of Tier 4 Final in the USA and Euromot Stage IV in Europe. It means loads of work for engineering teams and they have still managed to develop new machines. Accommodating additional exhaust and fuel additive ancillary components is one thing. Quite another is that often the new engines are, for example, straight sixes instead of V8s. It might even contribute to the proliferation of new cranes based on standard commercial vehicle carriers where someone other than the crane manufacturer has suffered those engine-related headaches. See the truck crane feature on page 35.

In the run up to ConExpo you can get last minute news at www.khl.com and we will be reporting live from the event. Stories will also appear in daily e-mail newsletters (free subscription at: www.khl.com/newsletter), on twitter and facebook. Feel free to send me news during the show, especially when you sign those big orders for new machines. If you would rather give me the news in person then let's arrange a meeting. On the afternoon of Thursday 7th is the traditional KHL Champagne and Strawberries Reception at the booth, S-3498, where you are welcome to avail yourself of a glass or two. It would be good to see you there. In the meantime, our comprehensive ConExpo show guide starts on page 18.

KHL CRANES

PUBLICATIONS:



KHL's **worldcranemarket**
The global source for used cranes and transport equipment
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KHL's **worldcraneweek**
The weekly newsletter for lifting and transport worldwide
www.worldcraneweek.com

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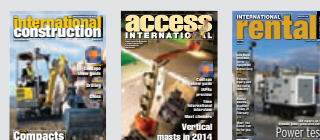
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ON THE COVER



The new 130 US ton capacity Tadano Mantis GTC-1200 telescopic crawler crane. For more on this and other ConExpo launches see the show guide starting on page 18.

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MEMBER OF



HIGHLIGHTS

■ Crane rental company Pfeiffer Cranes in Tasmania, has taken delivery of a new Tadano ATF40G-2 all terrain crane. The 40 tonner joins a fleet of cranes ranging from 12 to 220 tonnes capacity. The 2-axle crane offers a reach of 35.2 metres. Power comes from a Mercedes Benz diesel engine.

■ Liebherr and Russian truck manufacturer Kamaz OJSC have signed a joint venture to develop a range of 6 cylinder, 12 litre engines. The agreement includes construction of engines to Kamaz's specifications and setting-up a new production line and quality assurance systems. The engines, which will be produced in four power categories, will be used in Kamaz trucks and vehicles for the oil and gas industry.

■ Crane Institute Certification in the USA has added a designation for friction crane operators to its training certification cards. CIC has always certified operators of friction cranes but is now offering a special notation designating "Friction" on certification cards for operators who take their practical exam on friction cranes. A friction crane operator has to engage the clutch and control the load with the foot brake and levers at the same time. While manufacturers no longer produce friction cranes, some lattice boom models are still friction operated and controlled using friction clutches and brakes instead of hydraulics.

An articulated loader crane from Italian manufacturer Fassi Gru was used to help transport a group of endangered forest elephants from Ivory Coast, Africa. The rescue project was organised by the International Fund for Animal Welfare (IFAW). The 60 tonne-metre Fassi articulated loader was used to lift one of the elephants that had been tracked down and anaesthetised by a team from IFAW onto a trailer. The elephant was then taken to a National Park.

Andre Uys, IFAW team member, said, "In these circumstances, there is no other way to capture these enormous animals."

Manitowoc Cranes up 3.3% in 2013

For the full year 2013 Manitowoc Crane segment revenue was up 3.3 %, to US\$2.5 billion on the \$2.4 billion figure for 2012. Operating earnings increased \$48 million, or 28 % and the operating margin was up 170 basis points to 8.7 % for 2013, the USA-based crane manufacturer reported.

Fourth-quarter 2013 orders, at \$707 million, were 30 % higher than orders in the fourth quarter of 2012. The order backlog for cranes was \$574 million on 31 December 2013, a decrease of \$182

million from the same point in 2012. Fourth-quarter 2013 net sales were \$704.8 million, down 7.9 % from \$764.9 million in the fourth quarter of 2012.

Sales in the period a year earlier were unusually high due to shipments worth \$120 million delayed from the prior quarter which were included in the fourth-quarter 2012 revenue, the manufacturer said.

Glen Tellock, Manitowoc chairman and chief executive officer, said "Sales and order activity were solid in the crane segment in the fourth

quarter. Driven by sustained demand across multiple product categories, notably crawler cranes and tower cranes, the strong order intake during the quarter was particularly noteworthy as this was the highest level reached since before the recession. Furthermore, we are excited to showcase our new designs in the upcoming year,"

Looking ahead, in 2014 Manitowoc forecasts crane revenue to show modest top-line growth and the operating margin to be a high single-digit percentage.

Crawlers up for auction at Essex

Surplus crawler cranes will be sold off by Essex Rental at a sealed bid auction in the USA.

"In an effort to accelerate the sale of currently underutilised cranes, we have engaged Hunyady Auction Company to manage the sale of certain of our crawler cranes in a sealed bid auction," said Ron Schad, Essex president and CEO. "The assets being offered represent approximately 6 % of our crawler crane fleet. Over 80 % of the crawler cranes that will be listed for sale are traditional cranes whose utilisation and return on capital have been

unsatisfactory."

Unlike a live auction where equipment is sold to the highest bidder, in a sealed bid auction potential buyers propose a price and Essex determines whether the offered price is acceptable, Schad said. Bidding ends on 18 March 2014 at 17.00 eastern US time.

"As with prior sales, we will use the proceeds from the sale of excess equipment to repay debt and to improve our fleet," Schad explained. Essex is one of North America's largest rental and distribution companies for crawler and wheeled mobile cranes, tower cranes and other lifting equipment. In late 2013 Schad tendered his resignation as president and CEO of Essex Rental Corp. He said he would stay on in his capacity until a replacement was named.



NMT CRANE HIRE GETS FIRST 5800



The 5-axle Terex Explorer 5800

Bedfordshire, UK-based crane rental and heavy haulage company NMT Crane Hire, has taken delivery of the first Terex Explorer 5800 all terrain to be delivered by the manufacturer.

The 5-axle all terrain has a 220 tonne capacity and a 70 metre five section boom. The carrier has a 10 x 8 x 10 drive/steer configuration and power is from one 405 kW Scania engine to Euromot Stage IV/US EPA Tier 4 Final emission laws. Maximum counter weight is 70.2 tonnes.

Also included is the Terex IC-1 touch screen control system and radio remote control for easier and safer rigging and on-site operation. Other new designs include a 2.85 m walk-through carrier cabin with air conditioning.

NMT's new Explorer replaces a 200 tonne capacity Terex AC 200-1 all terrain. The first job for NMT's Explorer was at London's Tilbury Docks, UK. Tasks there include lifting a 93 tonne dock crane in tandem with an AC 250-1. NMT has also ordered two AC 40/2L ATs.

Jost to report on jib failures

Following the January jib collapse on a Jost JTL 158 tower crane in the UK, the manufacturer told *IC* that it is investigating the cause and will produce a report containing its findings.

Jost JTL 158.6 topless (flat top) luffing jib tower cranes in London have suffered jib failures during high winds on four occasions in the last nine months. Another, in Essex, outside London, similarly failed in December 2011. All had the same point of failure in the jib structure.

An initial finding reported by Jost Cranes in Germany is that when the failures occurred all the cranes had their slew brakes on and were unable to weather vane during the extreme stormy weather where winds exceeded 160 km/h. "We know that the slewing brake was locked," Jost said.

Regarding the design of the 6 tonne capacity crane, Jost commented, "All the structural calculations are good. We have enough safety factor in the jib if the crane is operated correctly," Jost also said that all crane operators must be briefed on how to weather vane tower cranes correctly to avoid similar incidents in future, regardless of the make or model of crane. When tower cranes are left out of service they should be left to free-slew or weather-vane, instead of the slewing drive being locked.

The company is working

to design and develop a safety mechanism to reduce the possibility of negative impact as a result of human error in tower crane operation. This would likely be an automatic interlock type solution preventing the crane from being left with the slew brake locked. "We want to see this implemented on all tower cranes of all types from all manufacturers," Jost told *IC*.

There are well over 100 Jost topless luffing jib tower cranes currently erected in the UK, Jost said. Over the last 10 years, 20 % of crane collapses across Europe have been linked to high winds and cranes not being properly left out of service and free to weather vane, Jost continued.

Jost JTL 158 luffing topless (flat top) tower crane



IC will publish details of these report findings when they are available.

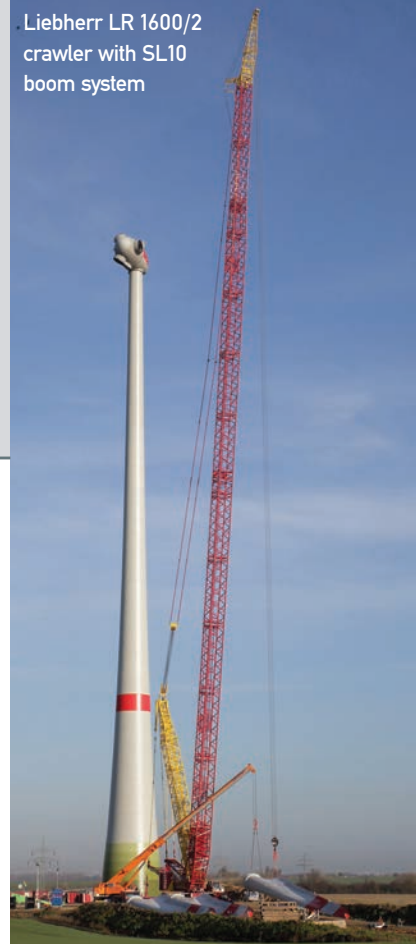
WIND BOOM UPGRADE FROM LIEBHERR

Crane manufacturer Liebherr has introduced a stronger boom system for its 600 tonne capacity LR 1600/2 lattice boom crawler crane.

With the new SL10 boom system, hoisting height can be increased by 15 metres, making the maximum reach more than 160 m, the manufacturer said. Load capacity is increased from 77 tonnes to 92 tonnes at a hoist height of 147 m, according to the manufacturer. When configured with the SL10 system, the LR 1600/2 is capable of installing wind turbines with tower heights of up to 150 m, a company spokesperson said.

The new system can be fitted on existing machines using additional lattice sections and does not increase the transport dimension of 3 m.

Liebherr LR 1600/2 crawler with SL10 boom system



Asian demand lifts Kobelco

Revenue for Kobelco Cranes was up 22 % to JPY 39.8 billion (US\$ 393 million) in the first nine months of the fiscal year to 31 March 2014 (starting in April 2013), compared to JPY 32.7 billion (\$ 323 million) for Q1-3 of fiscal 2012.

Ordinary income for the first nine months of the year stood at JPY 2.5 billion

(\$ 25 million), compared to the loss of JPY 1.2 billion (\$ 12 million) of a year ago. The company said this rise in sales was due to buoyancy in its domestic market and elsewhere in Asia, which offset weakness in Europe.

"Unit sales increased in Japan on the back of monetary, fiscal and other government economic measures and

reconstruction demand from the Great East Japan Earthquake," a statement said.

Kobelco added that it expected full-year sales of cranes to come in at JPY 56 billion (\$ 553 million). Ordinary profit for the year is expected to be JPY 3 billion (US\$ 30 million), compared to 2012's loss of JPY 2.2 billion (US\$ 22 million).

New owner and expansion plans for Raimondi Cranes

Tower crane manufacturer Raimondi Cranes has a new owner and with it an investment and expansion programme. The long-established Italian manufacturer is now owned by His Royal Highness, Prince Khaled bin Alwaleed Al Saud from Saudi Arabia.

A reported investment of US\$ 100 million will be used to expand manufacturing facilities in Italy and to build new ones in Brazil, Saudi Arabia, and India, the company said. Production capacity will be increased, new products added and the local presence and service will be developed.

Commenting on the acquisition, Prince Khaled

bin Alwaleed Al Saud, said, "Raimondi's acquisition is a key addition to our global strategy and one in which I take great personal pride and interest."

"If I have learned anything from my father's strategy in investments, it's investing in companies that have a long and successful history... and certainly very few companies in

the world can indeed compete with Raimondi's 150 years of history."

As a member of the Saudi Royal Family, Prince Khaled bin Alwaleed Al Saud is the only son of HRH Prince Alwaleed bin Talal Al Saud, owner and chairman of Kingdom Holding, and one of the world's largest private investors.



Taiwanese crane contractor Hong Tai International Crane Engineering, based in Kaohsiung City, has added two Liebherr mobile cranes to its fleet. Chao-Cheng Lu, Hong Tai company chairman, and Chao-Shuen Lu, general manager, took delivery of the 750 tonne capacity LTM 1750-9.1 and the 100 tonne capacity LTM 1100-5.2 at Liebherr in Germany. Hong Tai plans to use the cranes on jobs in local refineries and steel mills and to erect tower cranes.

Pictured from left to right: JR Wang, Hector Machinery; Christoph Kleiner, Liebherr-Werk Ehingen; Chao-Cheng Lu, Chao-Shuen Lu, Chiu-Yun Lu Tsai and Jui-Mei Lu Hung, all from Hong Tai; and Marcel Beck, Liebherr-Werk Ehingen

PAUL BROWN RETIRES



After almost 23 years at Tadano Faun in Germany Paul Brown has retired.

Born in Glasgow, Scotland, Brown spent most of his later school life in Billingham in the North East of England. He started his crane career in 1977 at P&H in Rome. 1980 saw a transfer to the P&H facility in Dortmund where he witnessed at first hand the start of some of the first all terrain cranes from P&H (WS-250M and later the Omega S 15 series). Primary activities were product development and research, product marketing, statistics and sales and product training.

In 1989 Brown joined Faun GmbH in Lauf as area sales manager for the Middle East but left in 1990 only to return a year later to the newly formed company Tadano Faun GmbH, following the Tadano takeover, as product manager. Since 2002 he has concentrated on sales, as area sales manager responsible for the UK and Ireland, Italy, Poland and the Baltic countries, Bulgaria, Serbia and Croatia.

MANITOWOC EXITS TRUCK CRANE JV

Crane manufacturer Manitowoc has completed the sale of its 50 % interest in Chinese truck crane manufacturing joint venture Manitowoc Dong Yue Heavy Machinery Co Ltd. The buyer is Manitowoc's partner in the venture, Tai'an Taishan Heavy Industry Investment Co Ltd.

USA-headquartered Manitowoc said that the sale is "expected to result in non-cash losses which will reduce income attributable to Manitowoc shareholders by approximately \$36.0 million in the year ended December 31, 2013."

Glen Tellock, Manitowoc chairman and CEO, said, "The sale of our joint venture interest is consistent with our strategy to better align resources across Manitowoc's crane segment." Tellock went on to emphasise the company's commitment to the tower crane market in China, "Looking ahead, we remain committed to the Chinese construction equipment market."

Nooteboom launches nine-axle trailer

Netherlands-based Nooteboom Special Trailers has launched a PXE low-loader trailer with nine axle lines.

The 3+6 Pendel-X combination low-loader is the largest in the manufacturer's catalogue. It is designed to transport heavy loads with a gross combination weight of 196 tonnes at low speed. With the new 3+6 PXE there is a choice of axle assemblies: inter-dollies, jeep dollies, load floors and goose necks. There is also a deeper and wider excavator trough than

on a modular trailer, for transporting tall objects, without having to remove a boom.

The first trailer off the production line was delivered to Danish company Bomholt.

The Nooteboom
3+6Pendel-X low-loader



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AL ZAHLAWI TO SPEAK AT CATT



The first speaker has been announced for the International Cranes and Transport Turkey conference being held in Istanbul on 8 May 2014. Nabil Al Zahlawi, NFT Cranes managing partner, will talk about, among other topics, the ongoing project to construct a new Bosphorus bridge crossing between the west and east sides of Istanbul.

International Cranes and Transport Turkey brings together international experts and speakers to focus on key issues facing the crane and specialized transport industry. Sharing and comparing experience among leading industry peers at this event can bring real reward in operating a safer and more efficient business.

Overhaul for work at height guidance

The UK's Health and Safety Executive (HSE) is overhauling its guidance on working at height.

More than a million British businesses and 10 million workers are estimated to carry out jobs involving some form of work at height every year, said a government spokesman, with falls being one of the biggest causes of death and serious injury at work.

The HSE said it has set out in clear, simple terms what to do and what not to do. It aims to dispel common myths that can confuse and mislead employers, for example, a ban on ladders when they can still be used.

HSE has identified 3,000 regulations that it says should be ended or improved through its Red Tape Challenge, which

asks businesses and the public to identify restrictive rules. Mike Penning, government health and safety minister, said, "As part of the government's long-term economic plan, it's vital that businesses are not bogged down in complicated red tape and instead have useable advice about protecting their workers."

Judith Hackitt, HSE chair, said, "It's important to get working at height right. Falls remain one of the biggest causes of serious workplace injury – with more than 40 people killed and 4,000 suffering major injuries every year."

Basic advice for those working at height is available through HSE's *Health and Safety Toolbox* at <http://www.hse.gov.uk/falls/wait/index.htm>



Austrian transport and lifting company Felbermayr has added two Grove all terrain cranes to its fleet in Germany. The five-axle GMK5095 and four-axle GMK4080-1 have capacities of 100 tonnes and 80 tonnes, respectively. The cranes were built at Manitowoc's facility in Wilhelmshaven, Germany. They were put straight to work at the Schwarze Pumpe coal mine, near the Polish border. Work included replacing beam ties on a 70 m long trench-cutting machine.

Organisational changes at Manitowoc

A new organisational structure of senior management has been introduced at Manitowoc Cranes, USA.

Larry Weyers is now global executive vice president, responsible for the crane product lines. Josef Matosevic

is executive vice president of operations and procurement, responsible for the operating value stream, including facilities and procurement activities. Dean Nolden is now executive vice president of finance and information systems, responsible for processes and efficiencies.

The new sales and marketing organisation will be as follows: Dave Hull, senior vice president global sales and marketing; Ingo Schiller, senior vice president rough terrain, boom truck and industrial cranes; Jean-Noel Daguin, senior vice president of tower cranes; John Kennedy, senior vice president crawler cranes; Jens Ennen, senior vice president all terrain and truck cranes; Raman Joshi, vice president and general manager for Manitowoc Asia-Pacific.

Leaving the company after nine years is Philippe Cohet, executive vice president for the Europe, Middle East, and Africa region.

TEREX ALL TERRAINS IN THE AMAZON

Logistics company Tomiasi Logistica Pesada, based in northern Brazil, has help expand the Port of Chibatao in the Amazon. The port is on the Rio Negro River and has a 450 metre long floating pier, which can serve up to four vessels with drafts between 12 and 20 metres.

The project was to add an extra lane on the bridge that connects the pier to land. Tomiasi used Terex all terrain cranes AC 500-2, AC 200-1 and AC 350/6. All were set up on barges because the bridge is partly floating. The project involved positioning prefabricated bridge sections that were transported by barges. Once the bridge sections were positioned on the barges, the cranes lifted the sections into

place. Jander Roque, sales analyst at Tomiasi, said, "The difficulty was that we had to perform a triple lift with cranes on barges. The load of each section was between 320 and 360 tonnes."

Tomiasi used three Terex all terrain cranes to help out with an expansion project at the Port of Chibatao in the Amazon



HIGHLIGHTS

■ Palfinger Marine will deliver one knuckle boom crane and one pipe handling crane to Streicher for the construction of a modular drilling rig in the Norwegian North Sea. Archer, the operator of the new VDD 400.2 Topaz rig, has secured a contract with Statoil for the permanent plugging and abandonment of 12 gas wells on the Heimdal field in the Norwegian North Sea. The PK 23500 M knuckle boom crane and the PKM 700 T pipe handling crane will be used to lift and carry rig modules, with a weight of up to 12 tonnes.

■ Indian manufacturer of electric overhead travelling (EOT) cranes ElectroMech plans to add a manufacturing facility to its operations in the UAE. Its Dubai-based subsidiary, ElectroMech FZE, offers a range of own-brand EOT cranes, as well as hoists and cranes from its co-operation partner Stahl CraneSystems from Germany.



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Tapering hits emerging markets

Early 2014 saw stock markets around the world lose ground, perhaps bringing an end to the rally which saw growth and record highs throughout 2013 and on into January this year.

The end of January, however, and early February, saw the markets slide back as some familiar fears resurfaced for investors, including the tapering-down of quantitative easing (QE) in the USA, economic weakness in the Eurozone and higher oil prices.

The winding-down of QE was probably the most significant. The Federal Reserve is cutting its US\$ 85 billion per month asset purchase programme. The expectation is that by the end of 2014 it will have been phased out.

Although this is a US scheme designed to help the American economy, the impact is largely being felt outside the country. It means that yields are rising for the type of securities the Fed was spending money on, for example, US government bonds. This in turn has prompted investors to take their money out of higher risk emerging markets and put it into these safer US instruments.

To do this they have effectively sold emerging market currencies, which has driven those lower. The response in countries like Brazil, India and Turkey has been to hike-up interest rates to defend their currencies.

The Turkish Central bank, for example, put its overnight lending rate up from 7.75 % to 12.5 % at the end of January.

Higher interest rates means less borrowing and less economic growth, and it is these factors that drove markets lower in late January and early February. Between weeks 1 and 5 the Dow was down 3.77 %, falling back below the 16,000-point mark. The same period saw the FTSE 100 drop 2.95 % and the Nikkei 225 fall 6.25 %.

Shares in the crane sector moved in the same direction. The IC Share Index fell 1.47 % over the same period thanks to

a mix of losses and gains.

Outlook

It has only taken a few weeks of QE tapering for some quite stark consequences to show. As these have been in emerging markets, with a direct impact yet to be seen in the USA and on its economic growth, the Fed is likely to keep cutting the amount of money it prints.

It remains to be seen if this will mean more pain and interest rate hikes for indebted emerging market economies as money leaves their shores for safer havens and improving returns in the USA. ■

The first few weeks of the year saw some familiar fears depress the stock markets.

CHRIS SLEIGHT
reports

JANUARY IC SHARE INDEX

STOCK	CURRENCY	PRICE AT START	PRICE AT END	CHANGE	% CHANGE
IC Share Index*		65.44	64.48	-0.96	-1.47
Legacy IC Share Index**		395.97	393.20	-2.77	-0.70
Dow Jones Industrial Average		16470	15849	-621	-3.77
FTSE 100		6722	6523	-199	-2.95
Nikkei 225		15909	14915	-994	-6.25
Hitachi Construction Machinery	YEN	2182	1997	-185	-8.48
Konecranes	€	25.97	26.12	0.15	0.58
Kobe Steel	YEN	179	172	-7	-3.91
Liugong	CNY	5.95	6.01	0.06	1.01
Manitowoc	US\$	23.46	24.76	1.30	5.54
Palfinger	€	29.73	32.30	2.57	8.64
Sany Heavy Industry	CNY	6.07	5.94	-0.13	-2.14
Tadano	YEN	1397	1459	62	4.44
Terex	US\$	41.28	39.81	-1.47	-3.56
XCMG	CNY	7.23	6.88	-0.35	-4.84
Yongmao Holding	SGD	0.19	0.19	0.00	1.07
Zoomlion	CNY	5.16	5.05	-0.11	-2.13

*IC Share Index, 1 Jan 2011 = 100

**Legacy IC Share Index, end April 2002 (week 17) = 100

EXCHANGE RATES - US\$

CURRENCY	VALUE AT START	VALUE AT END	CHANGE	% CHANGE
CNY	6.052	6.0607	0.0087	0.14
€	0.7346	0.7376	0.0029	0.40
Yen	104.54	102.51	-2.03	-1.94
UK£	0.6107	0.6072	-0.0034	-0.56

Period: Week 1 - 5, 2014

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New from Palfinger is an in-house designed and developed radio remote control system for the Austria-based manufacturer's articulating boom hydraulic loader cranes.

ALEX DAHM reports

PALcom P7 transmitters will be available in a range of configurations using linear levers or joysticks and a central PALdrive control knob



In-house control

The new PALcom P7 radio remote control is the result of five years of research and development work, a Palfinger product management spokesperson, told *IC*. It is a new (hardware and software) product developed by the Austrian loader crane and materials handling equipment manufacturer's engineers in co-operation with outside suppliers. Crane operators, universities and external specialists in ergonomics and design also contributed.

Following the initial market research, it took about two years to transform the concepts into reality, including designing the injection moulding tools, the layout of the printed circuit boards and so on, Palfinger explained. The last step was 18 months of field testing to prove the components under different environmental conditions.

Good ergonomics were a major consideration of the design where, for example, the hand rest and the arrangement of the control levers are designed for fatigue-proof operation. A centrally placed PALdrive control knob and menu navigation on the large display are used for easy and safe operation. It has a 4.1 inch TFT (thin film transistor) liquid crystal colour display designed to be read in bright sunlight. In addition to the usual safety features,

Good ergonomics were a primary consideration in the design of the PALcom P7 radio remote control



The battery charging station for the PALcom P7 radio remote control installed in a truck cab

Interface

Two handset versions of the new system will be available. The small one will have linear levers with four to six functions or up to two cross levers (joysticks), each with two or three functions. On the large handset there will be linear levers with four to eight functions, or two or three joysticks with two or three functions on each.

For power a charging station checks the condition and the temperature of the battery and surroundings to allow the fastest charge according to conditions. The charging station has a refresh function and is mounted on board the truck in the cab.

The PALcom P7 will be available on SH series premium crane models in Europe. From April 2014 it can be specified on models from the PK 42002 SH up to the PK 200002 L SH (around 40 to 200 tonne-metres). In June it will be available on the PK 10002 SH through to the PK 34002 SH models (around 10 to 40 tonne-metre classes). Other models with radio control will use the existing Palfinger/Scanreco system.

the transmitter has a rollover protection and an acceleration sensor designed to prevent unintentional crane movements, the company said.

The system will be manufactured in Austria by companies local to Palfinger, initially in a quantity somewhere between 1,000 and 1,500 units a year. Fitment of radio remote controls on hydraulic loader cranes is increasing in all areas, the company said. In Europe over the mid-term around 80 % of all loader cranes sold by all manufacturers, upwards of 10 tonne-metres maximum load moment, will have radio remote control, Palfinger said. In North America installation is at a low level but increasing while in South America and Asia only the largest models have it, the manufacturer continued.



The receiver for the PALcom P7 radio remote control system



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GR-1000XL-2 (100 US ton)

GR-750XL-2 (75 US ton)
GR-150XL-1 (15 US ton)

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ATF 220G-5 (250 US ton)



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On with the

Following last month's introductory preview, here is a comprehensive guide to what's new and what to see at ConExpo 2014, the largest show of the year for the industry in North America. *IC* reports

A buoyant mood already surrounded this year's big industry show in North America months before the start of ConExpo 2014 in Las Vegas. Between 4 and 8 March 2014 visitors to the spectacular desert city will be treated to a similarly impressive display of new construction equipment, components and services over an exhibition area of 213,680 square metres.

As usual, cranes will be the kings of the show, dominating the Gold and Silver outdoor lots at the Las Vegas Convention Center. Some surprises are being kept until the show opens but there is already an impressive list of new machines that have been announced. *IC's* news pages on www.khl.com over the last few months have carried some early information. Return to the web site for further last minute updates in the lead up to the show.

While the following is not an exhaustive list, it includes the information held at the time of writing. It is an opportunity to learn more before seeing the machines in the iron, hopefully under bright sunlight.

Wheeled mobiles

All terrain cranes are often perceived in the USA as a distinctively European product. Already addressing that is Link-Belt which now offers two models for the US market that are also designed and built there (see below for more details). While Terex Cranes says it is withholding further details until the show, the manufacturer says it will reveal a new mid-size all terrain that addresses the needs of the North American market.

Brand new from crane manufacturer Link-Belt is the 210 US ton (185 tonne) capacity ATC-3210 all terrain on five axles. The 200 foot (61 metre) fully curved profile boom is in six sections and there are seven extension modes to maximise capacities. Tip height for the fully extended main boom is 210.9 feet (64.3 m) and the maximum tip height, with all extensions and jib, is 326.7 feet (99.6 m).

Like the 250 tonne capacity ATC-3275 the new crane's upper engine is mounted transversely to maximise space for a stowable fly jib. The 12 foot (3.7 m) heavy-

lift fly has two-line, one-load lift procedures for concrete panel tilt-up work. An optional three-piece bi-fold fly jib has hydraulic offset between 2 and 45 degrees. Also available is a manual jib with four offset positions.

Easy road transport is a key factor so the ATC-3210 is designed to meet the toughest transport laws in North America and its Cummins engine meets Tier IV final and EPA 2013 on-highway engine exhaust emission requirements, the manufacturer said. Export versions of both models will also be available.

Multiple steering modes on the ATC-3210 are controllable from the single carrier cab and the drive/steer configuration is 10 x 6 x 10. Suspension is Link-Belt's Hydrogas and there is traction control with a mud and snow setting. Also available are locking differentials between the wheels and between axles.

None of the counterweight slabs on the ATC-3210 weigh more than 22,000 pounds (9.98 tonnes) and they can be grouped with other components for transport. With maximum counterweight, rigging, matting, and fly jib extensions it can move in three 45,000 pound (20.41 tonne) truckloads, the manufacturer said. At just under 145,000 pounds (65.78 tonnes) the ATC-3210 can transport in a three-axle dolly configuration, including three-piece hydraulic fly jib, auxiliary lifting sheave, hook block and ball, main and auxiliary winches. Maximum axle load in that configuration is 20,000 pounds (9.07 tonnes).

For easier maintenance the Link-Belt has large doors designed for good access to engines, filters and other regular maintenance points. All connections and



Liebherr LTM 1300-6.2 300 tonne capacity class wheeled mobile telescopic crane powered by one 450 kW V8 engine



EVENT INFO

WHAT: ConExpo-Con/Agg 2014

WHEN: 4 to 8 March 2014

WHERE: Las Vegas Convention Center, 3150 Paradise Road, Las Vegas, NV 89109, USA.

SHOW HOURS:

Tuesday 4 to Friday 7 March: 09.00 to 17.00

Saturday 8 March: 09.00 to 15.00



Link-Belt's second all terrain for the US market is the new 210 US ton (185 tonne) capacity ATC-3210. Export versions of both will also be available by mid-2014

greater, making it the most powerful mobile crane in the 300 tonne (360 ton) class, the manufacturer says.

Instead of the twin-engine concept normally used on cranes this size, the 300 tonne (360 US ton) capacity LTM 1300-6.2 is powered by a single engine with a mechanical shaft drive. One 450 kW V8 diesel is mounted in the carrier. Advantages include simpler design with reduced maintenance, lower cost and reduced weight, the manufacturer says.

service points are centralised and easily accessible, the manufacturer said. The pressure for hydraulics in the upper can be checked from one place. Centralised lubrication with manual override is available.

While not new models, there are several other notable all terrains on show. From further up the capacity range is Tadano's 400 tonne capacity ATF 400G-6, its largest all terrain crane. Its 5-section boom extends to 60 m and can have fixed or hydraulically extending luffing jibs to 78 m. The Japanese manufacturer is also showing its 220 tonne capacity ATF 220G-5 on five axles.

From its Grove GMK all terrain crane range Manitowoc is showing the 400 tonne capacity GMK6400 and the 300 tonne GMK6300L. Both are on six-axle carriers and the 300 tonner offers an 80 m (262 foot) boom.

In the same capacity range, Liebherr's LTM 1300-6.2 all terrain is the successor to the LTM 1250-6.1. The newer model's telescopic boom is longer by 6 m at 78 m. Load capacity is also

Rough terrains

As a mainstay of many US crane fleets, rough terrains are plentiful at ConExpo. One on show from Terex is the Quadstar 1075L, a 75 tonner with five section 41.8 m boom giving a maximum hook height of 43 m.

A highlight in the RT sector is Tadano's new 160 ton (145 tonne) capacity GR-1600XL-2 on three axles. A single cylinder 6-section 200.1 foot (60 m) boom and 59.1 foot (18 m) bi-fold off-settable jib give a tip height of 256.6 feet (78 m) and the cab tilt system improves visibility at extended reach. Of the two units on show one will be configured showing the crane in transport mode with the quick self-removing front and rear outriggers. The other will be rigged as a general purpose RT. The other Tadano RTs on show are the

CONEXPO EXHIBITORS

A1A Software	G-2853
Airo Industries	H-564
Air-Weigh	S-61852
Allied Power Products	G-70141
Allison Transmission	S-85430
Alps Wire Rope Corporation	G-70043
Altec	G-1827
Alturamats	G-70046
Anderson Trucking Service	S-4448
ANMOPyC	L-20030
Ascorel USA	C-50963
Aspen Custom Trailers	N-13002
Associated Wire Rope & Rigging	G-2852
Association of Equipment Manufacturers (AEM)	L-20051
Atlas Maschinen	S-4054
Auctiontime.com	P-90511
Autec Safety Remote Control	S-6773
Auto Crane Company	S-6710
Badger Equipment Company	G-2115
BKT Tires	G-70050
BLS Enterprises	C-51817
Braden Carco (Paccar Winch)	S-4048
Brevini USA	G-2971
Bridgestone	N-13006
Bridgwell Mats	C-51104
Bridon International	C-52828
Brigade Electronics	N-13226
Broderon Manufacturing	G-1324
Brutus Truck Bodies	S-4086
Next Hydraulics	
B-TEK Scales	P-8013
Caldaro	H-234
Caldwell Group	C-30313
Cargotec USA - Hiab	S-4748
Casagrande USA	P-8254
Cavotec	P-8101
Cometto Industrie	H-244
ContiTech North America	P-9479
Cormidi USA	S-3600
Crane & Hoist Canada	G-1568
Crane Institute Certification	G-2975
Crane Institute of America	G-2973
Cranesmart Systems	G-1393
Cummins	S-84808
Dana	S-85114
Deutz	S-84620
DHS Diecast Collectables	L-20010
Double Coin Tire / CMA	S-65401
Elliott Equipment	G-1108
Enerpac	S-3749
Eriez	C-52704
Everpads	C-50940
F&M Mafco	S-65009
Fassi Articulating Cranes	G-2736
Faymonville Distribution	S-3611
Galizia	P-9594
Geda USA	C-53090
GKD Technik	C-40424
GKS Lifting and Moving Solutions	P-90527
Goldhofer	G-2836
Goodyear Tire & Rubber Company	N-11649



Tadano's new 160 US ton (145 tonne) capacity GR-1600XL-2 rough terrain crane on three axles

CONEXPO EXHIBITORS

Groundmats	P-9600
Gunnebo Johnson	G-2842
Harrington Hoists	G-70306
Hatz Diesel	S-83740
HBC-radiomatic	C-52872
Hemisphere GPS	S-65010
Hetronic	G-1171
Hirschmann (PAT)	G-2024
Historical Construction	L-20012
Equipment Association	
Hitachi Construction Machinery	N-12621
HookCam	G-2674
Hytorc	P-9585
Ikusi - Cervis	S-82918
IMDER Turkey	S-60208
Industrial Matting	P-7354
Intercomp	C-40622
International Union of Operating Engineers	L-20125
Iowa Mold Tooling Company (IMT)	N-10652
IronPlanet	C-40064
Jean Lutz	P-8871
Jekko Minicranes	G-1095
JMG Cranes	G-2309
Kalyn Siebert	G-1292
Kamag Transporttechnik	S-3905
Kessler	S-83501
KHL (IC publisher)	S-3498
Kinshofer	S-3510
Kobelco Cranes North America	G-2129
KOCEMA (Korea Construction Equipment Manufacturers Association)	S-63357
Kohler Engines	P-7127
Lampson International	G-1392
Landoll	S-4248
Lectura Verlag	S-60110
Liebherr	G-2155
Lift Systems	G-1097
Lifting Gear Hire	S-3345
Lifting Technologies	G-2979
Lincoln Industrial	N-11621
Linden Comansa America	G-2181
Link-Belt	G-1747
Liugong	N-12166
Load Systems International (LSI)	G-2761
LoJack	G-70033
Lube-A-Boom	G-2760
Maeda Seisakusho	S-3211
Magna Tyres	S-3711
Mait	P-7854
Manitex International	G-2115
Manitowoc	G-2137
Michelin	N-10378
Miller Lifting Products	G-2854
MOBA	C-50063
MTU	S-84430
National Commission for the Certification of Crane Operators	G-1817
NBB Controls	C-50932
Nelson Manufacturing Company	G-2374
Nicolas Industrie	S-3905
NLMK Clabecq	S-6365



Zoomlion's new RT65 rough terrain sold worldwide by distributor Global Cranes

100 ton (90 tonne) GR-1000XL-2, 75 ton (68 tonne) GR-750XL-2 and the 15 ton (13 tonne) GR-150XL-1.

New from Grove are the RT770E and RT540 rough terrains. The 65 tonne (70 ton) RT770E has a five-section, full-power boom with a single hydraulic cylinder. It offers a reach of 42 m, making it the new class leader in the 60 to 70 ton (54 to 63 tonne) category, Grove said.

Paul Cutchall, Manitowoc Cranes rough terrain product manager in North America, said, "We're launching the RT770E into probably the most popular capacity class, so we knew we had to make it stand out from the crowd, and with its boom design I believe we've done that," he said. "We were able to lengthen the boom without adding more size and weight to the chassis." Power for the RT770E is from a 6.7 litre Cummins diesel engine. It can have a 10.1 to 17.1 m bi-fold swingaway jib to give a reach of 59.1 m and extend the working radius to 43.9 m.

The 35 tonne capacity RT540 is an updated version of the RT540E. The 31 m four section full power boom has a rectangular section and gives a maximum tip height of 47 m. There is an improved slewing system, a new cab and the updated Crane Control System (CCS) operating system introduced in 2013. CCS has the same software and uses a standard set of displays, joysticks, control units and a jog dial which simplifies maintenance and fleet management.

The RT540 is the third crane with CCS, a standardised operator interface that will be used on all new Manitowoc, Potain, National, Shuttlelift and Grove cranes. Mike Herbert, Manitowoc Cranes director of product planning and marketing in North America, says, "The intuitive and easy-to-use system reduces the need to train people on every crane we produce, so contractors and operators can move between crane models with ease."

Also new in the 65 ton RT class is the Zoomlion RT65. It has a 27 foot longer boom, greater tip height and stronger chart than the RT55. "It is over 30 % cheaper than



Manitowoc's 400 tonne capacity Grove GMK6400 all terrain

competing cranes like the Grove RT685," according to distributor Global Cranes. Also on show are the RT35, RT65, RT75, and RT100.

Truck mounted

Other ubiquitous crane types in the USA are truck cranes and boom trucks. Under wraps until the show from Terex Cranes is the Crossover 8000, a new high capacity truck mounted telescopic crane. It will be the largest boom truck in North America and the first Terex boom truck to have the new Terex Crane cabin. While Manitowoc is quiet on new Grove truck cranes, it is launching a pair of National Crane boom trucks, including the largest ever built by the company.

The 54.4 tonne capacity NBT60's 39 m boom is claimed as the longest in its class. Despite its size, the NBT60 will still be roadable without the need for additional permits in most parts of North America, Manitowoc says. The other new National Crane boom truck is one unit from a series of three models from 9.1 to 16.3 tonnes capacity: the NBT 14, NBT15 and NBT16.

Boom trucks on show from US manufacturer Altec Industries range from 18 to 45 US tons capacity. Latest on show is the 45 ton capacity AC45-127S. It has a lower winch control, front entry cab and engine start/stop at the tail shelf, designed to minimise slip, trip or fall hazards. The LMI reel is mounted at the boom heel and protected by a metal cover and the A2B cable is routed through the boom to improve reliability. Following introduction of the tilting cab to boom trucks at the 2011 ConExpo, this time another new cab is promised. Other Altec cranes on show include the AC18-70B and AC23-95B.

Elliott Equipment said it is launching new cranes, including high capacity boom trucks with boom length of more than



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Elliott is launching new cranes at ConExpo

142 feet (43 m) on federal bridge-legal chassis for the US market. Also new will be wireless remote controls. Target industries include oilfield service, electrical transmission construction, mining, general construction and facility maintenance.

In addition to a 40 tonne-metre articulating hydraulic crane, manufacturer Iowa Mold Tooling (IMT) is showing a crane-mounted TireHand manipulator for large off highway tyres, a Dominator II mechanic truck and a SiteStar lube truck.

Crawler mobiles

The crawler crane sector will be well represented overall. Many of the models on show have been introduced over the last year or so. A notable exception is the telescopic boom sector where there are at least two brand new models. Whether or not Manitowoc's promised two new models include one with a telescopic boom was undisclosed at the time of writing.

New in the telescopic crawler category is the 130 US ton capacity Tadano Mantis GTC-1200. It is the largest in the company's range and "represents the first blank sheet design since Mantis was acquired by Tadano in 2008," according to Ed Hisrich, vice president, sales and customer support.

The GTC-1200 has a full power, 5-section 12.8 to 47.2 m rounded section boom designed for lifting but it is also capable of out-of-level, pick and carry, and foundation work. A 3.8 m heavy lift jib with a capacity of 39.9 tonnes is part of



Manitowoc's Grove RT770E is new at ConExpo 2014

the standard bi-fold jib that has lengths of 10.3 m or 18 m. Optional are 7 m lattice inserts (a maximum of two). Maximum tip height is 82 m. Power for the GTC-1200 is from a Cummins Tier 4 Final, QSL9 diesel engine rated 261 kW. Unladen it can negotiate a maximum gradient of 52 %, the manufacturer says.

All new from Link-Belt in the market for telescopic crawlers is the 50 US ton (45 tonne) capacity TCC-500, which has already been built and tested at the Lexington plant and will be shown for the first time in Las Vegas. The third crane in Link-Belt's telescopic crawler line is described by the manufacturer as a solid piece of equipment. A primary target market is the power utility industry. Deliveries are due to start around the time of the exhibition.

"We think this crane will get a lot of attention from the utility market," says Pat Collins, Link-Belt product marketing director. "It has a 110 foot [33.5 m], full-power boom and 50 tons (45 tonnes) of capacity, which is more in line with what the utility market is looking for. It's also been designed for ease of transport. We've engineered it to hit the weight targets so transportability is easy and efficient."

Collins says the TCC-500 "gives customers a second option below our TCC-750 for less demanding and/or more cost-sensitive jobs. It's simple to operate, tough and rugged." Its capacity chart rivals lattice crawler cranes with a similar base rating, the manufacturer says. The four-section, full-power boom uses high tensile steel and is a box-type construction consisting of one base section and three telescoping sections. Fly jib options include a stowable 28.5 to 51 feet (8.7 to 15.5 m), two piece bi-fold lattice fly, offsettable to 2, 20 and 40 degrees. Maximum tip height is 165.5 feet (50 m).

The TCC-500 is designed to move quickly and easily on or off the jobsite. With a standard counterweight package of 25,000 pounds (11 metric tons), the TCC-500 transports in just one load while staying under 100,000 pounds (45 tonnes) in most cases, the manufacturer says. On

CONEXPO EXHIBITORS

North American Crane Bureau	G-2870
Nylacast	C-40527
Off-Highway Research	C-40519
Operating Engineers Ontario	G-70034
Training Institute	
Orlaco	G-2771
OSHA Training Institute	H-349
Palfinger	S-3311
PM	S-4782
PVE Cranes & Services	P-8023
Python Manufacturing	P-7322
Quality Mat Company	C-30303
Ramsey Winch	S-6710
Rayco-Wylie	G-2755
RCI Safety	S-65611
Reel-O-Matic	G-1888
Rogers Brothers	S-5861
RUD Chain	G-70332
Ruukki	G-2856
Sany	S-3516
Scanreco	S-3291
Scheuerle Fahrzeugfabrik	S-3905
Sennebogen	S-4264
Service Trucks International	G-1310
Shanghai Fulangjie	H-504
Shuttlelift	G-1395
Sigalarm	G-70112
SMIE	P-8676
SOBRATEMA	L-20073
Soilmec	P-9454
Spanco	S-61542
Specialized Carriers	L-20032
& Rigging Association	
SSAB	C-30611
Stellar Industries	G-1406
Superior Tire & Rubber	C-31133
Tadano America	G-2101
Tadano Mantis	G-2101
Talbert Manufacturing	G-2474
Techking Tires	S-3801
Tele Radio	H-760
Tenstar Simulation	S-62750
Terex	G-1047
Teufelberger	H-614
The Crosby Group	G-1570
Thern	G-70206
Titan Tire	N-11671
Towmaster Trailers	G-1295
Trail King Industries	G-1374
Trojan Tire	G-70015
US Rigging Supply	S-6920
Van Beest	G-70023
Versa-Lift	G-1594
Warn Industries	H-453
Whiting	P-9100
WireCo WorldGroup	C-50040
Wirerope Works	G-70209
XL Specialized Trailers	G-2744
Xuzhou Construction	G-1579
Machinery Group XCMG	
ZF Friedrichshafen	S-85030
Zoomlion	S-3554



Manitowoc's National NBT 60 boom truck

the trailer, the TCC-500 travels at a height of 9 feet, 10.55 inches (3 m) and a width of 11 feet, 5.24 inches (3.5 m).

For flexibility on site, an hydraulic cylinder mounted in the lower frame of the TCC-500 extends and retracts the all-welded, machined steel track frames. The TCC-500 can work at three track widths: 15 feet, 2.37 inches (4.6 m) fully extended; 13 feet, 6.11 inches (4.1 m) intermediate; and 11 feet, 5.24 inches (3.5 m) retracted.

Power for the TCC-500 is from a 215 hp Tier IV final Cummins QSL engine driving a variable displacement piston pump package. It can have pole claw, earth auger and man basket attachments. "The TCC-500 is an excellent general contractor crane and its moneymaking potential is huge," Collins says. Link-Belt has also developed an export version with a Tier II Cummins engine. "We feel really good about this crane and we are excited to show it off at ConExpo," Collins says.

Maeda USA and its parent company is showing examples from its range of mini-crawler cranes with a reach up to 68 feet (21 m) and capacity up to 4.2 tons (3.8 tonnes). Limited access and tight work space lifting are specialties for these Japanese cranes. Three models from the MC series will be shown, including dual power versions. A new optional auxiliary winch will be introduced with high rope capacity for work from rooftops up to 330 feet (100 m) below the machine. Jib style searcher hook boom extensions, fly jibs and a remote controlled vacuum manipulator for placing glass, steel plate and smooth stone. All MC models are shown with radio remote control. Also on show is the 5.4 ton (4.9 tonne) capacity LC785M-8 telescopic boom slewing crawler crane with operator cabin. Maximum tip



The new Tadano Mantis GTC-1200 telescopic boom crawler crane is the largest in the range

A 40 tonne-metre rated IMT articulating crane



height is 67 feet (20 m) and it boasts near-zero tail swing, the company says.

Moving to lattice cranes, at the top end of the size scale on show is the 1,000 tonne capacity Liebherr LR 11000. Introduced in 2012 it fits in the range between the 750 tonne capacity LR 1750 and the LR 11350 which is rated at 1,350 tonnes. A particular focus, the manufacturer says, is optimising the design for quick setup and to have minimum component dimensions and weight to be efficient for transport. Maximum component weight is 60 tonnes and there are possibilities to reduce this to 45 tonnes, Liebherr says. Allied to this is a compact design to allow operation in constricted areas. The range of boom options includes derrick systems, special wind power equipment and the PowerBoom parallel boom capacity enhancement system is available for the LR 11000.

A Terex crane that will have people talking is the Superlift 3800 lattice boom crawler. It will be exhibited in a larger configuration than its first public showing at the Bauma show last year in Germany. The Superlift is designed to redefine performance in the 650 tonne capacity class and is a more than worthy successor to the highly regarded CC 2800-1, the manufacturer says.

The Superlift has a maximum capacity of 650 tonnes at 12 m radius and its maximum load moment is 8,426 tonne-metres. Maximum hook height is 190 m and it requires up to 30 % less counterweight for long boom erection. All components weigh less than 40 tonnes and are below 3 m in width and height for easy transport.

On display from down the Liebherr range is the 250 tonne (275 US ton) capacity Liebherr LR 1250 lattice boom crawler crane. Versatility is the aim and it

is designed for a range of applications from simple light lifting to clamshell work. Each of the two hoisting winches have 12 tonnes (13 tons) of line pull and high rope speeds, the manufacturer says. Free-fall 12 tonne winches are optional.

The LR 1250 can be transported mounted with boom and counterweight by retracting the track width to 5.8 m. This taxi crane feature is especially beneficial for short-term work, the manufacturer says. Maximum width for transport is 3 m (9 feet 10 inches).

Making its US debut from Manitowoc is the 165 tonne capacity (762 tonne-metre) MLC165 lattice boom crawler crane. First shown at the 2013 Bauma show in Germany it is designed for the global market. Jerry Maloney, Manitowoc global product director, says the MLC165 is a versatile crane for contractors and rental houses, "This self-rigging crane is very easy to assemble and disassemble. It can install and remove its own counterweights and tracks without the need for an assist crane. In addition, it has a 3 m (10 foot) component width and modular assemblies for easy transport over the road."

Steven Dick, Manitowoc technical sales support co-ordinator, says the crane's design makes it suitable for many applications. "Our engineers designed the MLC165 to facilitate general contractor activities, like pile driving and moderate clamshell or grapple work," he said. "The MLC165 is built to be a versatile tool."

Maximum boom on the MLC165 is 84 m and there are fixed and luffing jib options. The maximum boom and fixed jib combination is 93.4 m (69 + 24.4 m). The longest main boom and luffing jib combination reach increases to 102.8 m (51 + 51.8 m).

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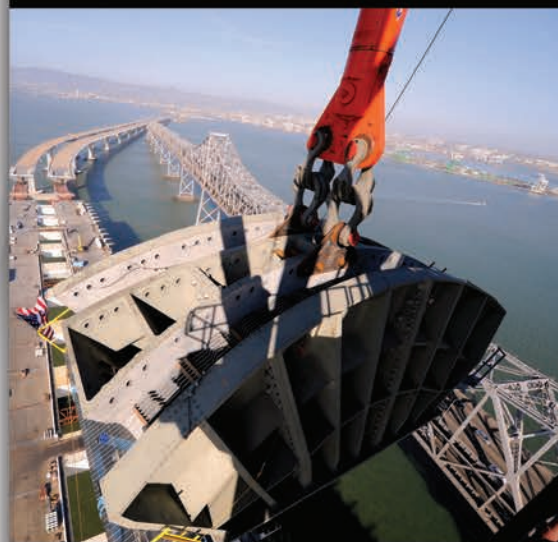
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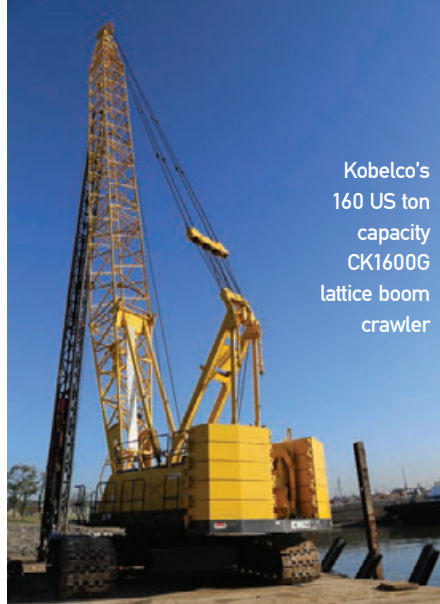


showing from the G-Series lattice boom range up to 250 tonnes capacity. The G-series cranes lifting capacities range from 85 to 275 tons for North America and 60 to 250 tonnes for Europe. Features include a nested boom for easier transport, and a small footprint for better manoeuvrability. All G-Series models have "G Mode" to help conserve energy. To reduce exhaust emission and to save fuel the Auto Idle Stop function stops the engine when there is no demand for power. The Tier IV Interim diesel engine reduces fuel consumption by a claimed 30 %.

On show from Kobelco are the 110 ton (100 tonne) capacity CK1100G, 160 ton (150 tonne) CK1600G and the 275 ton (250 tonne) CK2750G. Maximum boom length on the CK1100G is 200 feet (61 m). Its fixed jib offers a capacity of 24,000 pounds (5.4 tonnes) and the maximum combination length is 250 feet (76 m). Power is from a 285 hp Hino diesel. Main and auxiliary winches have a maximum line speed of 390 feet per minute, and a rated single-line pull of 46,800 pounds-feet.

The main boom on the Kobelco CK1600G is up to 250 feet (76 m) long and the maximum main boom and jib combination is 300 feet (91 m). The engine is a 363 hp Hino diesel. The nested boom on the CK2750G can be configured from 50 to 300 feet long. Its fixed jib offers a capacity of 373,400 pounds (169 tonnes), and has a maximum reach of 100 feet (30 m). The maximum boom and jib combination is 350 feet (107 m).

All Kobelco G Series models have the Remote Observation Satellite System, KCross. It allows remote monitoring of the unit from the owner's desktop. Daily, weekly, and monthly reports are available that the owner can print. Via an internet connection the owner can get a one-page report showing, among other information,



Kobelco's
160 US ton
capacity
CK1600G
lattice boom
crawler

the hours the unit worked, how much fuel was consumed, how many minutes the crane idled, and how long the main winch was used. Also on show from Kobelco is the new G-series service training simulator.

Crawlers on display from Chinese manufacturer Zoomlion are the 260 ton capacity QUY260 lattice boom and the 110 ton capacity ZCC1100H.

Tower cranes

One of two Liebherr towers on show is the 542 HC-L 18/36 Litronic, a large luffing jib model with a capacity of 36 tonnes (79,366 pounds). For situations where several cranes need to be set close together, the luffing gear can be optimised according to lifting capacity to allow shorter adjusting times.

Infinitely variable frequency drives are standard on the 542 HC-L. The entry-level model 542 HC-L 18/36 Litronic includes a 110 kW FC hoist unit, 110 kW FC luffing gear with secondary brake, plus two 11 kW FC slewing gear units.

From its flat top tower crane range Liebherr is showing its 380 EC-B 16 Litronic. Maximum radius for the 16 tonne crane is 75 m (246 feet) and it can lift 3,400 kg (7,496 pounds) at the end of the jib. Easy transport was a primary consideration in the design, which has a distinctive appearance and four-chord counter jib. The compact superstructure with full jib can be loaded onto only five trucks, Liebherr says. In addition, it is designed so that the dimensions of each individual part meet the requirements



Potain MR418 luffing
jib tower crane new
at ConExpo 2014

of container transport for easy loading onto ships. The EC-B head, including the IC slewing ring support and full jib, will fit inside a series of 40 foot shipping containers.

Spanish tower crane manufacturer Linden Comansa is exhibiting with Linden Comansa America. It reports many developments since the previous show in 2011. Product highlights for discussion include the new LCL 165 luffer which completes the five model LCL series. It is available in 8 and 12 tonne (17,640 and 26,450 pound) capacity versions. Also completing a range is the new 21LC 660 flat top tower crane in the LC2100 series. Four versions are available, with 18, 24, 36 and 48 tonnes capacity. This model has the manufacturer's longest jib at 84 m.

Largest in the range are the LC3000 series. A pair of models, the 30LC1100 and the 30LC1450, are available in three versions, with capacities of 32, 48 and 64 tonnes. Two steps down the product range is the LC1600 series of three flat top towers. The 16LC185 comes in three versions, with 8, 10 and 12 tonnes capacity. The 16LCL220 and the 16LC260 are available in two versions, 10 and 12 tonnes.

New from Comansa is its PowerLift control system which allows an improvement of the load chart by up to 10 % at reduced speed. It is a standard feature on all the company's flat top models.

Manitowoc's Potain tower crane brand will be represented by a new luffing jib tower crane and what the company claims as the world's largest self erecting crane. The MR 418 luffer is the first unit in a range under development with more units coming later in the year. All will have frequency converter drives. Application includes power station or super high-rise (200 m and taller) building construction. >



The 16LC
185 Linden
Comansa
flat top
tower crane



Linden Comansa LCL 165
luffing jib tower crane

The MR 418 lifts 24 tonnes and maximum jib length is 60 m. It can be fitted with the 201 kW (270 hp) 270 LVF 120 hoist winch (designated 320 LVF 120 in North America) with up to 830 m of rope. For greater productivity the maximum line speed is 254 m per min. Mounting the luffing mechanism and the hoist inside the counter jib reduces the amount of space the crane needs on site and simplifies assembly, Potain says.

Alexandre Chanteclair, Potain product manager for top slewing tower cranes, highlighted the design benefits of the new luffing jib crane. "For luffing jib tower cranes, two of the most important considerations are its out of service radius and the counter jib length," he explains, "The cranes are designed to work on extremely congested sites, so the less space they take up the better. With the Potain MR 418, we have an extremely compact crane that's quick to assemble, quick to commission and capable of extremely fast lifting speeds on high-rise job sites."

High speed operation is another feature of the MR 418. It luffs the jib from the horizontal position to the vertical in 1 minute 16 seconds, well under the 2 minutes that most luffing jib cranes of this size would require, Potain says. New is the auto-levelling function to allow loads



Enerpac's SBL1100 hydraulic telescopic gantry lifting system has a capacity of 1,100 tonnes

to be moved horizontally using only the luffing motion, rather than the luffing motion combined with the hoist.

With the MR 418 a free-standing height of 90 m can be achieved on a 10 m x 10 m base when fitted with 35 m of jib. Only three anchorages are needed to reach a working height of 170 m. When anchored to a building, the crane's mast can extend 53.2 m above the last anchorage point, the manufacturer says.

The Potain Igo T 130 self erecting crane has a 50 m jib to cover small and medium job sites. Working height can be altered according to project requirements. Manitowoc says it will appeal to customers with experience of the older Potain HDT 80, a popular self erecting crane in North America.

Industrial lifting

Enerpac is demonstrating its 1,200 ton (1,100 tonne) capacity SBL1100 hydraulic telescopic gantry lifting system for the first time in the USA. This three stage system is the largest in the company's range. For easier transport the boom can be folded down. Hydraulics are self-contained and there is the Intellilift radio remote control. Also on show is the new Enerpac EVO synchronous lifting system and the Enerpac HSL strand jack range. The EVO will be demonstrated levelling a container using its computerised control.

Mobile gantry crane manufacturer Shuttlelift will be promoting benefits of its SB series. An advantage over electric overhead travelling cranes is that the SB series can move all through a factory and outside without having to switch from one crane to another. It means more of the factory area can be covered by a crane and there is less rehandling. While other types of pick and carry crane can also do this, issues with them, compared to the Shuttlelift SB Series, are capacity and stability, the manufacturer says.

Manitowoc's Shuttlelift

Potain Igo T130 self erecting tower crane



CD5520 industrial pick and carry crane has been redesigned, boasting the highest capacity and longest reach in the class, the manufacturer says. The 18 tonner has a 16.6 m four section, full power boom. It is the first in a new generation of industrial cranes. "With this project, we completely redesigned the industrial crane from the ground up," says Thomas McCallum, Manitowoc director of industrial crane sales and crane remarketing. "The end result is a wholly innovative, superior machine that builds on the Grove and Shuttlelift tradition."

Also available is the Grove Yardboss YB5520, which has the same features and specifications as the Shuttlelift CD5520, and is available through Grove dealers. It replaces the YB5518 while the CD5520 replaces the CD5560B. For the first time on an industrial crane, Shuttlelift is offering two jib options: a 4.6 m extension or a telescoping 4.6 to 7.6 m swingaway.

Specialized transport

A highlight in the transport equipment sector for German manufacturer Scheuerle, part of the TII Group that includes Kamag and Nicolas, is the display of its first Highway Trailer manufactured in the USA. It is the result of a co-operation with the Precision Companies PFC, PEI and PMI. The first unit has been built and tested by Precision Fabricating & Cleaning in Florida. Precision Enterprises Inc has been selling and servicing Kamag equipment for more than 30 years. It is planned to build further products in the USA.



Talbert will roll out a new 6-axle steer dolly



Liebherr's 542 HC-L tower crane is designed with large 110 kW winches for fast and powerful hoisting and luffing



Liebherr 380 EC-B flat top tower crane



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Also on display from Scheuerle is a four-axle Wide Combi Power Booster. The Wide Combi has been customised to fully comply with US legislation and to deal with road conditions there, the manufacturer says. It uses proven pendulum axle technology where the hydraulic cylinders in the axles provide a damping action, compensate for ground unevenness and offer a high lifting range to drive under and lift loads. A steering angle of up to 60 degrees is possible.

Another TII Group exhibit is the Scheuerle-Kamag K25 Power Booster. It has drive axles and can be towed at 80 km per hour as an additional platform trailer or it can be used as an auxiliary drive with a Power Pack Unit (PPU) to boost traction on inclines. Where the tractor unit needs help the PPU cuts in automatically. A further option for in-plant transport is the mechanically coupled parallel combination where the Power Booster is laterally coupled as a platform trailer unit. Its broad base allows transport of loads with a high centre of gravity.

US trailer manufacturer Rogers Brothers is showing two new trailers, one of which is the latest 35/40 ton capacity No Foot unit with detachable gooseneck. It has a 24 foot (7.3 m) platform deck and a loaded deck height of 20 inches (500 mm). Lowered cross beams in the rear frame and at the rear of the deck allow better loading of



Rogers promises several new trailers and the CobraNeck multi-ride height detachable gooseneck



Cummins QSG12 Tier IV Final straight six diesel

excavators and other plant. Also on show is a 60 to 65 ton (54 to 59 tonne) modular trailer with interchangeable platform, I-beam and drop-side decks. The decks attach to the new Cobra Neck, a multiple ride height detachable gooseneck.

The Cobra Neck is designed to make unhooking and delivering safer, faster and more convenient. It allows increased ground clearance, when necessary, while saving time that would be spent in changing ride height settings, the manufacturer says. It will be available on all Rogers 55 ton (50 tonne) and larger detachable gooseneck trailers.

New from Talbert Manufacturing is the 6-axle steer dolly which, the company says, offers versatility, additional steering control and extra capacity to handle self-supporting superloads. The 60 ton (54 tonne) dolly is suitable for everything from heavy, low-riding materials, for example, bridge beams and steel girders, to tower sections for wind turbines, the manufacturer says. It has two groups of three axles with the axles in each group spaced at 60 inches (1.5 metres). With a bunk between the two groups that is connected to the rear-axle bearings through a tie rod system, the total spread is 16 feet, 1 inch (4.9 m). This configuration allows operators to carry more weight and complies with US federal bridge laws, the manufacturer says.

A hydraulic power pack on the dolly allows operators to override mechanical steering with a wireless remote. This option is useful for pilot car drivers escorting superloads. In addition, truck operators can adjust the bunk height from 40 to 50 inches (1 to 1.3 m) to clear overhead obstacles such as electrical lines and traffic signs and obstructions beneath the unit, for example, speed bumps. It also has Ridewell Model 240 air ride suspension. The dolly can be picked up using its four D-rings and stacked on a trailer or the front jeep for easier transport after load delivery.

Accessories and services

Engine manufacturer Cummins is showing its new, Tier 4 Final-compliant, 63 to 98 kW QSF3.8 engine and the larger 250 to 382 kW QSG12 models, as well as its after treatment technology to

The new qSCALE 12 from Hirschmann MCS is a load moment indicator for mobile cranes



The new Scheuerle Highway Trailer made in the USA



New from LSI-Robway is the GS085 anti-two block switch and line of wireless load cells to go below the hook

help the engines comply with the stringent emissions limits. Cummins says it will also showcase some of the first Tier 4 Final ready power packs in the industry.

Hirschmann MCS is presenting its new qSCALE I2, a load moment indicator for mobile cranes. Its Crane Configuration Tool is designed to be easy to use and eliminates the need for programming. The system has a simplified calibration procedure and a HMI graphic interface.

LSI-Robway will roll out its new wireless GS085 anti-two block switch and line of wireless underhook load cells. The lower-cost GS085 anti-two-block switch features an impact resistant, waterproof and UV stabilised nylon enclosure, with a mechanism life of over 250,000 cycles.

With a line of sight range of 4,000 feet (1.2 km), LSI-Robway's latest wireless A2B switch uses two-way radio communication with RF immunity. The GS085 has up to



Shuttlelift SB series mobile gantry crane





four years battery life from one lithium D-cell. It consists of the radio transmitter, battery and switch mechanism, which mounts at the boom tip. A weight-and-chain assembly is attached to the bottom eye-bolt of the A2B switch. When the weight assembly is lifted by the ball or block, an internal switch triggers an alarm to warn the operator.

Also new from Link-Belt, in partnership with A1A Software, is a telematics programme for its new crane models that have the Link-Belt Pulse operating system. Known as Link-Belt Pulse Telematics Unit, (PTU) monitors all of a crane's operations, including engine information, GPS location and crane faults, according to Bruce Kabalen, Link-Belt's manager of marketing and technical communications.

In the field of training, Crane Inspection

& Certification Bureau (CICB) will be holding NCCCO mobile crane operator preparatory training and volunteering services for NCCCO exams. A refresher training programme on 3 March is for recertification candidates, and a three-day CCO preparatory programme for new candidates will be held 3 to 5 March.

Moving to certification, the National Commission for the Certification of Crane Operators (NCCCO) will have live equipment demonstrations, nationally accredited certification examinations and practical examiner training. New candidates and existing certificants can take a variety of ANSI-accredited and OSHA-compliant CCO written, practical, and recertification exams. NCCCO has a *Visit ConExpo - Leave Certified* programme with onsite scoring and immediate test results.

Crane Institute of America has a new train-the-trainer combination programme, *The Complete Package*. In two weeks trainers can become a Crane Institute of America certified instructor and an authorised practical examiner for Crane Institute Certification (CIC), a nationally accredited, OSHA-recognised certification for crane operators, riggers, and signalpersons.

CONEXPO SHOW GUIDE



Manitowoc's Shuttlelift CD5520 industrial yard crane is a complete redesign, the manufacturer says



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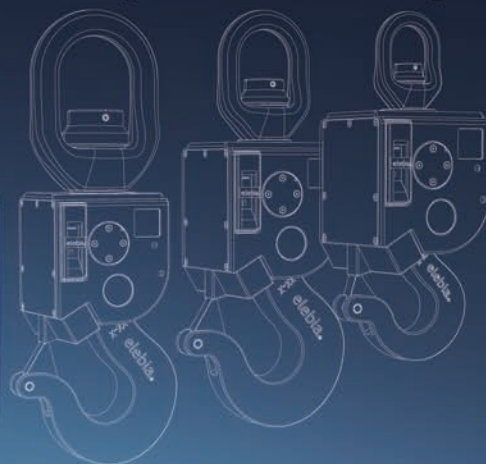
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In addition to each gantry tower, four strand jack units were installed giving a total of 24 strand jacks with a minimum capacity of 500 tonnes each to lift the topside

Mega lift

A topside weighing 10,000 tonnes was lifted by ALE at DryDocks World in Dubai, using a specially-designed gantry system with 24 strand jacks. IC reports

Two teams from heavy lift and transport company ALE lifted and installed a topside weighing 10,000 tonnes at DryDocks World in Dubai, United Arab Emirates.

The topside is the world's first semi-submersible HVDC (electrical current converter) platform. The *DolWin Beta* was constructed at the DryDocks shipyard. A gantry system used to lift the topside was a product of ALE's research and development department at ALE in Breda, Netherlands, and at the Middle East branch, a company spokesperson said.

ALE used four laced tower systems and two A-frame structures. Side braces were

also incorporated into pre-cast concrete foundations in the dock pier walls to provide stability and a ballast securing system for bad weather.

In addition to each gantry tower, four strand jack units were installed, for a total of 24 strand jacks at 500 tonnes each.

Once a test lift had been carried out, the topside was lifted clear of its supports and suspended while the topside was prepared for the full height lift. ALE lifted the topside to a final height of 52.8 metres. Once at full height the semi-submersible hull structure was manoeuvred in between the ALE gantry system and underneath the suspended topside. The topside was then positioned on the semi-submersible hull structure and welded into place.

Edward Talbot, ALE project manager, said, "For our client this was a first and, as such, a lot of design work, verification and detailed checks were completed to ensure full integrity of the entire system during the operation. Our aim was to execute the lift efficiently with minimal risk to the topside and surrounding yard activities.

"Usually a lift such as this would rely upon a very restrictive weather window requiring extended periods of relatively low wind speeds to affect the lift and integration



ALE prepares to lift the world's first semi-submersible HVDC platform, the *DolWin Beta*



For the lift ALE used four laced tower systems and two A-frame structures



The hull is moved between the gantry system and the suspended topside

safely." It was up to ALE to create a system that was capable of withstanding 10 year return wind loads but that would not cause permanent disruption to the operability of the dock.

"The design meant that our client could not only perform the mating operation inside the dock but also maintain adjacent docking operations with minimal impact to the yard facility during and after lifting and mating completion," ALE said.

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Custom or commercial carrier

As emission laws and road regulations are becoming increasingly strict, the design of the truck crane is changing. LAURA HATTON investigates

A wave of legal requirements regarding emission laws and road regulations means that customers are increasingly searching for cranes that have the efficiency and stability of a truck crane, but with the added ease of a commercial chassis. The main requirements for a truck crane are for it to be safe, capable of being driven on the road with little or no permit requirement, capable of travelling from one jobsite to another, and to be simple to maintain and repair.

In recent years, however, cranes designed to be mounted on commercial trucks (referred to as truck mounted cranes) have become increasingly popular and are becoming a favourable option, especially in the North American market, compared to truck cranes (based on custom carriers). "This popularity has

increased to the point where they have displaced the 40 ton (36 tonne) truck cranes practically out of the market," Ruben Saunders, global product director for truck cranes, boom trucks and carry deck cranes at Manitowoc Cranes, says, "The 50 ton (45 tonne) size class has also begun being displaced in the last three

years by new commercial truck mounted cranes. Lastly, we have seen that trend now move to the 60 ton (54 tonne) class in the North American market."

This trend is being observed by manufacturers all over, as a spokesperson from Terex adds, "What we have been observing is that new and heavier truck mounted cranes have started to bite into truck crane territory, as they have the advantage of lower operating costs." As a result of these lower operating costs, end users are demanding larger truck cranes that have the flexibility, comforts and serviceability that commercially-sourced trucks for truck mounted cranes provide.

The opinion on what is better – a commercial chassis or a purpose-built

Service provider, BerryCranes based in the UK, takes delivery of its fourth Böcker truck-mounted crane. From left to right: Michael Sendermann (Böcker); Martyn Berry and Neil Berry (Berry Cranes); Christoph Montag (Böcker UK)

TRUCK CRANES

Altec's latest model, the AC45 truck crane, has a 38 metre 5-section boom and a telescopic jib





The new Tadano GT-600EX truck crane

chassis – is not, however, simply based on comfort and price preference. As a spokesperson from Italian truck mounted crane manufacturer Marchetti explains, “Sometimes truck manufacturers do not have a model that matches or satisfies the technical specifications needed to fit our superstructures.”

Truck mounted cranes fitted on a commercial chassis do, however, help overcome the regulatory restrictions surrounding emission laws. For truck cranes, most of the world’s emissions needs fall in to the Tier 3 (Stage IIIA) category, while in other areas it is Tier 4 final (Stage IV). Meeting emission laws by choosing a commercial chassis can have its problems, as Rick Curnutte, Link-Belt product manager for telescopic truck and all terrain cranes, explains, “While it’s true that a commercial chassis does give you an easy way to overcome the emission challenge, the chassis doesn’t primarily focus on the needs of a crane.

“A commercial chassis doesn’t give you the low speeds needed to travel when a crane is fully counterweighted and rigged for work,” Curnutte explains, “Also, a commercial chassis is not strong enough to serve as the primary lifting base, making it necessary to have a supplemental frame

mounted atop the commercial chassis. This equates to a high centre of gravity and added weight.”

A spokesperson from Terex adds, “Having a purpose built chassis means that you can optimise the design for lifting performance but you are sacrificing the benefit of having standard components (lower operating costs, maintenance, easier part replacements, etc). But with the capacity of truck mounted cranes increasing, this line is starting to blur.”

New models

Axle weight limits are another headache for truck crane manufacturers, as Ruben Saunders says, “In North America there are so many different road regulations that vary from state to state, that, as a manufacturer, it complicates the design of new products in regards to weight and dimensions. As truck mounted cranes have gotten larger and larger, we have been forced to select five- to six- or more axle trucks, depending where they will be used.”

As a result of these conflicting requests and demands, manufacturers are offering cranes both on a purpose built chassis and mounted on a commercial truck chassis. Japanese manufacturer Tadano, for example, has developed a custom carrier for



The MTK 35 has a lifting capacity of 35 tonnes and is on three axle truck chassis

The Ormig 104AC has a 100 tonne lifting capacity, an 8-section telescopic boom and can travel on most motorways and roads without transit permits



the GT-600EX truck crane. “We took pride in providing a truck crane which matched customer requirements. For example, the GT-600EX has hydraulic and pneumatic suspension on all axles for stability and comfortable driving on the road.” To meet varying emission laws, Tadano’s GS-600EX model, which will be sold in Singapore, is planned to be mounted on a commercial truck adapted to meet the emission law of Singapore (Euro 5). In addition, the GS-600EX has Hello-net, an online crane management system, which provides customers information such as machine position, working history and maintenance timetable.

Altec, in the USA, has launched a 45 US ton (40 tonne) capacity AC45-127 telescopic boom crane. The AC45-127 has a 38 metre 5-section boom and a telescopic jib that extends from 10 to 16 m. It also has out-and-down outriggers, an engine start stop function and the cab tilts up by 20 degrees. Matt Trefz, market manager at Altec Cranes says, “The AC45-127 is a new design that gives customers confidence and the ability to be more productive at the job site.”

Tryson Energy Services of Alberta, Canada use a 140 ton Link-Belt HTC-3140 LB hydraulic truck crane to service an injector and conventional coil tubing rig at a well site in Alberta, Canada. The rig is used to clean and clear an existing well hole



From Böcker Maschinenwerke in Germany is the AK 44/4000, a truck-mounted crane which has a reach of 42 m and a maximum reach of 44 m with attachment. It has a load capacity of 4 tonnes. The AK 44/4000 has a low body weight and can be installed on a 15.5 tonne heavy goods vehicle (HGV), the manufacturer says.

New from Manitowoc is the NBT60, which will be shown at ConExpo 2014. Ruben Saunders says, "It is the biggest crane in National Crane's history and will not need additional permits to travel on the road in many regions. It has a 54.4 tonne capacity and a 39 m five-section, full-power boom. A 7.9 to 13.7 m two-section, off

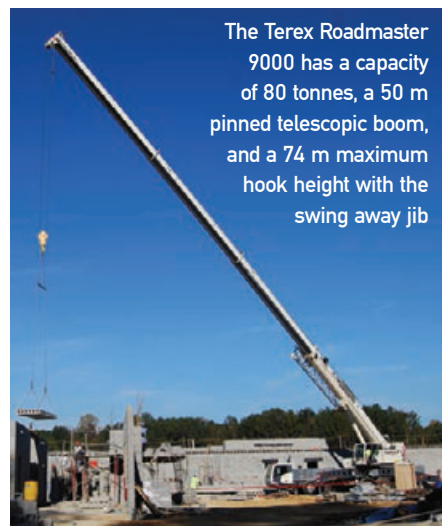


National Crane's new NBT15 series models have an 18.3 m three-section boom and a 6.7 m single section jib. The cranes fill the gap between the 10 ton (9 tonne) and 18 ton (16 tonne) capacity classes.

settable manual extension is also available."

Also from Manitowoc are National Crane's new NBT15 series models, which fill the gap between the 10 ton (9 tonne) and 18 ton (16 tonne) capacity classes. The three crane models that comprise the series are the NBT14, NBT15 and NBT16. All three have an 18.3 m three-section boom and a 6.7 m single section jib. The NBT14 offers a 14 ton (12.7 tonne) capacity; the NBT15 provides a 15 ton (13.4 tonne) capacity; and the NBT16 has a 16 ton (14.5 tonne) capacity. The cranes feature a remote control console as standard and have updated outriggers. Ruben Saunders says, "These new boom trucks remain ideal for getting into tight spots on the job site and can easily hop on and off the highway without additional permitting. In many cases, a commercial driver's licence (CDL) is not even required for the NBT14. The cranes will be on display at the ConExpo show."

The latest truck mounted crane models from Marchetti are the MTK 60 and the MTK 35. The MTK 60 has a 60 tonne lifting capacity and is fitted on a four axle truck chassis. The MTK 35 has a lifting



The Terex Roadmaster 9000 has a capacity of 80 tonnes, a 50 m pinned telescopic boom, and a 74 m maximum hook height with the swing away jib

capacity of 35 tonnes and is on three axle truck chassis.

From fellow Italian crane manufacturer Ormig is the Ormig 804AC. It has a lifting capacity of 80 tonnes and a 6-section telescopic boom. Also from Ormig is the model 104AC, which has a 100 tonne lifting capacity and 8-section telescopic boom. The truck cranes can travel on motorways and roads without transit permits being

>





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New from Link-belt is the HTC-8675 II. The model fills the gap between the 60 ton (50 tonne) and 100 ton (85 tonne) truck cranes. Counterweights can be moved to meet transport loading requirements. Another model from Link-Belt is the HTC-3140LB. Rick Curnutte says, "It is the largest truck crane in the North American market today and it goes head to head with all terrain cranes in its class. It has the reach and capacities of the all terrain while also having speed and transportability of a truck crane."

The latest truck crane from Terex is the Roadmaster 9000. It has a capacity of 80

Smith Hauling, based in Oliveburg, Pennsylvania, USA, placed several circa 1909 railcars for a new restaurant concept in DuBois, Pennsylvania. A 140 US ton Link-Belt HTC-3140 hydraulic truck crane lifted the 52 tonne railcar to be refurbished and used as part of the new restaurant. Photo courtesy of Joy Norwood, *The Courier Express*

tonnes, a 50 m pinned telescopic boom, and a 74 m maximum hook height with the swing away jib. The Roadmaster 9000 is a five axle truck crane and is the first truck crane from the Waverly production facility in Iowa, USA. It has the new Terex Cranes lower and upper cab.

Future productions

The demand for truck cranes with increased capacity is continuing to rise. Manufacturers are looking at the possibility of designing a truck crane that can still meet the traditional needs of safety, transportability and manoeuvrability while providing end users with a high lifting capacity. As Ruben Saunders says, "When it comes to truck mounted cranes, customers around the world are looking for products they can maintain and service locally and that meet their local standards. As a manufacturer we have to design products

that are easily tailored to those needs."

To meet such demands, Manitowoc is looking at designing new products. Tadano are also continuing to look at developing both custom carrier truck cranes and cranes mounted on commercial trucks that meet road regulations, exhaust emission laws and customer requirements of individual countries. Marchetti has also hinted at developing a new truck crane, possibly in the 100 tonne capacity class, but is not yet to determine the fundamental aspects. Meanwhile, from Terex, a truck mounted crane, to top the Crossover range, will be unveiled at ConExpo. "It will be our biggest truck mounted crane yet," a spokesperson says. More information will be unveiled at the ConExpo show in Las Vegas, USA, 4-8 March 2014.



A 16 US ton (14.5 tonne) capacity Manitowoc National Crane NBT16 boom truck at work

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Components shipped for Indian wind farm

BNSF Logistics helped transport wind turbine components from Brazil to a wind farm in India.

The project was carried out through BNSF's Houston Project Group in co-operation

DELTA MARITIME SHIPS LIFEBOATS

Transport company Delta Maritime, based in Greece, has moved four large lifeboats and accessories from Piraeus in Greece to Bergen, Norway.

The lifeboats were loaded at the site of the manufacturing facility in Thebes, a company spokesperson said. The lifeboats were then transported on specialized transport and moved to Piraeus Port using four 12 metre flat racks.

On arrival at Piraeus Port, the lifeboats were shipped to Bergen in Norway.



The lifeboats were transported to Piraeus Port on 12 metre long flat racks

with a Brazilian joint venture partner in Belo Horizonte.

The cargo consisted of 12 rotor blades, 12 hubs, 12 nacelles and 12 cones. In total, 28,000 cubic metres of wind farm equipment was transported.

The cargo was loaded onto the Thorco Challenger, a vessel chartered by BNSF. The cargo was loaded at three different ports in India: Tuticorin, Mangalore and Kandla. Loading and unloading was supervised by a marine surveyor.

Some of the turbine blades are loaded onto the Thorco Challenger



SILOS TRAVEL TO SARATOV

Specialized transport company Van der Vlist, based in the Netherlands, transported two silos from central Europe to Saratov in South-western Russia.

The silos weighed 15 tonnes each and measured 18 metres long, 3.6 m high and 3.3m wide. For the first part of the journey the silos were transported by road 1,000 km to the North of Germany, before being loaded onto a ferry and shipped across to St Petersburg.

On arrival in St Petersburg the silos travelled 1,600 km to Saratov. The final part of the journey was organised by Van der Vlist's Russian office, a company spokesperson said.

Along with the two silos, the consignment saw three tilt-trucks were used to carry parts for the silos.



The 15 tonne silos measured 18 metres long, 3.6 m high and 3.3m wide

KÜBLER TRANSPORTS 170 TONNE CARGO



The transformer makes its first part of its journey by road to a substation

Germany-based transport company Spedition Kübler, was awarded a contract to transport a 170 tonne transformer from Trier in Germany to the area of Rhine-Ruhr.

For the transport project, the transformer was moved from its foundation to rail tracks on a special loading site near a substation, a company spokesperson said.

On arrival at the substation, the transformer was loaded onto a 12-axle trailer using jacks and then loaded onto Kübler's new Schnabel rail car. The cargo was then transported by rail to a town in the western part of Germany in the Rhine-Ruhr area.

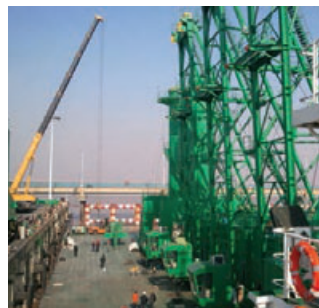
The journey took one week to complete.

Guangzhou Sunshine ship gantry cranes

Chinese transport company Guangzhou Sunshine, has shipped four sets of gantry cranes from Dafeng port in China to Indonesia.

For the project, the gantry

cranes were loaded onto a vessel at Dafeng port and then shipped to Cigarding in Indonesia. The largest piece of cargo to be shipped weighed 88 tonnes and measured



Guangzhou Sunshine was responsible for carrying out the loading and shipping of all four gantry cranes

11.65 x 11.65 x 25 metres. The heaviest piece weighed 148.65 tonnes and measured 13.65 x 9.75 x 28 m.

One of the challenges during the task was using a 500 tonne crane that had a suspension arm that could

The gantry cranes on their way to Indonesia



not swing from one side and was immovable, a company spokesperson said. Other challenges during the task included bad weather.



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Making its maiden trip

Austrian company Felber Transport use a new Doll Panther trailer to transport an oversized generator from Weiz in Austria to Macedonia

Heavy transport company Felber Transport, based in Austria, used a new Doll Panther trailer to transport a 54 tonne generator from Weiz, Austria to a power station in Macedonia.

The 8-axle extendible semi-trailer, S8E-S3F 3+5, has a 12 tonne axle load, a steering angle of 55 degrees and hydraulic suspension with a lift of 405 mm. In addition, it can travel at up to 80 km/h

and has individual wheel suspension with a suspension travel of -70 to +335 mm. It is also fitted with hydraulic steering and a hydraulically detachable gooseneck.

The truck and trailer combination was driven by heavy-duty carrier driver Andi Prem. Felber Transport used the Doll panther S8E with a Scania R730 8x4 tractor unit. The load consisted of a 54 tonne generator and a 5 tonne supporting frame. The vehicle's total size was 16.45 metres in unextended state and the semi-trailer's size was 12.41 m. In total the vehicle weighed 42.8 tonnes.

For the first part of the journey the cargo travelled by road from Austria to Belgrade, Serbia. On arrival the transport was limited to travel at 65 km/h and accompanied by a police escort. The cargo then continued to the city of Niš, where a second escort took over to accompany the cargo to the Macedonia border.

The second part of the journey was on a four lane road to the mountains of Ohrid. Along the route the transport had to overcome challenges, such as rectangular crossroads, bridges and parked cars.

Narrow tunnels

Eventually the cargo pulled up at Brutok power station. The hydro-electric power station is different from most power stations in that it has been carved out of the rock. A result of this design meant that the cargo had to be driven several hundred metres down into a tunnel before it could arrive at the unloading point. This section of the tunnel measured 4.5 m wide and had several bends which made the journey difficult.

Christian Manninger, technician of the



Andi Prem, the driver on the transport project for Felber Transport

power station builder Andritz Hydro, said, "After a quarter of an hour we reached the unloading point which was a square opening in the concrete ceiling. The space is only just sufficient so the 54 tonne colossus was lifted slowly above the floor a few centimetres before being placed into the round hole."

Once the cargo was placed into its final position, the chains, winches and tensioning belts were packed away into the stowage boxes. Following this the shipping documents were signed and the crew was able to make its way back home.

Andi Prem, the driver for the transport project, said, "I really love my job and the new 8-axle semi-trailer makes the ride a pleasant experience. I appreciate the steering and suspension precision with which height differences, for example on roadwork sites, can be compensated. This is a very important safety factor. From the first moment on, I was also convinced by the steering angle of 55 degrees as well as by the quick and proper response of the Panther's steering."



The cargo begins its journey to the power station in Macedonia



Navigating the tunnel was a challenge

The cargo is transported on an 8-axle extendible semi-trailer, S8E-S3F_3+5. The trailer has a 12 tonne axle load capacity, a steering angle of 55 degrees and hydraulic suspension with a lift of 405 mm



New generation

The largest of a new generation of Krøll heavy lift and medium sized tower cranes has been installed and put to work. HEINZ KESSEL reports on the K5000S and other news from the Denmark-based tower crane manufacturer and from its sister company Favelle Favco



The largest Krøll saddle jib tower crane of the new generation, the K5000S, was installed last year in Germany. It is on the Lürssen wharf outfitting pier at Aumund near Bremen. Lürssen is well known for its design and construction of naval ships and luxury super yachts up to 180 metres long.

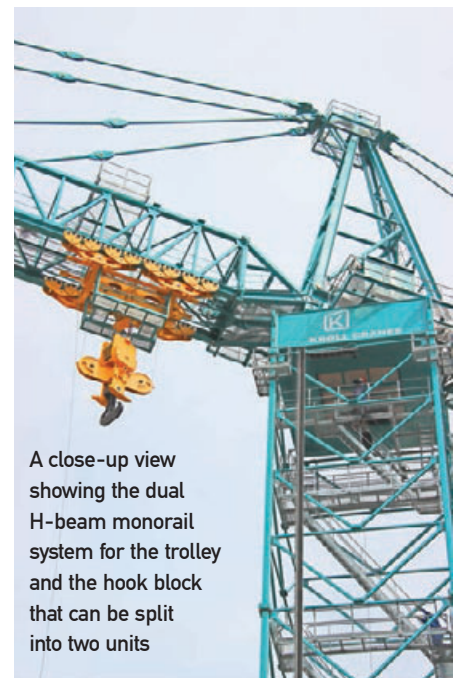
The new crane increases heavy lifting capacity at the wharf and replaces a 52 year old Demag hammerhead crane. Having become a landmark, the 150 tonne capacity crane was a reminder of the historic Vulkan wharf. It was dismantled and replaced by the new Krøll giant with its 250 tonne lifting capacity at 19.6 m radius. The new saddle jib crane can reach out to 60 m with a 55 tonne load.

Like its predecessor the new crane is working stationary on a concrete foundation but it has been prepared for a future upgrade that includes a portal-mounted undercarriage. The extra capacity of the new crane over the old

One unique design feature of the K5000S is its rectangular jib cross section, along the full length of the jib, and the compact 250 tonne trolley and hook system. It is shown at the erection stage of the crane during the reeving process of the hoisting rope

allows the handling of larger ship modules. It is also suitable for loading vessels with the large generation of wind turbine towers, which are designed and produced by the local company Ambau.

The new crane uses the Krøll TM60 6 x 6 m wide tower system. It has a custom-made base like a tower adapter 9.2



A close-up view showing the dual H-beam monorail system for the trolley and the hook block that can be split into two units

Surrounded by Krøll K800 and K560 cranes the massive K4000 in the centre towers over the Hebron offshore module construction site in Canada. As the construction project progresses the K4000 will reach an underhook height of 187.7 m. Lifting capacity is 110 tonnes



x 9.2 m, which was required by Lürssen due to the structural strength of the existing pier. The design is prepared for the addition of another conical tower section, which spreads the base to 12 x 12 m. It allows the crane to be converted into a portal rail mounted unit by just adding the portal and travelling bogies if the wharf decides in the future to convert the stationary heavy lift crane into a travelling unit.

Design capacity

The new crane's high capacity requirement led the design towards a rectangular cross-section for the jib over its full length. It marks a return after decades of the typical Krøll triangular top-down cross section with one H-beam monorail at the bottom for the trolley. For the company's range of large cranes above 600 tonne-metres, the square section boom allows a dual H-beam monorail system for the trolley. The load trolley has a 2.5 m spread with four bogie supports connecting the 16 wheel sets at each corner.

The man on the counter jib gives an idea of the impressive size of the Krøll K5000S with 250 tonnes capacity. It is pictured being erected at Lürssen wharf in Germany

The 250 tonne trolley and hook system is a brand new design. In the last couple of years Krøll has developed new systems for 75 tonne (two to six falls), 90/100 tonne (two, four or six falls) and 110/120 tonne (two, four or eight falls) capacity. The 250 tonne capacity requirement and the rectangular jib called for new thinking in the structural department, which resulted in a rather compact design both in respect to length and height.

Thanks to the sophisticated rope changing mechanism, the crane can be operated with the same compact trolley in a fast two-line operating mode for up to 50 tonne loads or, for up to 250 tonne loads, in 10 line falls operation. As is typical for the new Krøll series, the hoisting winch is on the counter jib in front of the counterweight carrier. A weather-protected electrical cabinet is mounted on the slewing unit surrounded by the massive tower head, made up of a folding A-frame-like steel structure.

There is no operator cabin because the customer decided to operate the crane by remote control at ground level. It has an extra durable surface treatment to eliminate corrosion and a control system for precise operation are essential for the intended application as a heavy lift crane for generations to come.

While the K5000S is a customised solution, Krøll also offers the K5000 with an extended 90 m jib. At the jib end capacity is still 40 tonnes and the maximum free standing height on the standard TM60 tower system is 60 m. For the long jib version the capacity is restricted to 120 tonnes.



Climbing the large M60 tower system using the new CT60 climbing cage on the K4000. The complete preassembled mast section will be inserted by a monorail through the front opening of the climbing unit

Krøll on a GBS

In Newfoundland, Canada, new Krøll saddle jib cranes are serving the construction of the massive gravity-based structure (GBS) foundation for the new Hebron offshore oil platform. The 40,000 tonne concrete GBS will be 130 m in diameter and 120 m tall. Construction is in a dry dock using tied-in tower cranes. The concrete base is then towed out into





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The new Krøll cranes are raising the base of the Hebron offshore platform in the harsh winter conditions of Newfoundland. To help improve operator comfort they have ScanCab crane driver cabins

deeper water where the central shaft will be constructed to its final height. This huge concrete pillar is lowered to the ocean bottom and surrounded by reinforced concrete oil tanks designed to withstand impact with icebergs.

The Krøll K4000 that is working to raise the central concrete shaft will be tied in twice, reaching an under hook height of 187.7 m. Up to 33.1 m 110 tonnes can be handled in eight-fall operation. At the 85 m maximum radius lifting capacity is still 34 tonnes. The high maximum capacity makes the tower crane suitable for outfit work which would otherwise have to be done by bringing in a special floating crane. As the project progresses it is also used to relocate the smaller tower cranes.

It has a stepless, frequency-regulated, drive and an option to change from eight-fall over four-fall, to two-fall operation with the same trolley. It is done by removing pins and splitting the special sheave block. The design is to offer fast hoisting speeds adapted to every load.

Like on the smaller, 24 tonne capacity, Krøll K560 and the Krøll K800 with 40 tonnes capacity, the K4000 tower system is based on the transport-friendly Krøll M-type mast system. Instead of the traditional K-shaped diagonal members in the mast system, the fold away diagonal member arrangement, with bolted chords, reduces transport space to a minimum. The 2.82 x 2.82 m mast system of the K560, the 3.92 x 3.92 m one on the K800 and the 6.4 x 6.4 m system on the K4000 can be transported inside standard containers.

For the large M60 mast system Krøll



developed the CT60 climbing cage equipped with four 150 tonne cylinders to push the K4000 upper crane in two steps so that a complete 5.8 m long and 6.4 x 6.4 m wide tower section can be inserted. The CT60 telescoping cage, roughly measuring 7.4 x 6.8 x 17.8 m, is assembled from side sections that can be transported inside containers. It is claimed by the manufacturer to be one of the biggest of its kind in the world.

The crane mast will be partly under water when flooding the dry dock to float the completed concrete oil rig structures. A special highly protective surface treatment to resist salt water corrosion is applied to the lower tower sections. It can be recognised by its yellow colour.

Flat tops

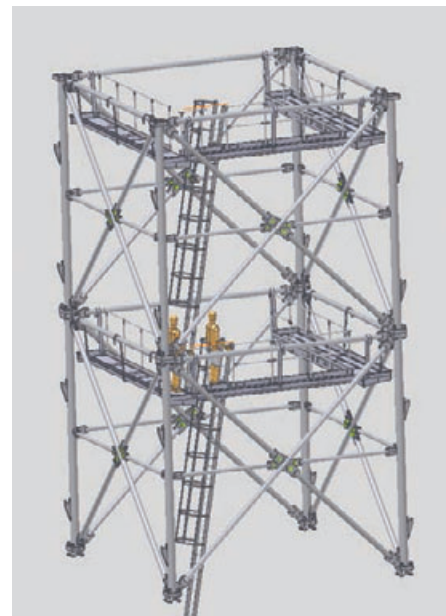
Also working on the Hebron project is the first Krøll standard saddle jib crane that incorporates certain modern European flat top design features. The K333 offers a capacity of 16 tonnes at 20 m radius in four-fall operation while 3.2 tonnes can be handled at the 75 m maximum radius.

As the smallest crane engaged on the site, the crane upper is based on a 2.2 x 2.2 m monoblock tower system. A complete unit is designed to fit into a shipping container.

Krøll is completing its series of flat top cranes, ranging from the all new K130F to the larger K420F and K620F models still in the pipeline. The K130F has 6 or 8 tonnes capacity and a 1.25 tonne load can be handled at the end of the 60 m jib.

All cranes on the Hebron project have the Krøll Comfort driver cabin. These ergonomically well designed, insulated and spacious cabins from ScanCab are intended to cope with the harsh weather in Newfoundland, Canada.

Already for some years Krøll has been supplying its sister company and fellow tower crane manufacturer Favelle Favco with electric winches and slewing drives.



All tower cranes in the 560 to 4,000 tonne-metre capacity range engaged on the Hebron offshore module construction project have the transport-friendly Krøll M-type mast system, with fold away diagonal members, to allow shipment in standard containers



With the K333 Krøll enters the popular flat top tower crane market sector. This unit is working on a special wide, rail mounted, undercarriage at the Hebron project in Canada.

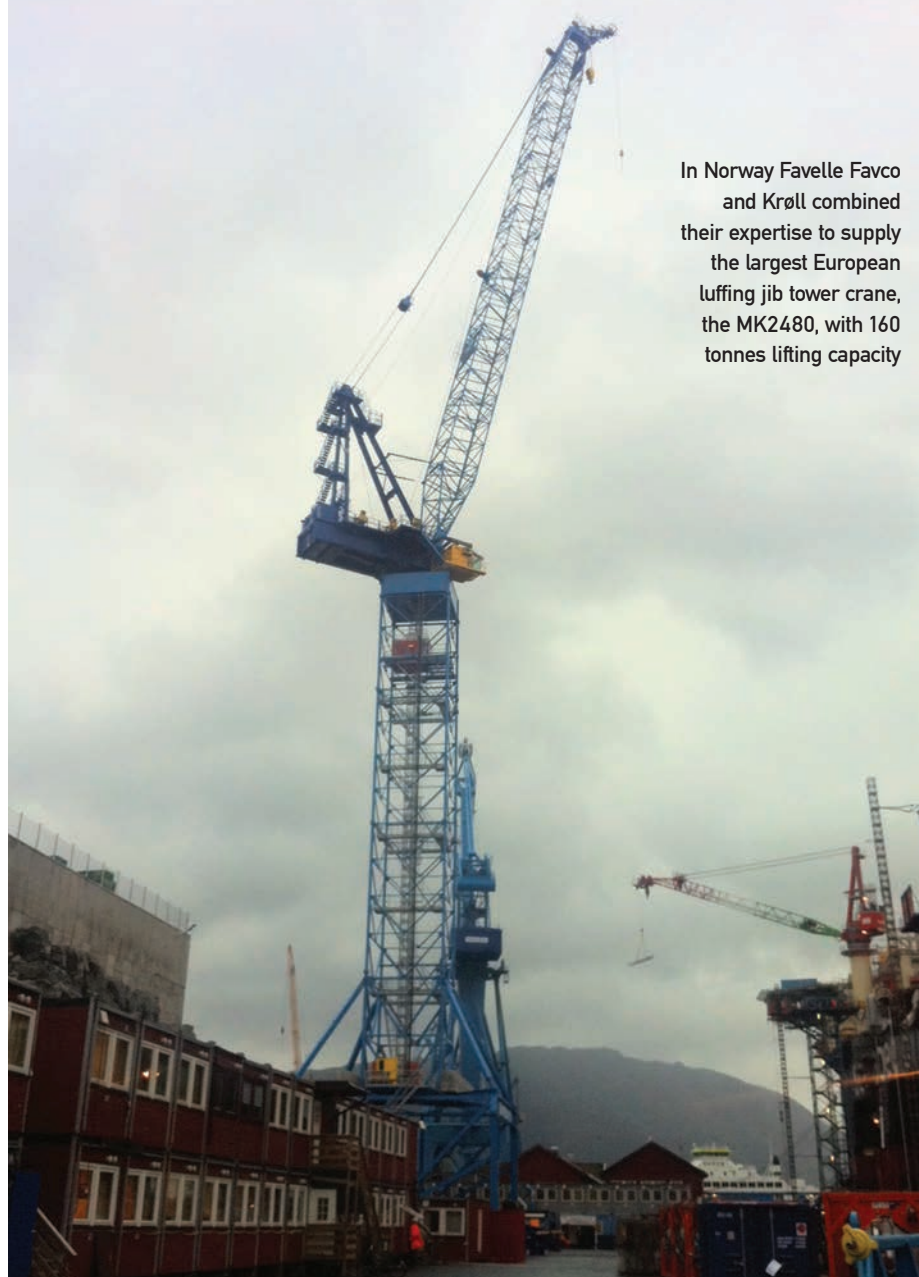


While Krøll supplies the electric drives and the tower system, Favelle Favco delivered the machinery platform, A-frame and luffing jib of the upper crane. The ScanCab operator cabin is positioned so that the jib foot does not obstruct driver's vision

Recently the expertise of the two crane manufacturers has been further combined. An example is the massive MK2480 luffing jib crane delivered to the Westcon Yard in Norway under the lead of Krøll. The Favelle Favco upper crane has a lifting capacity of 160 tonnes in six-fall operating mode. At 35 m radius 110 tonnes can be lifted and capacity is still 28 tonnes at 80 m radius. Loads up to 20 tonnes can be lifted with the single line runner up to 87.6 m radius.

In addition to the drive units, Krøll

also supplied the box-shaped slewing ring support, the lightweight TM60 tower system and the 15 x 15 m rail mounted portal, giving the crane a 70 m hook height



In Norway Favelle Favco and Krøll combined their expertise to supply the largest European luffing jib tower crane, the MK2480, with 160 tonnes lifting capacity

at maximum radius. A large custom-made operator cabin with separate WC, instructor's seat, air conditioning and Wynn/Hepworth marine grade screen wipers, was supplied by ScanCab. The position of the cabin is, in contrast to the standard Favelle Favco one, below the slewing deck where the boom foot does not obstruct the vision of the crane driver for its specialist application.

At the time of writing in early 2014 the MK2480 was the biggest luffing jib tower crane working in Europe.

Work in progress

In development is another combination of Favelle Favco and Krøll expertise, this time an MK1280 luffing jib climbing crane with a capacity of 100 tonnes at 24.9 m radius. It will have a free-travelling tower height of 74 m on the Krøll TM50 tower system and a 12 m wide rail mounted portal. ■

The MK2480 has a custom-made spacious and luxurious crane driver cabin from ScanCab with WC, instructor's seat, air conditioning and Wynn/Hepworth marine grade screen wipers



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The Nhat Tan Bridge, which crosses the Red River in Vietnam, is part of a new road that will link the country's capital city Hanoi and Noi Bai International Airport

Five Linden Comansa tower cranes were used to build the concrete pylons for the Nhat Tan Bridge over the Red River in Vietnam. IC reports



Comansa towers build the Nhat Tan Bridge



Hitoshi Yamaji, project manager at Sumitomo Mitsui Construction

The Nhat Tan Bridge in Vietnam is part of a new road that is being constructed to link Vietnam's capital Hanoi and Noi Bai International Airport.

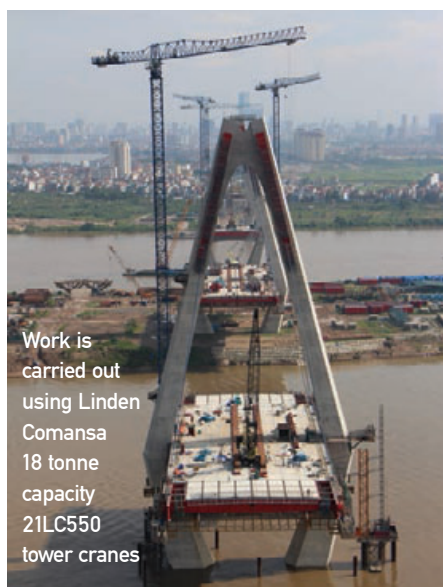
The road is made up of eight lanes, four for each direction. It is being constructed by joint venture company IHI Infrastructure Systems and Sumitomo Mitsui Construction, both based in Japan.

Construction work on the the Nhat Tan Bridge, which is also known as the Vietnam-Japan Friendship Bridge, began

in 2009. It is 1,500 metres long and has five A-shaped concrete pylons. The pylons are positioned 300 m apart and will be connected by suspension cables.

Work on the bridge was carried out by five Linden Comansa 18 tonne capacity 21LC550 tower cranes. The cranes were supplied by Singapore Linden Comansa dealer Asia-Ted.

For the construction of the pylons the tower cranes were erected on foundations and configured with a jib length of 50 m. >



Work is carried out using Linden Comansa 18 tonne capacity 21LC550 tower cranes



Material is delivered to the cranes by barge

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View of the barges and pylon construction



Due to the river, three of the five tower cranes were erected using crawler cranes positioned on barges. The additional foundations increased the cranes' height between 5 and 11 m, a company spokesperson said.

For the first part of the project the cranes were tied at a height of 31.1 m, and using a hydraulic cage, each 21LC550 was climbed to a height under hook of 85.8 m. At a later stage of the project the cranes were tied at a height of 60.6 m and configured to a final height of 107.8 m. Combined with the height of the foundations, at final configuration the cranes could reach between 109 and 111 m high, a company spokesperson added. Their height meant that the tower cranes were equipped with obstruction lights for air navigation and lightning protection. Barges were used to deliver materials and

The additional foundations increased the cranes' height by between 5 and 11 m



crane components to the tower cranes that were surrounded by water.

Work for the tower cranes included lifting prefabricated rebar cages, concrete and steel girders weighed 7 tonnes and were lifted at a radius of 50 m. The 21LC550s also helped place the bridge cables and lift cable anchor boxes to the top of the pylons. In total, there were 29 anchor boxes per pylon and each weighed 18 tonnes.

Hitoshi Yamaji, project manager at Sumitomo Mitsui Construction, said, "The five 21LC550 tower cranes worked well during our pylon construction without any trouble. In addition, the maintenance and technical support by their well-trained technicians were satisfactory. We got the best decision by choosing Linden Comansa cranes for our construction works; otherwise, I think it would have been difficult for us to complete our project on time."

The Nhat Tan Bridge is expected to open in October 2014.

The cranes were supplied by Singapore Linden Comansa dealer Asia-Ted



At a later stage of the project the cranes were tied at a height of 60.6 m and configured to a final height of 107.8 m



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Factors such as costs and the availability of spare parts are affecting the repair and refurbishment market. LAURA HATTON finds out what companies have to offer in this area of the industry

Workers carry out repairs at the Liebherr-Werk Ehingen facility in Germany



Keeping costs down

The attitude towards the repair industry is changing and over the past few years end users and crane rental companies are increasingly choosing to repair or refurbish crane components. A spokesperson from Liebherr-Werk Nenzing explains, "The importance of refurbishment has increased in recent years since many clients do have a well-functioning crane but it is difficult to get new components. Some of the cranes are 30 years old and the components, such as electronic components, are not produced any more."

Another reason behind this increase is because of costs, as a spokesperson from crane repair company Avezaat explains, "When a client decides to choose a repair instead of renewing there can be a difference in price which can be up to 80 %."

Although repairing a crane can be a cheaper alternative to replacing the crane entirely, it isn't necessarily the easier option, as a spokesperson from Terex points out, "Equipment is getting increasingly complex and materials are becoming more and more advanced. This means the level of workmanship has to be very high, especially with repairing critical structures and doing critical welds."

When repairs are carried out without the level of skill and expertise necessary, problems can occur. As stated in the *Terex Cranes Guideline on Crane repair*, "Repairs done by companies not authorised by the OEM (original equipment manufacturer) may lead to issues related to product safety and compliance. Companies other than the OEM (and its recognised partners) often do not have the appropriate or

complete knowledge of the product and the manufacturing processes which are necessary to evaluate and carry out repairs, particularly when load bearing parts and/or safety related components are involved."

To be compliant and to keep in line with safety requirements, many companies that carry out repair work have certain protocols in place and follow strict guidelines. Any repair and refurbishment work carried out at Liebherr-Werk Ehingen, for example, complies with the same regulations as the manufacture of new cranes. Manitowoc follows OSHA regulations and FEM standards. At independent crane repair centre Rush Crane Repair, all repairs and overhaul of cranes and crane components are carried out according to the procedures in the *ISO9001-2008* handbook.

Work carried out at Köhler Kran

Service, such as welding, is also completed by qualified personnel. "Our welders have to pass regular improvement and examination of their qualification," a spokesperson from Köhler Kran Service explains. "In addition, we have the welding qualification *Grosser Eignungsnachweis* from the welding institute SLV. This is the same qualification level as for the crane manufacturers." Independent company Avezaat says it keeps its employees certified and well trained to carry out repair and refurbishment work.

Time saver

Repairing parts and components instead of replacing them can also save time. This is especially important in the offshore industry. As a spokesperson from Liebherr-Werk Nenzing explains, time can be saved when refurbishing a crane because alterations to platforms, such as mechanical changes due to crane size or weight, do not have to be undertaken. For the offshore

>

A damaged Liebherr LTM 1100 all terrain that was brought into Avezaat



The LTM 1100 after repair and restoration work was carried out



A 1986 Liebherr LTM 1045 was brought into Rush Crane Repair for a complete renovation



The LTM 1045 after the renovation works were carried out by Rush. It was finished with a fresh coat of paint

industry saving time is crucial, as cranes are usually the only way to get material and supplies onto an offshore installation.

An example of how short the time frame of an offshore refurbishment project can be was experienced by the team at Liebherr-Werk Nenzing, which was required to carry out a repair and refurbishment project in a time frame of five weeks. The aim was to provide the crane with a newly designed control system and electrical system, new drive cabin with foundation, new hydraulic system and power pack (reusing the existing diesel engine), and to spot-paint corroded steel components. Other challenges the team encountered were limited deck space, no assist crane, weather conditions such as high wind speeds, and a varying elevation of sea level.

Avezaat has also carried out repair work for an offshore client. Workers had to refurbish two National cranes. "For the project the pedestals were cut off and the cranes were transported to our workshop over water," a spokesperson explains. "We repaired several boom sections and A-frames and we built several new boom sections, to replace ones that were beyond repair. Approximately 60 % of the crane houses were renewed and the cabins refurbished. All the winches were checked and the bearings were renewed. The hydraulic motors were disassembled, checked, overhauled and tested. The engines were overhauled as well. After

assembling, testing and painting, the cranes were loaded on pontoons and transported back to our client."

Back onshore, a team from Liebherr-Werk Ehingen recently carried out the repair of a telescopic boom off a LTM 1500-8.1. "We had to replace one telescopic section," Wolfgang Beringer, sales promotion Liebherr-Werk Ehingen explains, "In addition the telescopic ram had to be refurbished by the cylinder manufacturer as there was a leak. The guide rail was also damaged. On the Y-guying system a tube had to be replaced and also the frames of the guying winches had to be replaced. The winches were refurbished. Also the cover panels had to be repaired."

Favourites

Another factor that can influence a person's decision to repair a crane instead of replacing it is personal preference. As Gilberto Ferreira, global GM Encore remanufacturing at Manitowoc Cranes explains, "Many companies like the crane they have and are familiar with its operation and maintenance; refurbishment allows them to keep the crane."

An example of this was seen recently

at Manitowoc's manufacturing facility in Passo Fundo, Brazil, which has an Encore branch for repair and refurbishment. The crane due for repair was a 38 year old Manitowoc 4000W lattice boom crawler crane. It was owned by Brazilian construction company Odebrecht and had worked at the Estaleiro Paraguaçu shipyard in Salvador for several decades.

"Odebrecht wished to keep the model in service because of its freefall system, which is used for pile-driving operations," a company spokesperson explains. "The company also valued the crane's easy maintenance and familiar mechanisms."

For the project, the Encore team remanufactured the boom hoist, refurbished the travel lock, rebuilt the main drive shaft (including new clutches and bearings), redesigned and fitted a new roof with new plates and reinforcements, and gave the crane a new paint job. In addition, the chassis was inspected and the engine was exchanged for a new Cummins model. The refurbishment took six months to complete and cost 75 % less than purchasing a new crane, a spokesperson from Manitowoc says.

Another example is from Rush Crane Repair, which recently finished an overhaul of a 1986 Liebherr LTM 1045 all terrain with 23,000 hours on the clock. There was a complete renovation of the telescopic boom, replacement of hinges, change out of extension cables, and the sliding blocks were replaced. In addition, there was an overhaul of the gear box, drop box, outrigger and main winch. The hydraulic hoses were also changed and the counterweight was refurbished, including a complete overhaul of the remote control electronic system counterweight. The crane cabin and driver cabin interior were renovated, as was the outside of the crane. The slewing motor was replaced and the LMI system was renovated. After renovation the crane was inspected by TÜV and certified.



Refurbishment work of mobile harbour cranes under way at Liebherr-Werk Nenzing



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The Terex AC 60 after its repair and restoration

A 60 tonne capacity AC 60 city class crane on arrival at Terex

Facilities and equipment

Repairing older cranes has other advantages as well, as a spokesperson from Terex points out, "When we repair cranes it's almost like upgrading and updating it. As manufacturers, we can update electronics and programming etc." To carry out repair works Terex has workshops in almost all of its manufacturing facilities.

"We use the same equipment to repair cranes as we do to manufacture them," a company spokesperson says. "In the Zweibrücken facility, we have the capabilities to repair and refurbish everything that has been produced at the Zweibrücken facility. From large CC cranes (the latest one was a 1,250 tonne CC 6800) to all types of all terrains. Typical repairs include parts that are subject to high wear and deformations from accidents. We do not, however, repair third party electronics or components here. We focus on what we are experts at, and that is with our cranes."

Avezaat has four locations in the area of the Port of Rotterdam, Netherlands and near the Port of Antwerp, Belgium. The main office and workshop, where building new boom and jib sections, both lattice and telescopic, takes place, is in Schiedam, Netherlands. The steel cutting company is located in Vlaardingen. Avezaat also has a specialised shot blasting and painting facility in Rotterdam.

Liebherr-Werk Ehingen has three repair halls in Ehingen, Oberhausen and Alt-Bork, Germany, plus others around the world. "Presently we trade in mostly three to six year old cranes," Wolfgang Beringer says, "We offer a wide range of services for used cranes, including inspections of the superstructure and undercarriage, overhaul or replacement of all modules, testing and guarantees for a Liebherr used crane."

Rush Crane Repair, based in the

Netherlands, has a conditioned welding area for welding high tensile steel and special equipment for turning, milling, broaching and renovating and straightening crane booms.

Manitowoc offers 32 Encore facilities and is currently expanding operations in EMEA and Asia. Gilberto Ferreira says, "Remanufactured parts or cranes carry the same warranty as new ones."

For assembling and testing, Köhler Kran Service, based in Germany, has its own workshops, and for inspecting welding the company uses x-ray equipment. To carry out repair work, new cylinders are fabricated and chromium plating is repaired or replaced. Inspections on all cylinder components are carried out by dismantling and inspecting the valves and assembling with new seal kits. High pressure testing and the overhauling of the locking system on Liebherr Telematik boom cylinders are also carried out. The cylinders are delivered with a guarantee, the company says.

"For slewing rings we dismantle and check all slewing ring components, grind and polish the bearing surfaces, and, if required, harden the surface. We repair worn teeth, and reassemble with new bearings and seals. We also carry out overhauling on winches, partial or full replacement of boom tubes, and can fabricate new boom sections. All steel and welding materials are of manufacturer quality," Köhler explains.

For the offshore industry, Liebherr-Werk Nenzing has specially designed tool containers (onshore and offshore versions) complete with hand

tools, such as welding and lancing equipment and hose crimping tools. There are, however, additional complications to address, as explained by a Liebherr spokesperson, "Most offshore cranes that are refurbished are at an offshore location, so the impact of weather is very high, especially in Canada and the North Sea."

Future repairs

The repair and refurbishment industry is only expected to get bigger as the years go on. As a spokesperson from Avezaat explains, part of this increase is because customers are using their equipment for a longer period of time and, as the equipment gets older, it will need more maintenance and refurbishment. Gilberto Ferreira adds, "The crane industry is still waking up to it. Depending on the market and the area of the globe, we see different types of cranes being refurbished. After this, the components and structural repairs are areas where we foresee growth in the next years."



Odebrecht's Manitowoc 4000W before and after its refurbishment



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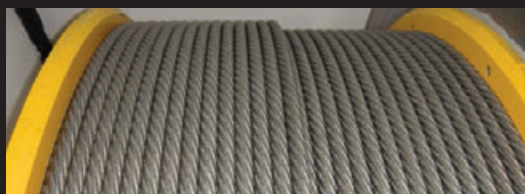


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A Kuli gantry crane has a 32 tonne lifting capacity and a lifting height of 12 m

Factory workhorse

The market for industrial lifting products, especially ones for hazardous environments, is becoming more important. LAURA HATTON looks at what new products are available for the industry

Equipment for areas such as the oil and gas sector and chemical industries needs to be robust and suitable for a range of environmental conditions. As a spokesperson from lifting equipment manufacturer Kuli Helmut Kempkes, explains, "[Industrial] cranes need to be reliable in extreme environments, such as heat or humidity. Therefore, suppliers have to provide flexible solutions and stable processes."

To be able to provide customers with products that meet specific requirements Kuli Helmut Kempkes manufactures its own motors in its German facilities. "This gives us the opportunity to make a tailor-made component," a company spokesperson explains. The company also produce the hydraulic units of platforms at the Remscheid facility. In addition, the company can fulfil requirements for corrosion protection since they have their own paint shop. "We have even developed crabs [trolleys] with reduced heights to meet requirements for a better use of room height," a spokesperson adds.

The latest product from Kuli Helmut Kempkes is a trolley with a wire rope hoist for a DG EOT Crane, which was shown at the last Bauma show. The hoist has a 120 tonne capacity and a lifting height of 15 metres. "The crane will also be equipped with an additional crab to enable two crabs to jointly turn over larger machine components," a company spokesperson said. "All movements of the

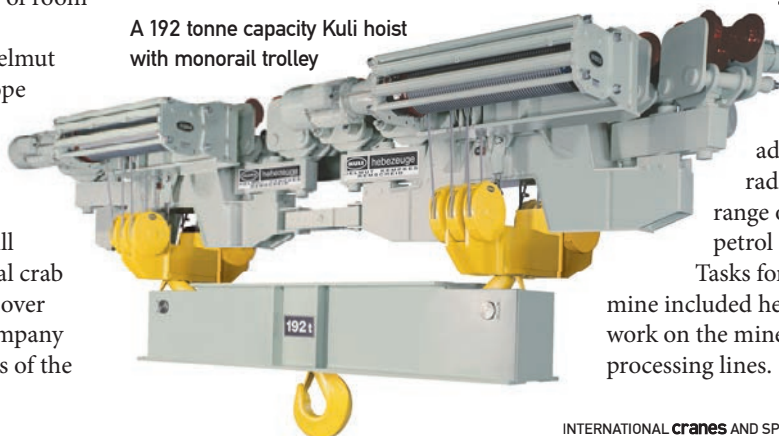
crane are frequency-controlled for better positioning and safe handling of heavy loads."

Challenging locations

The location of industrial sites is also driving change in the design of industrial lifting equipment. Products used in mines, for example, need to have easily accessible parts for inspection and maintenance purposes. Andrew Pimblett, Street Crane Company managing director, explains, "Mines are often hundreds of miles from cities so engineers need to be self-sufficient to keep plant running. This makes hoist design crucial."

"Street Crane hoists have unique features especially relevant in mining," Pimblett adds, "The open design of the Street hoist means that components can be easily accessed for inspection and service. Components can be removed and replaced without lowering the hoist to the ground for disassembly."

A 192 tonne capacity Kuli hoist with monorail trolley



The Konecranes CLX Electric chain hoist



Other important design features for working in mines is for the product to be capable of working in a dry and uneven underground environment. GGR Group, for example, recently worked at the Winsford Rock Salt Mine in Cheshire, UK, 182 m underground.

For the project GGR used a Unic URW-095 mini crane. Suitable for tight spaces, the crane has a width of 600 mm, a working radius of 8.41 m and an 8.65 m boom. Its lifting capacity is 0.995 tonnes at 3.5 m radius. The crane also has a number of outrigger configurations, making it suitable for working on uneven surfaces and slopes.

The 095 can also be fitted with a 300 kg searcher hook and 700 kg searcher hook and fly-jib. "These are ideal for lifting under soffits and overhangs," GGR adds. The crane also has radio remote control and a range of fuel options, including petrol and LPG dual.

Tasks for the mini crane at the mine included helping with maintenance work on the mine's conveyor belts and processing lines.

Customer demands

Increased hoisting speed is another demand from customers. To meet these requirements, SWF Krantechnik, a manufacturer of lightweight crane systems and electric wire rope hoists and winches, has improved hoisting speed controls for its standard wire rope hoists up to 80 tonnes and for its winches up to 250 tonnes. "We have also introduced many other improvements such as slack rope protection, sway control and shock load protection," Gerald Körner, SWF Krantechnik sales director of exports adds.

On the ASR type systems, for example, the new hoisting speed controls include fast speed with empty hook, medium speed with partial loads and safety speed with full loads. "The benefits for the user include higher productivity and less energy consumption," the manufacturer adds. In addition, the hoist drive can detect when the load is grounded and stops the lowering process. There is also a sway control feature, which brings the load to the required speed and minimises the sway of the load caused by acceleration and deceleration. A shock load protection feature for smooth lifting is also fitted.

Demag Cranes has also improved its DR-Com rope hoist product range. The hoists now have an improved FEM classification, better maintenance costs and improved handling rates, the manufacturer said. "The move up to the next-highest FEM group means that its rated service is doubled, while its maintenance requirement is cut," a spokesperson explained. The 2 tonne model is now available with FEM 4m classification. Cross-travel speed has been increased to 24 metres per minute. The Demag DR-Com rope hoists are available in three sizes, with load capacities of 2 to 10 tonnes and with a 4/1 reeving arrangement as standard.



The NOVA electric wire rope hoist from SWF Krantechnik, has a single girder trolley, sway control, 2-speed hoisting motors, low headroom and a capacity up to 12.5 tonnes



A Unic URW-095 mini crane from GGR Group works 182 metres underground at the Winsford Rock Salt Mine in Cheshire, UK

New to the market

Finland-based global manufacturer of overhead cranes and industrial hoists, Konecranes, has also introduced some new products. An addition to the Konecranes' workstation lifting systems series (WLS), for example, is the XA Aluminum Workstation Crane. Its modular design helps reduce downtime during installation, expansions, or upgrades. "It can handle loads up to two tonnes and has a light aluminium structure to help reduce rolling resistance and dead weight by 50 % so loads are handled faster and with less effort," the manufacturer adds.

Konecranes also offers electric chain hoists, including the CLX electric chain hoist, which has a new patented chain wheel to help increase service life to up to four times longer than previous models (FEM 2m 1,600 hours). "The newly developed drive system also allows for better power transmission, oil-lubricated



A Konecranes ATL Vertical Lifter in operation

gears and powerful motors with a speed ratio up to 6:1," the manufacturer adds. The hoist has a standard speed of 8 metres per minute. It is also fitted with a brake and safety clutch to prevent a load from falling if the clutch fails.

Industrial lifting equipment provider, NFC (Shenyang) Metallurgical Machinery (SMMC), also offers industrial lifting products. The company has product lines for heavy mining equipment, heavy duty overhead cranes and pot tending machines (PTM) for the primary aluminium industry. "A PTM is a complex partly automated overhead crane with a tooling centre including grab, breaker hammer, rotating cabin and hoist trolleys," a company spokesperson says, "The main hoist trolley is used to tap pure aluminium from the electrolysis cell bath. Capacity is around 32 tonnes." SMMC will open a new factory in Shenyang, China, this summer. ■

WORKING IN SENSITIVE AREAS

Having products that produce zero emissions is another design that is on the rise for products used in sensitive industrial areas. GGR Group, for example, used a F200E Galizia pick and carry crane to carry out a lift at a paper manufacturing plant.

The battery-powered Galizia mini crane was chosen because it is fume-free and quiet to operate. For the project the 20 tonne capacity F200E Galizia was used to install a paper treatment oven. The F200E has a 6 metre working radius, front wheel drive, 180 degrees hydraulic steering and a 2,295 mm wide chassis for easier navigation. In addition, the F200E has removable counterweights and radio remote control and an on-board battery charger.



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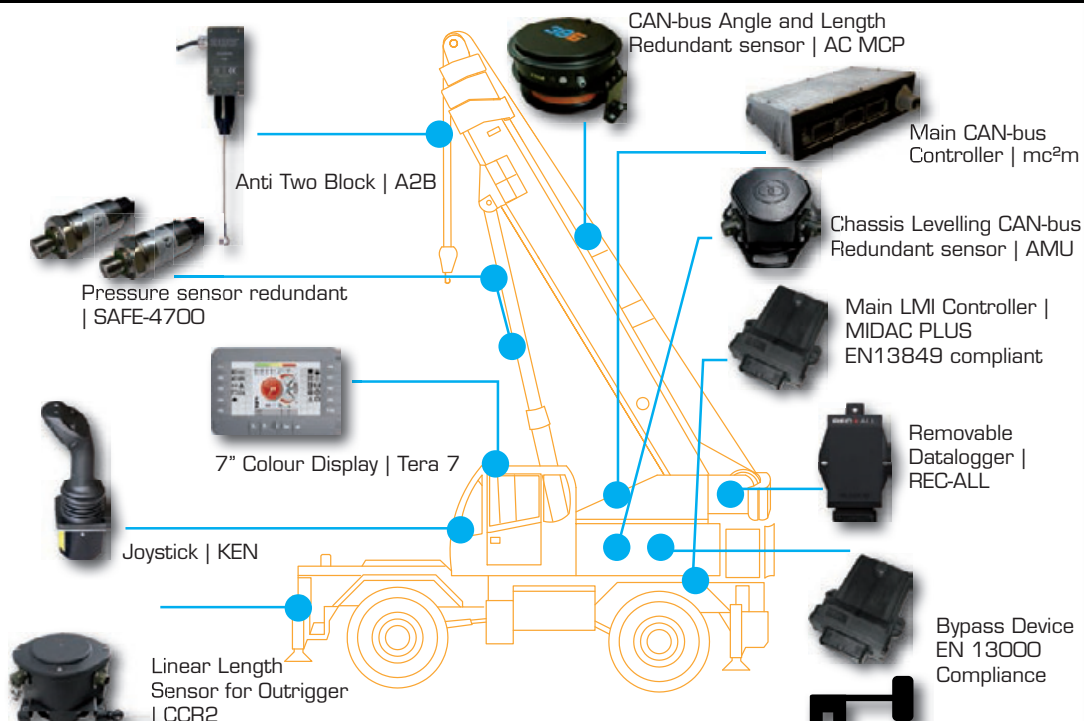
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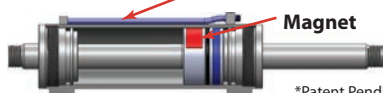
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View of the Wolff towers on the Taunus Turm (tower) in Frankfurt

Luffing jib tower cranes were chosen to overcome space restrictions on site

New landmark for Frankfurt

Five Wolffkran tower cranes have been put to work on a high rise skyscraper project in Germany. IC reports

Tower crane manufacturer and rental company Wolffkran supplied five Wolff tower cranes to assist on the construction of a new high-rise building, the Taunus Turm, on Neue Mainzer Straße in Frankfurt, Germany.

The first four cranes, two Wolff 355 B and two 180 B luffing jib towers, were delivered to construction company Züblin, the main contractor for the build. The cranes have a maximum load of 18 tonnes

or 28 tonnes when used with either 60 kW (180 B) or 75 kW (355 B) hoisting winches. Lifting speeds are up to 185 metres per minute.

The four cranes are lifting loads of up to 14 tonnes to a maximum height of 170 m. To help increase stability during these tasks, the cranes have been anchored to the building from a height of 51 m upwards, a company spokesperson said.

Challenges for the tower cranes

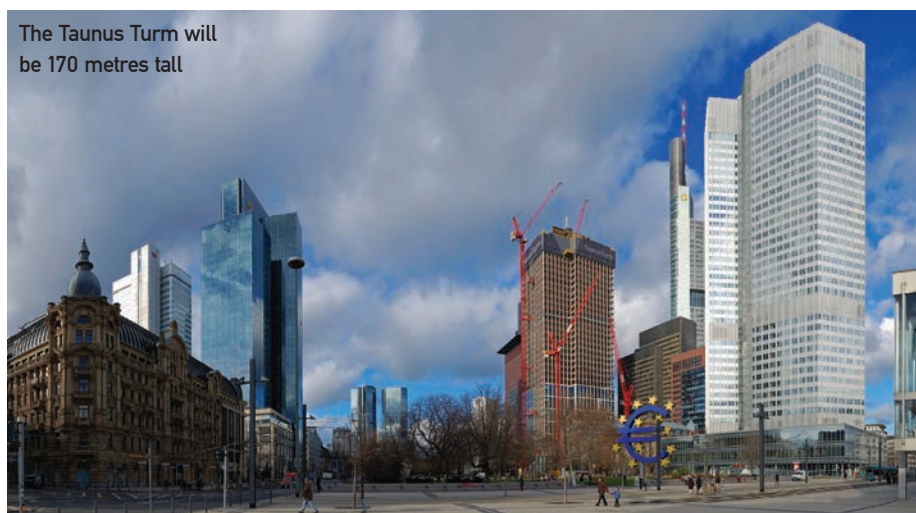
include limited work space due to the location of the site, which is in the centre of Frankfurt. Florian Rehklau, project manager at Wolffkran explains, "The cranes have an extremely limited working radius due to the adjacent high-rises and, in particular, the busy Neue Mainzer Strasse, over which the cranes are not permitted to swing."

To overcome these challenges the cranes on site are luffing jib type, which allows them to freely swing over one another and to climb independently from each other, a company spokesperson said. In addition, they have a short rear tail swing radius of 7 m.

The fifth tower crane on site is another Wolff 180 B. The crane has been rented out by construction company Ruppert App, which is contracted to build the glass façade on the Taunus Turm.

The 40 storey Taunus Turm will be 170 m tall and will accommodate offices, apartments and restaurants. It is due for completion by mid-2014.

The Taunus Turm will be 170 metres tall



Determining the Z

As shown last month a weighing can be used to determine the X and Y co-ordinates of a load. When it comes to the Z co-ordinate, however, it can be a different matter, as MARCO VAN DAAL explains

To determine an accurate weight of a load and the location of its centre of gravity (CoG) a weighing can be performed. Last month we saw how the X co-ordinate as well as the Y co-ordinate can be determined from the results of a weighing.

A logical question could be asked why the third co-ordinate, the Z co-ordinate, could not be determined in the same manner. This article (quite conceptual and theoretical in content) explains under which conditions the Z co-ordinate could be determined and why it is so difficult and often impossible.

Of equal importance is the question, why would the Z co-ordinate be so important to know? The latter question is fairly simple to answer. For every load or heavy lift that is to be transported, or shipped or lifted, the vertical CoG component (Z co-ordinate) is important as it has an effect on the equipment selection and/or its set-up. A high CoG may result in additional axles for transportation to

warrant the needed stability.

The CoG of the load also has an influence on the KG value of a barge or ship. Explanation of the KG value is beyond the scope of this article but, for nautical readers, the statement makes sense. Last but not least the CoG may have an effect on the lift plan, depending on where the lifting lugs are located and if it is a single crane lift, a tandem lift or a multiple crane lift.

$$CoG_x = \frac{\sum D_x * W}{\sum W}$$

(principle of moment)

EXAMPLE: Wa = 6 tons and Wb = 4 tons and the distance between Wa and Wb is 5 feet.

With the above formula it can be calculated that X = 2 feet and Y = 3 feet. See Figure 1.

NOTE: The units chosen are tons and feet but, in reality, can be any unit because the principle of moment formula is unit independent.

To determine the X co-ordinate of a simple object, for example, a box, the weight is measured in at least two locations, say A on one side of the CoG and B on the other side of the CoG. With the distance between A and B known, the location of the CoG can be determined.

For the determination of the Z

co-ordinate, the challenge lies in the direction of the Z co-ordinate and the direction in which gravity works. Both are in the same direction. The principle of moment cannot be applied as there is no "moment arm" or distance "D".

Thus, the conventional way to determine CoG cannot be applied to find the Z co-ordinate of the CoG. A different (unconventional) way may offer a solution.

Let us assume that the box is tilted by an angle of 5 degrees. The weight of the box remains the same – nothing is added and nothing is taken away. See Figure 2.

In this new situation, the weights of Wa' and Wb' have changed a bit as the CoG has slightly shifted. Wa' = 7 ton and Wb' = 3 ton. The distance between Wa' and Wb' is still 5 feet.

NOTE: In reality the distance between Wa' and Wb' is smaller than 5 feet. It is actually 4.98 feet due to the 5 degree rotation. Because of this rotation Wa' and Wb' moved closer together. However, for this example 5 feet demonstrated an adequate result.

Applying the above formula again, the distances X' and Y' can be determined. X' = 1.5 feet and Y' = 3.5 feet.

Let's have a look at what really happened with the box. Due to the rotation of 5 degrees, the CoG has shifted 0.5 feet closer to the left (difference between X = 2 feet and X' = 1.5 feet) and, as a result, Wa is now experiencing an increased load of 1 ton (difference between Wa = 6 ton and Wa' = 7 ton).

Figure 3 shows a graphical representation of the tilted box with the important dimensions and angles. The focus is now on the shift in CoG and how this shift can lead to the Z co-ordinate of

ABOUT THE AUTHOR



Marco van Daal has been in the heavy lift and transport industry since 1993. He started at Mammoet Transport from the Netherlands and later with Fagioli PSC from Italy, both esteemed

companies and leading authorities in the industry. His 20-year plus experience extends to five continents and more than 55 countries. It resulted in a book *The Art of Heavy Transport*, available at: www.khl.com/books/the-art-of-heavy-transport/

Van Daal has a real passion for sharing knowledge and experience – the primary reason for the seminars that he frequently holds around the world. He lives in Aruba, in the Dutch Caribbean.

FIGURE 1

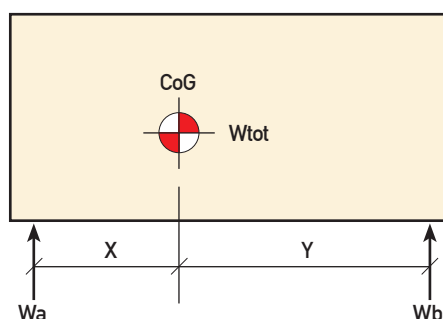
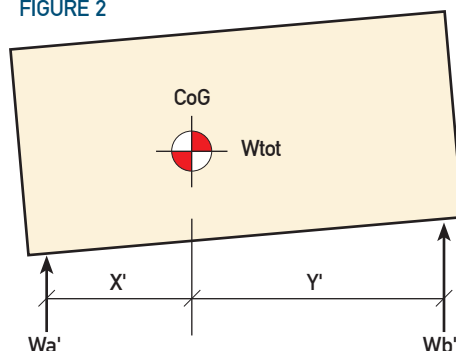


FIGURE 2



co-ordinate

this CoG. The box has been tilted by 5 degrees. This in turn means that the angle between the vertical line from the CoG and the original vertical line from the CoG (from before the box was tilted) is also 5 degrees. If the box tilts more, the angle between these two CoG line increases. If the box tilts less, the angle decreases. If the box is horizontal, thus no tilting (see Figure 1), there is no angle between these two lines as they then become one and the same line.

Calculations

With some trigonometric knowledge and the information available the height of the CoG (indicated as H_{COG} in Figure 3) can be determined. To make things easier to visualize, the CoG triangle has been extracted from Figure 3 and shown separately in Figure 4.

The top angle (alpha or α) can be recognised. This is the 5 degree tilting angle. The angle (beta or β) is a right angle and measures 90 degrees. The remaining angle, (gamma or γ) therefore, measures $(180 - 90 - 5) = 85$ degrees.

There is a trigonometric rule, called the sine rule:

$$\frac{a}{\sin \alpha} = \frac{b}{\sin \beta} = \frac{c}{\sin \gamma}$$

This sine rule can be converted to determine the CoG.

$$\frac{0.5}{\sin 5} = \frac{H_{COG}}{\sin 90}$$

If H_{COG} is isolated from the formula.

$$H_{COG} = \frac{0.5}{\sin 5} * \sin 90 = 5.736$$

The Z-co-ordinate of the CoG is 5.736, meaning that the CoG can be found at an elevation or height of 5.736 feet, measured from the base of the box.

In summary

By tilting the box a number of degrees, in this case 5 degrees, the CoG shifts an undetermined distance to one side. This shift of CoG results in a shift of load on the support points (or load cells). The loads on the support points before and after the CoG shift is known and that is why the load cells are used. With the application of trigonometry formulas the height of the CoG can be determined. It can therefore be stated that it is possible to determine the vertical component (Z co-ordinate) of the CoG.

Operational implications

Now that it is known that the Z co-ordinate is within reach and it was already known that this Z co-ordinate is important for equipment selection, lift plans and stability of transporters and

ships or barges, then why is it not common practice to obtain a verifiable field reading as opposed to "only" an engineered value?

The answer to this question lies in the practicality of the above method.

The tilting of a box is one thing and the tilting of a box by exactly 5 degrees is another. Even when the box is tilted by exactly 5 degrees and the jacks raise the box (so the load cells can do their work), it could actually be tilted back or slightly further and the 5 degrees can end up being either less or more. By default the calculation will now produce an incorrect result.

In addition, the tilting method assumes that the box is infinitely stiff, meaning that torsional rigidity has no affect on the results. This, of course, is not the case in reality. Large structures, such as the example of last month (over 250 feet long) are often designed to flex under the influence of weather or, in this case, water. Such flex can cause the structure to be tilted at different angles at various locations along its length. Again, this will produce an incorrect result.

Moreover, for a whole array of reasons, designers or manufacturers may not allow their box to be tilted.

Last but not least, the location of the CoG plays a role in the accuracy of the results. It goes without saying that a high CoG shifts more under the influence of a 5 degree tilt than a low CoG. This means that high CoG boxes will yield a better result than low CoG boxes. For low CoG boxes the shift in CoG will be so small, and consequently also the shift in X versus X' and W_a versus W_a', that the accuracy of the difference in value will start to have an influence on the accuracy of the final result.

Conclusion

The purpose of this article is to indicate that there is a method to determine the Z co-ordinate of the CoG by weighing. There are, however, implications in this process and it may not always be practical to do so.

NOTE: Every effort is made to ensure the accuracy of the contents of these articles. If you find any mistakes, a brief notification and explanation would be appreciated.

FIGURE 3

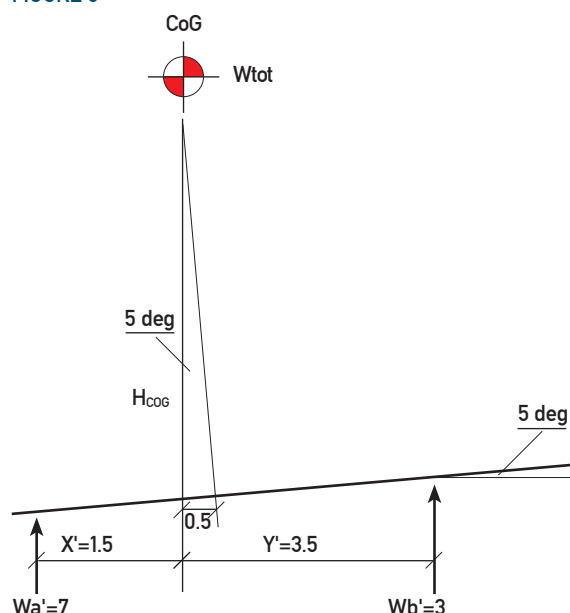
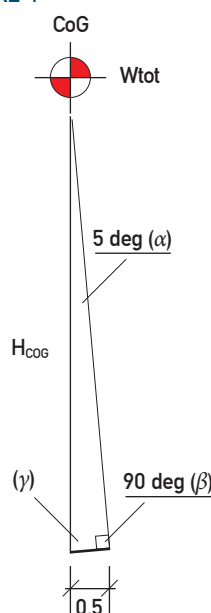


FIGURE 4



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Divided opinion

ROBERT TRAXL, head of research and development at Teufelberger, a manufacturer of wire and synthetic fibre rope, explains issues surrounding the new standard:
EN 13001-3-2 Cranes – General design – Part 3-2: Limit states and proof of competence of rope reeving components for selecting the correct rope

Although the document *CEN TS 13001-3-2* has been in circulation since 2004, the method for the selection of wire ropes has still not been fully put into practice. The determination of the theoretical life time of a rope under single layer spooling conditions is extremely difficult. Determining the lifetime of a rope for multi-layer spooling is almost impossible. This is because too many factors, such as the number of layers, number of wraps, pre-tension of the rope during installation, spooling in upper or lower layers and the lifting or lowering the load, influences

the life of a rope.

At the University of Stuttgart in Germany, tests with different rotation-resistant wire ropes in multi-layer spooling arrangements were carried out. As the results differed extremely, no results for the calculation of the theoretical life-time could be published. With rotation-resistant (non-rotating) ropes no tests at all have been carried out. This particular standard creates new combinations of working conditions on, for example, the d/d (drum diameter/rope diameter) ratio, with regard to line pull. The mode of failure of wire ropes selected according to these

new working conditions, however, is unproven.

Unsafe situation

Experiences have shown that the behaviour of wire ropes to show external wire breaks can change dramatically if small d/d ratios in combination with high line pulls are used individually or in combination. Hence, in such cases, the use of discard criteria according to *ISO 4309* may not be applicable and a dangerous situation may occur. Up until now the material in the standards relies on proven engineering practice and established criteria of wire ropes, which can easily be used by inspectors in the field. The updated *EN 13001-3.2* is based on a theoretical approach to determining the life of a wire rope used on cranes, but it is yet to be verified.

Around the world *ISO 4308* and *ISO 8087* are recognised by crane designers and end users as the standards by which the selection of wire ropes is made. Following many international meetings a revision of these

two standards in the form of *ISO 16625* was agreed. This document, *ISO/FDIS 16625* at this stage, has now been submitted to ISO Central Secretariat for formal approval. *ISO/FDIS 16625* reflects the different working conditions of the different types of cranes and, in particular, the practical experiences made by crane and wire rope manufacturers in the past years and decades. The design of a reeving system and the discard criteria of wire ropes necessarily belong together: see *ISO 4308* and *ISO 4309*, *DIN 15020 Part 1* and *DIN 15020 Part 2*. The replacement of the *ISO 4308* standard (*ISO/FDIS 16625*) maintains this relationship and no additional or competing standard is necessary.

These are the key reasons why we strongly believe that *EN 13001-3-2* doesn't represent the best available knowledge at the time. The whole European wire rope industry has raised its concerns in many inquiries but these comments have not been considered sufficiently so far. ■

“The updated EN 13001-3.2 is based on a theoretical approach to determining the life of a wire rope used on cranes, but it is yet to be verified”

ROBERT TRAXL, head of research and development wire rope at Teufelberger



45T Used Kobelco RKK 450



45T Used Kato KR 45H-V



50T Used Tadano TG 500E



50T Used XCMG QY 50K



50T Used Kato SS 500



50T Used IHI CCH 500



55T Used Grove RT 760E



55T Used Tadano GR 550EX



80T Used Grove RT 890E



100T Used Demag AC100



150T Used IHI CCH 1500



150T Used Terex Demag AC 335



160T Used Liebherr LTM 1160



160T Used Kato NK 1600-V



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COMMENT

Joel M Dandrea

A work in progress



If you're in an upper management or leadership role at your company, there's a good chance you spend a lion's share of your workday arriving early, answering emails, attending meetings and making phone calls until you finally look up and the sun is going down. Oddly enough, you can sometimes look back on such a day and feel like you did a lot, but didn't get a lot done. Sound familiar? We've certainly heard about it – this nagging difference between activity and productivity – and we know exactly what it means. Why then does it continue to happen even when we're so driven to get the job done every time we walk through the door?

Management theorist Peter Drucker makes his living distinguishing between achievements and contributions. He explains that achievements are particular items we tend to check off of our daily to-do list, whereas contributions are much larger accomplishments that inevitably define project goals and lend strength to the overall company vision. An occasional day here and there where we admit that we were likely more "busy" than we were productive isn't going to bring down the business. A smart leader, however, knows that too many of these days likely requires a reassessment of how our skill set can best be applied towards the long-term success of our company, and our career.

Drucker outlines five initiatives that any business leader can implement to get the most out of their career – from both an operational and fulfilment perspective.

■ **ONE STEP BACK – TWO STEPS FORWARD:** It is helpful to look back on your career at times as a gauge for how you plan on moving forward. What were some of your goals early on? How have you turned certain ambitions, even dreams, into accomplishments? Essentially, what got you here? And what is going to successfully get you to the next point on the horizon?

■ **BE SPECIFIC:** Hopes and dreams for the future are all well and good, as long as there is a specific plan attached to them. You can't contribute to the sustainable success of either your company or your career if you don't set realistic expectations for yourself and work towards hitting your marks. In addition, the same applies to your business. In the specialized crane, rigging and transportation industry, nothing is left to chance – too many vital details, including lives, depend on it. Say what you mean and mean what you say.

■ **LOCATE THE SNAGS:** If you are questioning your level of contribution, then what is in the way? Do you have the right resources for the project? The right staff? Is the strategy on point, or does it need a touch up? What are the snags – what will bring you closer to a worthwhile contribution in this instance, or any other instance?

■ **CREATE SPACE:** Athletes do it all the time when they feel that the current position they are in doesn't allow them, or their colleagues, to operate at the fullest potential. You can do the same with your workday. Reorganise your schedule so you can address the most important topics and conversations of the day when you know you are at your sharpest. Push distractions into a later category – away from valuable time. Work on long-term projects and ideas when you feel fresh and innovative.

■ **FIND A MENTOR:** Seriously? Yes. You are never so accomplished that you can't benefit from the advice or experience of someone who is as accomplished as you. Truth be told – you never know who you are surrounded by that could offer quality counsel from time to time. Keep your eyes open – look for people who appear to be enjoying the same career success you want for yourself. ■



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The 2014 SC&RA Annual Conference is fast approaching. More than 700 of the industry's owners, executives and top managers are expected to attend the event in Florida, USA. MIKE CHALMERS reports

Annual Conference sets itself apart for year ahead

Featuring a week of highly organized and beneficial networking events, committee meetings and education sessions, the 2014 SC&RA Annual Conference, from 22 – 26 April, will set the stage for a productive and unforgettable year. It will be at the Boca Raton Resort in Boca Raton, Florida, USA.

What distinguishes the Annual Conference is a seamless mix of executive networking opportunities, access to insight from renowned speakers and the chance to participate in an array of extracurricular events and activities. Professional and personal advancement should be at the top of the list at any SC&RA meeting. The Annual Conference allows members to blend business with pleasure in a beautiful environment for a number of great causes.

Among this year's highlights will be the ever-popular Products Fair with 90 exhibitors. Each year, the Annual Conference exhibit floor offers members and exhibitors an unmatched chance to meet in person and discuss industry products and opportunities that apply

directly to business on both sides of the exhibit table. The Exhibit Center is a hub of instrumental networking activity and stands as a clear example of SC&RA membership value.

Fundraising is also a key point of emphasis at the Annual Conference. The SC&R Foundation's Heart of the Industry Gala embodies this notion with a dinner and dance that focuses on the most important part of this industry – the people. Over the years this event has raised US\$ 461,000 for the Foundation. If the 2014 Gala is even half as successful as in years past, contributions this year will take cumulative donations to more than half a million dollars. The Gala included a live auction, casino tables, dancing and more.

Awards dinner

Although it closes out the conference, albeit in glamorous style, the Annual Awards and Recognition Dinner is a highly anticipated affair – with this year's event to host 300 attendees. This formal

evening includes an outdoor reception followed by a gourmet dinner and a programme to recognise companies, individuals and industry leaders.

Awards presented include longevity recognition for 25-year through 65-year member companies, current officers, the Environmental Award, the Golden Achievement Award, the President's Award and the Driver of the Year award. The prestigious Hauling and Rigging Job of the Year Awards buttress the end of the evening and provide an opportunity for members to recognise their fellow industry professionals for tremendous accomplishments in both innovation and application.

Not to be missed within this eminent collection of events during the week is the strongly attended President's Reception. Association President, Ron Montgomery and his wife, Jeanie, invite all attendees to join them on the Grand Lawn for an evening with friends, clients and colleagues. This reception affords members yet another memorable occasion to meet and mingle.

Additional receptions and meetings throughout the week for first-timers, international members and spouses will also provide an opportunity for attendees to gain insight into the SC&RA as a members-first organisation.

On the activities side of the conference calendar for the week is a not-to-miss trio of outdoor undertakings meant to inspire and, if nothing else, help everyone to simply unwind and get some fresh air.

The SC&RA Golf Tournament is a great opportunity to kick-start networking at the conference while playing the signature Resort Course designed by Hugh Hughes. The course is a par 71, playing 6,253 yards >

The Boca Raton Resort is one of the most luxurious in South Florida, combining old-world glamour and new-age sophistication





Carey Lohrenz knows what it takes to succeed in a high-pressure environment. As the first female F-14 Tomcat Fighter Pilot in the U.S. Navy, Carey knows all too well that inconsistent execution can generate catastrophic results

from the back tees. Water comes into play throughout most of the course with 12 acres of lakes.

For members who prefer to swing a racket, the Tennis Tournament will be held at the Boca Raton Tennis Center, which ranked fifth on Tennis Magazine's 2011 "50 Greatest Tennis Resorts in the United States" list. This casual round-robin event is open to players of all skill levels. Rackets will be available for rent.

The Fun Run/Walk rounds out the popular outdoor festivities with a 3 mile



Mark Mayfield has shared the stage with celebrities and introduced the President on live TV. His unique and comedic presentation is not one to miss, and will examine credibility, empathy, reliability, and responsiveness, and how they help you create genuine customer service

or 1.5 mile course for either runners or walkers – to benefit the National Commission for the Certification of Crane Operators (NCCCO). It is free to enter. Contributions to NCCCO are encouraged and warmly appreciated.

When conference attendees aren't enjoying gourmet meals, or running around for a good cause in the Florida sun, they'll enjoy the added pleasure of an impressive roster of conference speakers delivering presentations on a wide range of industry-specific material.

Speakers

Leading the charge on Wednesday 23 April is Doc Hendley, whose opening session, *Wine to Water*, proves that anyone with passion and determination can impact the world in a positive way. Hendley will explain how he dreamed up the concept of *Wine to Water* in 2003 while bartending and playing music in nightclubs in North Carolina, USA. Progress he has since made in his efforts to help the 1.1 billion people worldwide who lack access to clean water led to him being named one of the Top 10 CNN Heroes for 2009. Hendley's story emphasises ways in which we can all improve ourselves and our processes to help those in the world who have difficulty helping themselves.

During the breakfast sessions on Thursday and Friday, two speakers will deliver presentations on customer loyalty and business complacency. Thursday's session will be led by Mark Mayfield, as he discusses the critical aspects of customer loyalty and how the ABCs of human behaviour will help you bring customers back. In this light and lively presentation, Mark will examine credibility, empathy, reliability and responsiveness, and how they help you create genuine customer service. Mark Mayfield has merged his



corporate background as a lobbyist with his experience as a nightclub performer.

Carey Lohrenz headlines the breakfast session for Friday. She knows what it takes to win in one of the most extreme environments imaginable. As the first female F-14 Tomcat fighter pilot in the U.S. Navy, having flown missions worldwide as a combat-mission-ready United States Navy pilot, Carey is used to working in fast-moving, dynamic environments, where inconsistent execution can generate catastrophic results. The same challenges are found in business: markets change, customer needs evolve and adaptation can often fend off disaster. Carey will share her captivating experiences operating on an aircraft carrier. Through these stories she will reveal what helped her win in the cockpit at more than 1,500 mph (mach 2), and how these fundamentals translate into "winning" in the corporate environment.

These three presenters just represent the beginning of each day. An inspiring assortment of others will aim to educate and entertain attendees during special sessions throughout the conference. They include: Jim O'Conner, principle and consulting actuary at the Chicago, USA, office of Milliman; Jeff Jorge, executive partner at Global Development Partners; and Leon and Terrance Resnick, partners at Resnick Associates. An additional session, *Maximizing Your Message in the Media*, will provide practical strategies for crane, rigging and specialized transportation companies to employ when working with editors and reporters on media coverage of newsworthy events. This session will also show attendees how to make the most of social media, such as blogs, Twitter, LinkedIn, and Facebook. Speakers include: D. Ann Shiffler, editor of IC sister magazine *American Cranes & Transport*; Tim Hillegonds, Thrive Creative Services founder; and Jillian Williams, SC&RA communications and marketing co-ordinator.

For more information see:
www.scranet.org

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In 2003 Doc Hendley came up with his *Wine to Water* concept to help bring clean water to victims of genocide in Africa. His opening session presentation is a true highlight of this year's conference

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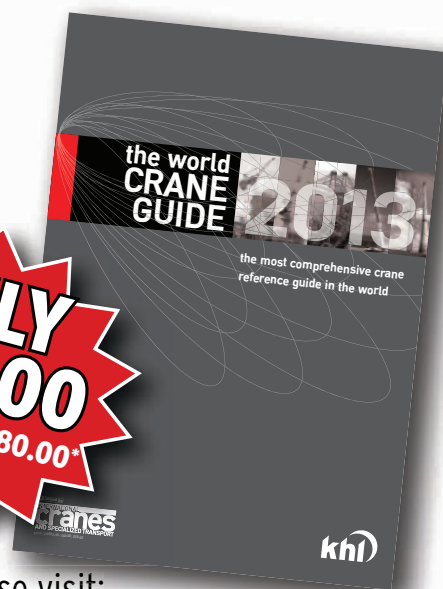
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**TON KLIJN, working group
ECOL Chairman, provides
an outline of the status
of the European Crane
Operators Licence project,
development of which is
under way in the Crane
section of ESTA**

Natural progression

Presently a crane operator needs a licence to drive his crane on the road. This is a common heavy goods vehicle (HGV) licence that is recognised by all European states, although training and examination are done locally. As a result, all European crane drivers are allowed to drive their crane on the roads of any European country.

When it comes to operating the crane in the function it was constructed for (i.e. lifting) the situation is completely different. Some European countries require crane operator training by law, while some countries have an obligation that arises from arrangements between government organisations and employers' associations and unions. Others have hardly any formal requirement.

As a result of this wide variety in training requirements (and as a result probably also in qualifications of operators), none of the European countries recognise each other's training and examination schemes for crane operators. The only exemption is Holland and Belgium, which allow operators from both sides of the border to operate in their respective countries.

Current status

The European Association of Abnormal Road Transport and Mobile Cranes (ESTA)'s crane section has decided that this is an undesirable situation. Operators

of bigger machines, who travel and work throughout Europe, sometimes have completed four or five national tests and training programmes in the different countries to be able to operate their own machines. In addition, construction crews sometimes have to work with unfamiliar operators who do not speak their language as a result of these local requirements. This does not enhance safety.

ESTA's Crane Section has formed a working group with the aim of arriving at a European Crane Operators Licence that will be recognised throughout Europe, like a HGV licence is.

Working together

The workgroup was initially formed this spring at the ESTA meeting and consists of member representatives from the UK, France, Netherlands, Norway and Belgium. At the last crane section meeting Italy, Germany, Finland and Switzerland also decided to join, which gives the workgroup a broad support from across Europe. In addition, the crane manufacturers (who all give some sort of operator training to customers) have decided to second a representative from their FEM platform to take part in the working group.

All present members of the working group have accepted the common goal of arriving at some form of mutually recognised crane operator's licence.

The work presently revolves around

three topics. The first topic is to make a comparison of the contents of the present training and examination schedules in the various member states so as to be able to assess where the differences in training levels are.

The second is to come to a commonly accepted level of training deemed necessary to be able to operate a crane, and decide on the contents of the training. Typical questions to be answered are: Should an operator have rigging skills? What categories and types of cranes should be distinguished for licensing purposes? What should be the medical fitness requirements and how should they be assessed? Should experience of an operator be registered and should he be recertified after a certain period?

Last but not least, the workgroup will have to decide on which route they will take to arrive at their goal; will we use the route of the newly instated European Professional Card, or shall we take the route via the ISO standard for certification of persons? We are still rallying up support from the industry (meaning the principal clients), to support ESTA in this task.

It is my strong belief that they are the ones who will benefit most from having a common European Crane Operators Licence, as this will eliminate a safety risk for them, and will eliminate a lot of checks and controlling procedures, presently in place on many industrial sites. ■





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ALLISON
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The new Allison facility in Slidrecht, Netherlands

Allison Transmission Holdings has opened a new facility in Slidrecht, Netherlands for parts distribution and product customisation for customers in EMEA.

The centre will also house a technical training facility for technicians and end users. Michael Headly, Allison Transmission senior vice president of global marketing, sales and service, said, "This facility expands Allison's capability to provide our OEMs with transmissions that are installation ready. We are focused on providing the best overall value to our customers, which includes services such as those available from our new facility."

■ For more information see: www.allisontransmission.com

High-vis outrigger pads

UK-based Outriggerpads, previously known as PLC Sales, has launched a new design of outrigger pads.

The pads are made out of ultra-high molecular weight polyethylene (UHMWPE) and are designed for use on high-value floors in hotels, shopping centres and similar venues.

Bill Green at Outriggerpads, said, "A lot of internal work in sensitive areas is carried out by spider lifts which require

outrigger pads. Our poly-rubber pads provide complete protection for expensive flooring such as marble or oak, without compromising the durability and stability benefits of a standard pad."

Also new from the company is the Hi Viz range of high visibility spreader plates. These have vertical load bearing capacities from 5 to 350 tonnes. They are suitable for cranes, powered access and other



Hi Viz outrigger pads from Outriggerpads

mobile plant such as concrete pumps, the manufacturer said.

■ For more information see: www.outriggerpads.co.uk

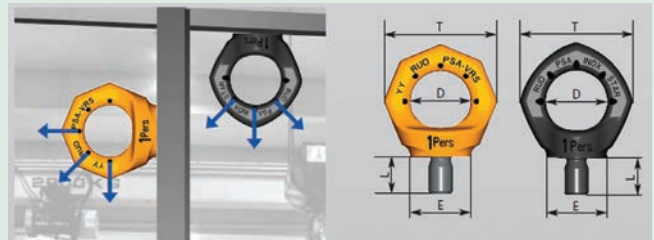
FALL PROTECTION ANCHORAGES NEW FROM RUD

RUD, a manufacturer and supplier of lifting and lashing applications, has launched a range of fall protection anchorage points.

The RUD PSA-Fall Protection Anchorage Points PSA-VRS (STAR-POINT) and PSA-INOX-STAR are designed as an anchorage point and can be used for personnel protection equipment, the manufacturer said. The protection anchorage points permanently attach to structures where fall protection is frequently required.

The INOX-STAR can be turned and adjusted to any load direction, has high resistance to corrosion and offers 50 % higher working load limit than a DIN eye bolt, the manufacturer said. The PSA STARPOINT can be used as an anchor point for personal protective equipment according to DIN EN 795, certified by the German BG BAU. It is made of high tensile quenched and tempered forged steel inspected to EN 1677-1.

■ For more information see: www.rud.co.uk



New braking resistors from Magnetek

Magnetek, a provider of control systems, has announced the availability of a new line of cULus certified dynamic braking resistors.

The resistors are designed for crane and hoist duty cycles and meet UL508A and CSA C22.2 No. 14 safety standards. The resistors work with dynamic braking units on motors controlled by IMPULSE brand variable frequency drives. They are available in grid, wire wound or edge wound resistor coils mounted in ventilated enclosures.

Jason Wellnitz, Magnetek controls product and development manager, said, "These resistors are available in all of Magnetek's standard

The new line of cULus certified dynamic braking resistors

models or may be customised. Customers can also pair our cULus certified resistors with Magnetek cULus certified control panels to provide a complete motor control solution that meets industry safety standards."

■ For more information see: www.magnetekmh.com/resistors



ABB SIMPLIFIES SAFETY ENGINEERING

ABB has launched a new addition to its PLC range of programming facilities used for the safe control solutions for control applications.

The AC500-S uses a dual processor that complies with SIL3/PL e functional safety levels. It has been tested on different types of cranes, mining hoists, automatic guided vehicles and robotics, the manufacturer said.

The system includes support for structured text (ST) programming, graphical function block diagram (FBD) and ladder diagram (LD) software. In addition, ABB has also developed a safety code analyser tool, SCA, to verify the safety programming rules or guidelines according to IEC 61508-3 under FBD, LD and ST. The tool has been certified by TÜV SÜD. The AC500-S Safety PLC has a safety processor and an option to allow users to configure functional safety PLC solutions suitable for operating in harsh conditions and extreme climates, for example, wind power applications.

ABB offers a choice of SIL3/PL e certified safety I/O modules including digital input and outputs, and an analogue current input module covering the 0-20 mA (or 4-20 mA) range.

■ For more information see: www.abb.com/plc





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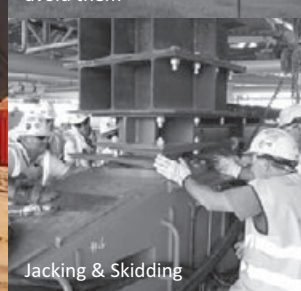
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www.scranet.org

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1 – 5 April 2014
Zaragoza, Spain
www.smopyc.com

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22 – 26 April 2014
Boca Raton, Florida, USA
www.scranet.org

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www.khl.com/events

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8 May 2014
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Verona, Italy
www.samoter.com

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24 – 26 September 2014
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www.bauma-china.com



This Picture of the Month was sent in by IC reader David Weston in the UK. It is a new Liebherr LTM 1750-9.1 wheeled mobile telescopic crane owned by crane rental company Ainscough Crane Hire, based in the UK. The 750 tonne capacity crane is pictured just after delivery to the company's yard in the north of England. It was featured in *The Crane Gang* television series shown on the UK's BBC Two channel in late 2013.

Picture of the month

PEOPLE NEWS



■ Crane manufacturer Link-Belt has made product management team

promotions in the USA. **BRIAN SMOOT** has been promoted to the position of product manager, rough terrain cranes. In his new role Smoot will be responsible for rough terrain cranes, co-ordination of current product activities and guide new product development, a company spokesperson said. Prior to his recent appointment, Smoot was a product specialist.

SCOTT KNIGHT has also been promoted to product manager of lattice and telescopic crawler cranes at Link-Belt. Knight will be responsible for product development for both product lines. Pat Collins, Link-Belt director, product marketing, said, "Scott has been deeply involved in every phase of marketing our products, new product concept to field research including voice of the customer, trade show planning and setup, day to day customer support issues and plant visits."



■ Essex Rental Corp in the USA has promoted **MICHAEL BERNARDY** to director of

purchasing and inventory. Bernardy will have responsibility in this area for Essex Crane Rental and its additional subsidiary, Coast Crane Company. Bernardy has been at Essex for more than five years. Before that he worked for Manitowoc Cranes in the parts and service department. Nick Matthews, Essex COO, said, "These promotions will ensure that our best practices are utilised by the whole organisation for the benefit of our customers and shareholders."

■ **ERIC LEPINE**, general manager at Caterpillar France SAS in Grenoble, has been appointed president of the Committee



for European Construction Equipment (CECE). The official handover took place in Paris in December 2013 during a CECE-Steering Group meeting. Lepine's main goal will be to ensure the implementation of the 10 Points listed in the CECE-CEMA Industry

Manifesto. The three main points that Lepine believes the CECE should focus on are to achieve a harmonisation of road safety requirements for non-road mobile machinery within Europe; ensure that the industry's needs are taken into account within the current revision of the engine exhaust emission legislation; and to work for the final approval of the market surveillance legislation review.

■ **SIOBHAN HITCHEN**, managing director of Rope Assemblies Ltd, has been appointed as one of four new directors of the Lifting Equipment Engineers Association (LEEAA), headquartered in the UK. Hitchen was elected onto the board alongside three other new directors, Douglas Price of Gunnebo, Richard Oldknow of The Crosby Group and James Bolger of Certs Assured. Hitchen has worked in the lifting industry since 1997, when she joined Rope Assemblies, a UK-based rope manufacturer.



■ Send picture of the month entries and all other back page-related information to *International Cranes and Specialized Transport*, KHL Group, Southfields, Southview Road, Wadhurst, East Sussex TN5 6TP, UK or by e-mail to alex.dahm@khl.com. Picture caption entries should include: the month and year taken, the place, type of crane, owner and project, plus any other relevant information.

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Grove RT760E, 60 ton, '07-'11, 110' boom, 33'-56' jib	Call
Grove RT765E, 65 ton, '11-'13, 110' boom, 33'-56' jib	Call
Tadano GR750XL-2, 75 tons, '13, 141' Boom, 58' jib	Call
Grove RT880E, 80 tons, '10-'13, 128' Boom, 33'/56' jib	Call
Grove RT890E, 90 tons, '10-'13, 142' Boom, 33'/56' jib	Call
Tadano GR1000XL-2, 100 tons, '11-'13, 154' Boom, 58' jib	Call
Grove RT9130E, 130 ton, '10-'13, 160' boom, 36'/59' jib	Call
Grove RT9150E, 150 ton, '12-13, 197' boom, 36'/59' jib	Call

CRAWLERS

Kobelco CKE2500G, 275 ton, '13, 64m + 61m luffer	Call
Demag CC2400, 440 ton, '13, SWSL, 72m+72m	Call
Demag CC2800, 660 ton, '11, SWSL, 84m+84m	Call
Demag SL3800, 715 ton, '14, SWSL, 96m + 84m	Call

ALL TERRAIN

Grove GMK5170/5225, 170/225 ton, '11 & '12, 64m boom, 18m jib	Call
Liebherr LTM1220-5.2, 275 ton, '13, 60m boom, 22m jib	Call
Grove GMK6300L, 350 ton, '12, 80m boom, 37m jib	Call



(3) 2008, Grove RT760E 60t, from 5,800 hrs, 2 hoists, aircon block and ball. Just returned from long term lease.

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TELESCOPIC AT-CRANES

Capacity	Manufacturer	Type	Year	Drive/Steering	Boom/jib (m)	Delivery
400 t	Liebherr	LTM 1400	2004	14 x 8 x 14	60 / 56 / 84	direct
300 t	Liebherr	LTM 1300	2001	12 x 8 x 12	60 / 42	February
250 t	Demag	AC 665 SL	1996	12 x 8 x 8	58 / 22 / 65	direct
200 t	Grove	GMK 5200	2002	10 x 8 x 10	60 / 36	direct
160 t	Krupp	KMK 5160	1995	10 x 8 x 10	49 / 18	direct
130 t	Liebherr	LTM 1150-5.1	2007	10 x 8 x 10	60 / 19	February
120 t	Liebherr	LTM 1120/1	2000	10 x 8 x 10	56 / 28+3	direct
120 t	Liebherr	LTM 1120/1	1999	10 x 6 x 10	56 / 28	direct
110 t	Faun	ATF 110 G-5	2008	10 x 8 x 6	52 / 16,2	direct
100 t	Grove	GMK 4100 L	2008	8 x 8 x 8	60 / 22	direct
100 t	Grove	GMK 5100	2002	10 x 8 x 10	51 / 18	direct
100 t	Grove	GMK 5100	2001	10 x 8 x 10	51 / 18	direct
80 t	Faun	ATF 80-4	2005	8 x 6 x 8	48 / 16	direct
80 t	Demag	AC 80/2	2003	8 x 8 x 8	50 / 17	direct
70 t	Faun	ATF 70-4	1999	8 x 8 x 8	40,5 / 16	direct
70 t	Liebherr	LTM 1070/1	1997	8 x 8 x 8	40 / 16	direct
70 t	Liebherr	LTM 1070/1	1997	8 x 8 x 8	40 / 16	direct
70 t	Krupp	KMK 4070	1995	8 x 6 x 8	38 / 16	direct
60 t	Liebherr	LTM 1060/2	2001	8 x 6 x 8	42 / 17	direct
60 t	Faun	ATF 60-4	2002	8 x 6 x 8	40,2 / 16	direct
60 t	Liebherr	LTM 1060/2	2000	8 x 6 x 8	42 / 17	direct
60 t	Krupp	KMK 4060	1990	8 x 8 x 8	35 / 16	direct
60 t	Grove	AT 865	1990	6 x 6 x 6	35 / 18,5	direct
60 t	Liebherr	LTM 1060	1983	8 x 8 x 8	35 / 18	direct
55 t	Grove	GMK 3055	2006	6 x 6 x 6	43 / 15	direct
55 t	Liebherr	LTC 1055-3.1 (2x)	2005	6 x 6 x 6	36 / 7,8	direct
55 t	Liebherr	LTM 1055/1	2002	6 x 6 x 6	40 / 16	direct
55 t	Krupp	KMK 4055	1989	8 x 6 x 8	35,1 / 16	direct
50 t	Grove	GMK 3050	2003	6 x 6 x 6	38 / 15	direct
50 t	Grove	GMK 3050	1998	6 x 6 x 6	38 / 9	direct
40 t	Liebherr	LTM 1040/1	1999	6 x 4 x 6	30 / 14,5	direct
40 t	Faun	RTF 40-3	1993	6 x 6 x 6	30 / 14,5	direct
40 t	Liebherr	LTM 1040-3	1991	6 x 4 x 6	30 / 8	direct
35 t	Terex-Demag	AC 35	2006	4 x 4 x 4	30,4 / 15	direct
35 t	Grove	GMK 2035	2000	4 x 4 x 4	29 / 15	direct
35 t	Grove	GMK 2035	1998	4 x 4 x 4	29 / 15	direct
35 t	Liebherr	LTM 1035-2	1988	4 x 4 x 4	26 / 8	direct
35 t	Liebherr	LTM 1030/2	2003	4 x 4 x 4	30 / 15	direct
35 t	Liebherr	LTM 1030/2	2002	4 x 4 x 4	30 / 15	direct
35 t	Liebherr	LTM 1030/2	2001	4 x 4 x 4	30 / 15	direct
30 t	PPM	ATT 335	1997	4 x 4 x 4	27,4 / 15	direct
30 t	Luna	AT 30/27	1989	4 x 4 x 4	27 / 7	direct
30 t	Luna	AT 30/27	1989	4 x 4 x 4	27	direct
25 t	Demag	AC 25/75	1998	4 x 4 x 4	25 / 13+1,5	direct

LATTICE BOOM TRUCK CRANES

180 t	Demag	TC 650	1981	10 x 6 x 6	72 / 60	direct
115 t	Linkbelt	HC 238	1981	10 x 6 x 4	42 / 19	direct

More machines, crane details and photos on: www.homar.nl

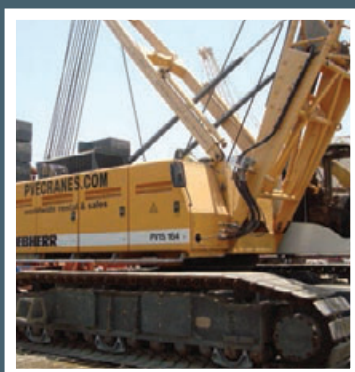
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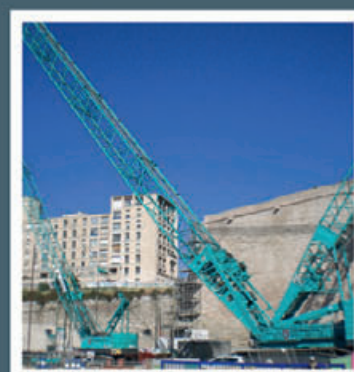
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Demag CC2800,
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PPM ATT 400-3
35 t YOM 2002



Liebherr LTM 1060-2
60 t YOM 2001



Demag AC 205
80 t YOM 1996



Liebherr LTM 1100-1
100 t YOM 1995



Demag HC 360
120 t YOM 1980



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Demag AC 100, 2009

80 t



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2 winches

70 t



Terex Demag AC 60,
2002

60 t



Liebherr LTM 1060-2,
2002

60 t



Terex TC 60L, 2007

40 t



Demag AC 40, 1999

40 t



Demag AC 40-2, 2008

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35 t, Liebherr LTM 1030-2.1, 2007

70 t, Tadano Faun ATF 70-4, 2001

40 t, Demag AC 40-1, 2008

80 t, Tadano Faun ATF 80-4, 2003

45 t, Tadano Faun ATF 45-3, 2004

150 t, Liebherr LTM 1150-6.1, 2009

55 t, Demag 3160 Challenger, 2012

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Make / Type	y. o. m.	Drive	Boom / Fly Jib
20 t Gottwald AMK 31-21	1984	4x4x4	20,50m
25 t Demag AC 75	1998	4x4x4	25,00m + 13,00m
30 t PPM ATT 335	1997	4x4x4	27,40m + 15,00m
35 t Terex AC 35	2006	4x4x4	30,40m + 15,00m
35 t Liebherr LTM 1030/2	2003	4x4x4	30,00m + 15,00m
40 t Demag AC 40-1 City	2001	6x4x6	31,20m + 13,00m + 1,20m
40 t Liebherr LTM 1040-1	1999	6x4x6	30,00m + 14,50m
55 t Liebherr LTC 1055-3.1	2005	6x6x6	36,00m + 7,80m
55 t Liebherr LTC 1055-3.1	2005	6x6x6	36,00m + 7,80m
55 t Krupp KMK 4055	1989	8x6x8	35,10m + 16,00m
55 t Grove GMK 3055	2006	6x6x6	43,00m + 15,00m + 2,00 m
60 t Faun ATF 60-3	2005	6x6x6	40,00m + 16,00m
70 t Krupp KMK 4070	1995	8x6x8	38,10m + 16,00m
70 t Faun ATF 70-4	1999	8x8x8	40,50m + 16,00m
80 t Faun ATF 80-4	2005	8x6x8	48,50m + 16,00m
100 t Grove GMK 4100 L	2008	8x8x8	60,00m + 22,00m
100 t Grove GMK 5100	2002	10x8x10	51,00m + 18,00m
110 t Tadano Faun ATF 110G-5	2008	10x8x8	52,00m + 16,20m
120 t Liebherr LTM 1120/1	2000	10x8x10	56,00m + 28,00m + 3,00m
130 t Liebherr LTM 1130-5.1	2007	10x8x10	60,00m + 19,00m
200 t Grove GMK 5200	2002	10x8x10	60,00m + 36,00m
300 t Liebherr LTM 1300/1	2000	12x8x12	60,00m + 42,00m
400 t Liebherr LTM 1400-7.1	2004	14x8x14	60,00m + 56,00m + 84,00m

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55 t Grove RT 760 E	2005	4x4x4	33,50m + 17,10m
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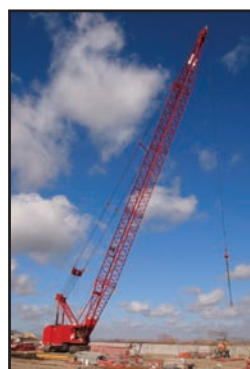


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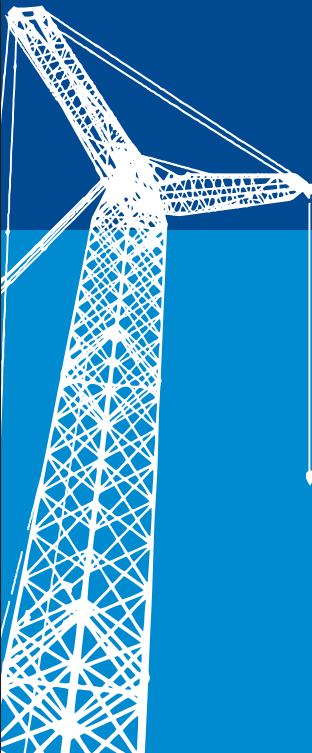
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1250 t	Terex-Demag CC6800	NEW!

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80 t	Grove RT880E	NEW!
90 t	Grove RT890E	NEW!
130 t	Grove RT9130E	NEW!
150 t	Grove RT9150E	NEW!

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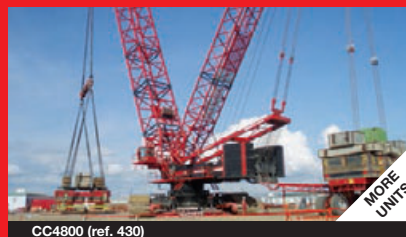
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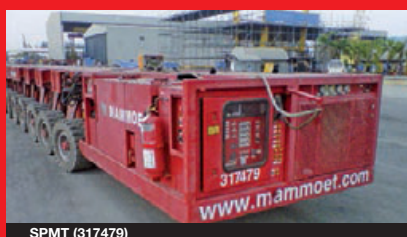


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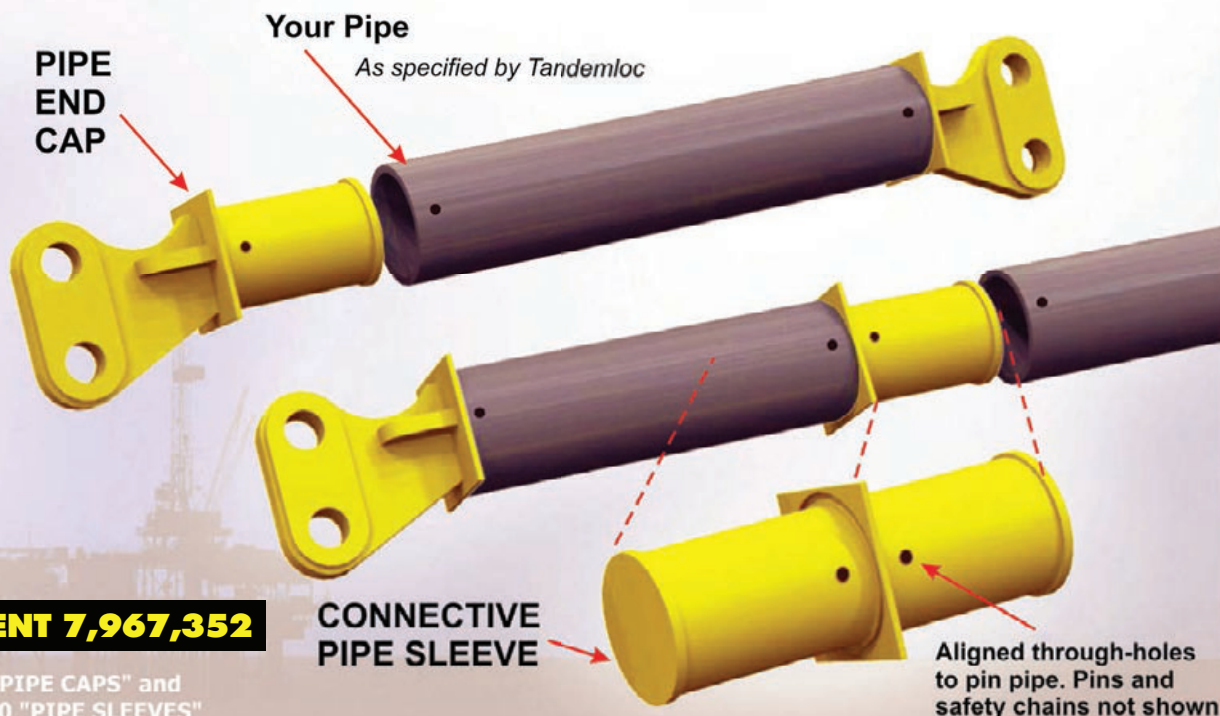
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