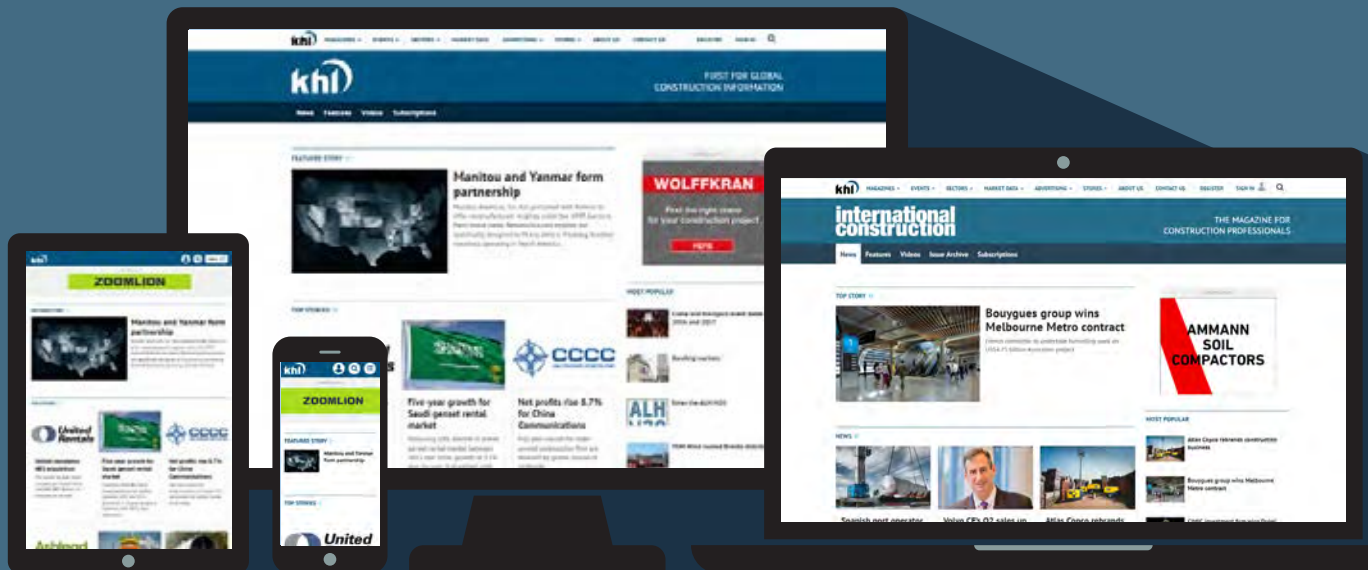


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Tower cranes



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EDITOR'S VIEW



Being able to describe the tower crane sector as a hive of activity is great to report in this month's issue, especially as it happens to be a tower crane special. New products are always interesting and the raft of new large luffers is a topic you can really get your teeth into thanks to our epic feature on page 21 written by international tower crane expert Heinz-Gert Kessel.

The buoyant market for tower cranes is conservatively forecast to continue for the next couple of years, possibly longer. The 2024 Olympics and Grand Paris metro scheme in the French capital city will be a big help with that, at least for the next few years, but who knows what is in the pipeline after that? I have confidence that something will turn up.

Relevant to the tower crane theme of this issue, and returning to our regular theme of anniversaries, is another one of note: 50 years of tower crane rental and sales company Morrow Equipment – which started in the USA in 1968. The company is always near the top of our IC Tower Index ranking of the world's largest tower crane-owning companies (see page 15).

Having brought up the subject of anniversaries again, I can't resist mentioning that Lego, the well-known polychromatic plastic construction toy, is celebrating its 60th year. The latest Lego Technic series model crane contains more than 4,000 pieces. It must be one of the Danish company's biggest sets, commensurate with its price tag. I expect some might say it is modelled on a Liebherr RT in Mammoet colours. (The set number is 42082).

On one hand I am really pleased my children are all big Lego fans as it has positive benefits in the areas of education and exercising imagination – theirs as well as mine. Yes, of course it is perfect cover for being a kid again. On the other hand it is rare to find a parent unfamiliar with just how horribly unpleasant Lego pieces are under your bare feet on the floor at home, especially first thing in the morning or last thing at night. Then there is the vacuum cleaner bag or dust bucket which regularly requires forensic dissection in an attempt to retrieve that special brick or particular figure of a Wookiee/Batman/Ninjago character. As in many other areas of human endeavour, failure to find the missing pieces is not an option.

ALEX DAHM

Editor



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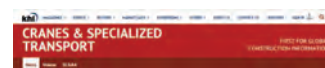


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The GT-750 / 600 / 300 redefines what truck cranes should be by offering enhanced safety and performance in all crane operations. The newly designed carrier also boasts refined performance, enabling it to withstand even the harshest running test conditions. Tadano has utilized years of development experience to craft this cutting-edge, Japanese-manufactured truck crane.

	GT-750EL / ER	GT-600EL / ER	GT-300EL / ER
Max. lifting capacity:	75 metric tons	60 metric tons	30 metric tons
Boom Length:	12.0 m - 47.0 m	11.0 m - 43.0 m	10.3 m - 34.0 m
Jib Length	9.0 m / 14.3 m	9.0 m / 14.3 m	8.5 m / 14.0 m
Max. Lifting Height	Boom: 47.3 m / Boom + Jib: 61.2 m	Boom: 43.4 m / Boom + Jib: 57.3 m	Boom: 34.0 m / Boom + Jib: 48.0 m
Max. Working Radius	Boom: 40.0 m / Boom + Jib: 48.0 m	Boom: 34.0 m / Boom + Jib: 44.0 m	Boom: 32.0 m / Boom + Jib: 40.0 m

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ON THE COVER



Spanish crane manufacturer Comansa's new 50 tonne capacity 21LC1050 flat top tower. Read more about it and a raft of other new models in the feature starting on page 21.

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HIGHLIGHTS

■ Production is under way at a new Manitowoc factory in the Indian city of Chakan. It replaces the company's old facility in Pune. Although the new factory is smaller than the old one it will have the same manufacturing capacity. The factory produces Potain MCT 85 and MC 125 tower cranes for India and surrounding markets.

■ Andrew Lees, corporate director SHE-Q at Mammoet, has been confirmed as a speaker at the Cranes and Transport Middle East (CATME) conference in Dubai. Lees, who has worked at Mammoet since 2006, will discuss safe working practices and, in particular, Mammoet's use of the Serious Injury Fatality (SIF) concept. See: www.khl-catme.com

■ Dutch crane company Hovago Cranes is preparing to increase capacity by building a new industrial complex. It has purchased a building plot of approximately 12,942 square metres at the Dordtse Kil III business park in Dordrecht. The development comprises two symmetrical office areas with industrial units over a total area of 1,440 m². Work starts in early October 2018 and should be operational from mid-May 2019.

Manitowoc sales up 26 per cent

Crane manufacturer Manitowoc reported second quarter 2018 net sales of US\$ 495.3 million versus \$ 394.6 million in the comparable period in 2017 – a 26 per cent increase, year-on-year.

The order backlog was \$ 692.1 million at the end of June, up 41 % from the same period of 2017. Operating income was \$ 24.1 million compared to \$ 11.9

million a year earlier.

"I am pleased with our continuing momentum in delivering solid financial results using the principles of The Manitowoc Way," said Barry Pennypacker, president and CEO. "We achieved our fifth consecutive quarter of year-over-year improvement in adjusted EBITDA percentage,

along with a 14 % year-over-year increase in orders. Our product revolution is real, highlighted by the outstanding customer, dealer and investor feedback from our Crane Days event held in June, 2018 at our Shady Grove [USA] manufacturing facility."

Pennypacker added that key markets were continuing to show signs of recovery.

ALE Mega Jack raises topside

Heavy lift and transportation specialist ALE used its Mega Jack system to jack up a topside a height of 14 metres in Mexico. According to ALE, because the Mega Jack had its own starter beams, the client did not need to fabricate temporary ones – saving it time and money.

ALE explained that for cost-effective load-out onto the barge,

the topside needed to be jacked up more than 10 m so it could be placed on a desk support frame (DSF). Mega Jack was the most viable option as limited site space meant they needed to avoid any disruption to other site operations, ALE said.

The topside weighed more than 13,000 tonnes and was jacked up, in stages.

After the first jacking phase, at 5.5 m high, the client was able to get forklifts underneath. At full height the DSF was installed underneath and the topside jacked down for the load-out.

ALE configured the Mega Jack with eight towers, each with a capacity of 5,200 tonnes. This provided the strength needed to lift such a heavy weight whilst evenly distributing the ground pressure.

ALE used its Mega Jack to jack up a topside a height of 14 m for cost-effective load-out



HIGHLIGHT

■ Ecuadorian heavy transport company Transportes Noroccidental has bought four Terex RT 100US rough terrain cranes. The RT 100US has a 90 tonne capacity and a five-section hydraulic boom that extends to 47 metres. The cranes will be used by Transportes Noroccidental for work in the oil sector.

RENTAL GIANT MAXIM ACQUIRES GOULD TECHNICAL SERVICES

One of the world's largest crane rental companies, Maxim Crane Works, has acquired Gould Technical Services based in the Atlanta region of the USA.

It is another step towards increasing the Maxim footprint and improving the support needed to further expand its Hoist Division, the company said.

Chris Gould will join Maxim as vice president of the Hoisting Division. "I have worked with and around the Maxim and AmQuip teams for nearly 15 years," he said. "By joining the Maxim Family, we will be able to provide our customers with a

true one-stop-shop anywhere in the USA."

Frank Bardonaro, Maxim COO, said, "Our team and customers have worked with Chris and his team for years. As we drive towards our goal of 200 hoists, we identified Chris and his team as the perfect partners. The addition of GTS to the Maxim Company of Families continues to demonstrate our ability to partner with the industry leaders around the country and in every aspect of the lifting services industry."

Financial terms of the acquisition were not disclosed, but it was funded out of available cash on hand and no debt was assumed.



HIGHLIGHT

Spanish tower crane manufacturer Linden Comansa has returned to using its original name, Comansa, as part of a brand overhaul. The change will be implemented across the company's product range and at the company's facilities. Cranes manufactured in Pamplona, Spain, previously marketed under the Linden Comansa brand, and cranes manufactured in Hangzhou, China, distributed under the name Comansa CM, will all be known from now on as Comansa. Current model names will be retained, using the letters LC or CM to indicate the product range. Model name 21LC750, for example, will show that it is part of the range previously known as Linden Comansa, while model name 21CM550 will show that it is part of the former Comansa CM range.

Palfinger launches crawler cranes

The Palfinger Crawler Crane PCC makes its debut at the IAA Commercial Vehicles exhibition in September in Hannover, Germany.

Three models, between 50 and 150 tonne-metres, will be available initially. The idea is for the crane to be able to work on sites with difficult terrain without the truck having to struggle or reach its limitations.

It is a "system" idea where the three modules; crawler, crane and counterweight, can be individually combined and operated. Commenting on the concept, Michael Hagenauer, head of the crawler crane product division at Palfinger, said, "On difficult terrain, for example, when constructing power lines or cable lifts, helicopter transport is normally the only alternative to a truck-mounted crane.

With the PCC, such jobs can be completed safely, efficiently and inexpensively."

PCC is 400 mm narrower than a standard truck and it can handle gradients up to 60 percent, Palfinger said. The crane is an articulating or knuckle boom folding type, like the cranes the Austrian manufacturer is well-known for. Confined spaces in urban areas and inside factories are other areas of potential application. A strong feature of the crane type is that it can easily and quickly be repositioned on site.

The three versions available are: PCC 57.002, with a maximum reach of 29.5 m, maximum lifting height of 32 m, and a capacity of 17.9 tonnes; the PCC 71.002, which has a reach of 31.6 m, a height of 34 m, and lifts 19.1 tonnes; and, largest of the



The Palfinger Crawler Crane type PCC 115.002 in action

three, the PCC 115.002, which has a reach of 33.3 m, lifts to a height of 35.8 m, and a capacity of 30 tonnes. Additional equipment available includes personnel baskets, vacuum lifters and pipe manipulators. The two larger models are available now, while the PCC 57.002 will be available in the second quarter of 2019.

HOUSING PUSHES UK TOWER DEMAND

UK tower crane sales and rental company Falcon Tower Crane Services said it is seeing strong demand from the UK house building sector.

"Traditionally we have focused on the smaller end of the tower crane capacity range," says Daniel Nickalls from Falcon's technical department. "However, over the past couple of years, we have supplied larger capacity cranes to this market, such as the Jaso J700 saddle jib and Jaso J380PA luffing jib. This is due to an increase in modular and off-site building."

Reflecting this are the company's latest investments: a Jaso J700 and a Jaso J380PA luffer. "Luffing jib cranes are being designed to have a short park radius as air space across the UK, specifically London, gets tighter. We have also invested heavily in hydraulic luffing jib tower cranes due to their low power requirements," he added.

Earthquake resistant tower crane

Russian crane manufacturer Giraffe launched a number of tower cranes in 2018, including a 16 tonne capacity TDK-16.350 and the rail-mounted TDK-40.1100, which lifts 40 tonnes.

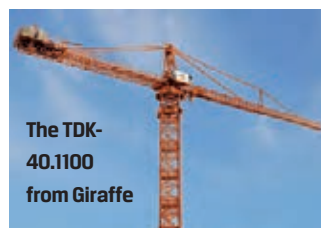
Giraffe said it will also soon produce the SMK-10.300 bottom slewing tower crane which will have a capacity of 10 tonnes and a maximum jib radius of

50 metres. Capacity at the maximum jib radius is 3 tonnes. Its maximum lifting height will be 96.6 m.

The manufacturer has also developed the TDK-8.180 – an earthquake resistant tower crane which has already been deployed in regions prone to earthquakes.

Giraffe adds it is planning to

make all its equipment suitable for use in particularly hard environmental conditions.



The TDK-40.1100 from Giraffe

UAE-based crane service provider Al Faris lifted three 72-metre-long, 130 tonne spud legs from a barge at Hamriyah in the United Arab Emirates (UAE). Al Faris chose its Demag CC 3800-1 crawler crane for the challenge.

The 650 tonne capacity class lattice boom crane was first transported 82 km from Al Faris's location in Dubai Industrial City to the job site. The journey took more than ten hours using Al Faris's lowbed trailers. The company then used a team of ten people and its own all terrain cranes to set the CC 3800-1 up.

The main boom was rigged at 108 m long and used a 36 m superlift mast. The central ballast totalled 50 tonnes, the superlift counterweight 325 tonnes, and the counterweight on the superstructure 165 tonnes. The three spud legs were lifted at a radius of 50 m, before being swung to one side, and set in place with the help of a 150 tonne crawler crane. According to manufacturer Terex the CC 3800-1 only used 68 per cent of its available rated capacity for the lifts.



HIGHLIGHT

■ The US subsidiary of German radio controls company HBC-radiomatic is celebrating its 20th anniversary. The subsidiary was incorporated in Ohio, USA, in spring 1998. However, formal celebrations have been put on hold while a major expansion project is completed at its Hebron, Kentucky, headquarters, which started in May. HBC-radiomatic's products are German-engineered and the components are made in Crailsheim, Germany, although most products sold in the USA are made at the facility in Hebron.

AMCS USED FOR SAFETY IN UAE

French company AMCS Technologies has installed its DCS 60 anti-collision and zoning system on 54 tower cranes working on the prestigious Dubai Creek Harbour construction site in Dubai, United Arab Emirates. The company said it will continue to equip any new tower cranes being erected on the job site with its system. "The cranes are working in close proximity so anti-collision and zoning systems are essential for this project," explained Radoine Bouajaj, AMCS sales director.

The DCS 60 operates in real time and in three dimensions to calculate distances between crane parts and movement speeds. Three-dimensional prohibited zones can be quickly defined directly on the screen, the company said. The DCS 60 also includes a display unit and data logger.

The system is universal and has been installed on different crane brands, including Liebherr, Manitowoc Potain, Terex, Wolffkran, Raimondi, XCMG, Zoomlion, and QTZ, AMCS added.

Tadano and Escorts joint venture

Equipment manufacturers Tadano and Escorts have formed a joint venture company to manufacture rough terrain and truck mounted cranes in India, writes Partha Pratim Basistha.

Tadano Escorts India (TEI) in Faridabad, Haryana State, will manufacture 20 and 80 tonne capacity truck cranes and rough terrain cranes for the Indian market.

Japanese crane and access equipment manufacturer Tadano will hold a 51 percent stake in TEI with the remaining 49 % held by Escorts Limited, an Indian manufacturer of cranes, road construction and agricultural machinery.

The joint venture agreement was signed in New Delhi by Nikhil Nanda, Escorts's chairman and managing director, and Koichi Tadano, president and CEO at Tadano.

Commenting during the signing ceremony, Nikhil Nanda said, "The joint venture will leverage the cost effective frugal Indian engineering excellence of Escorts and world leading Japanese technology from Tadano to cater to an expanding Indian market for heavier, safer, sophisticated, and efficient truck and rough terrain cranes. The joint venture will enable us to reinforce our leadership in construction equipment space."

Koichi Tadano said, "Tadano

India Pvt. Ltd was established in 2012 for selling and servicing our mobile cranes. However, sales have been modest. The local, manufacturing merging Tadano's superior technology, featuring, safety, quality and efficiency will provide us with a competitive edge. This will further enable us to leverage our market presence in India supported by Escorts' wide distribution network."

On the question of whether Tadano will also manufacture other crane types in India,

Koichi Tadano said, "We will be gradually looking to introduce all our range of products for the Indian market. To cater for the Indian application and market requirements, the cranes, made under the joint venture will be engineered accordingly."

Ajay Mandahr, Escorts Construction Equipment Business CEO, said, "Production under the joint venture is expected to commence at our Faridabad facility in the third quarter of this financial year.



Heavy lift and transport specialist Mammoet loaded four 140 tonne reformed-gas waste heat boilers onto the world's largest cargo plane – the Antonov AN-225 Myrna – at the Leipzig/Halle Airport in Germany.

Each 20 metre boiler was tandem lifted from a transporter using one 400 tonne and one 350 tonne wheeled mobile telescopic crane.

Other mobile cranes were also used on the job, ranging from a 400 tonne capacity Tadano Faun ATF 400 G6 to a 750 tonne capacity Liebherr LTM 1750-9.1.

The Ukrainian Antonov AN-225 can carry 250 tonnes of freight. Mammoet said the AN-225 takes off relatively infrequently, with the flight in April being the first cargo flight for the 30-year-old aircraft since it received upgrades between November 2016 and March 2018.

Jekko and Fassi collaboration

Italian mini-crane manufacturer Jekko has followed its JF545 articulated mini crawler crane with what it describes as "a



new, better performing, lighter model", the JF365.

The crane was developed in partnership with Italian loader crane manufacturer Fassi and will be unveiled at the IAA Commercial Vehicles show in Hannover, Germany, in September 2018.

Its capacity is 11.5 tonnes and Jekko said the new crane offers better performance due to

Jekko's new JF365 with Fassi crane

the absence of a counterweight. Reduced weight and dimensions make the JF365 suitable for working in job sites with restricted space, crowded town centres, in the industrial sector, and when lifting next to walls, as rotation is confined to the area of the machine. The JF365 can work either horizontally or vertically with the use of either the hook or the winch. It is also possible to use it with a manipulator for lifting sheets of glass.

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Chinese mobile market grows

In its mid-year review of the construction industry in China, UK-based specialist forecasting and market research company Off-Highway Research (OHR) reported strong growth for the first half of 2018, with the mobile crane sector doing particularly well.

OHR found, of all the product sectors analysed, the mobile cranes sector recorded the

largest year-on-year growth, of 76 per cent, in the first six months. It attributed this to strong demand for truck mounted cranes (especially in the 20 to 25 tonne class) which accounted for 94 % of total market demand.

According to Chris Sleight, OHR managing director, "We expect mobile crane sales to hit 27,500 units in 2018, up 43 % on 2017 and about three times what

they were in 2016."

OHR said demand has been driven by ongoing infrastructure projects nationwide and buoyant urban construction. Another increasingly important factor is the intensified legislation of emission controls which has accelerated the replacement of elderly fleets. For more information or to subscribe contact: mail@offhighway.co.uk

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DATES CONFIRMED FOR ITC AND WCTS CONFERENCES

The dates and locations have been confirmed for the International Tower Crane (ITC) conference and the World Crane and Transport Summit (WCTS) in 2019, as follows:

International Tower Cranes (ITC)

26 and 27 June 2019

Hotel Savoyen Vienna, Vienna, Austria

www.khl-itc.com

World Cranes and Transport Summit (WCTS)

13 and 14 November 2019

Grand Hotel Krasnapolsky Amsterdam, Netherlands
www.khl-wcts.com

If you would like to submit a speaking proposal for ITC or WCTS, please contact: Alex Dahm, editor, *International Cranes and Specialized Transport* magazine.

Tel: +44 (0)1892 786206

E-mail: alex.dahm@khl.com

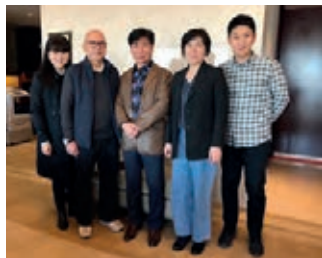
Crane World Asia adds Terex towers

Singapore-based tower crane specialist Crane World Asia has ordered 31 luffing jib tower cranes from Terex. All of them are CTL 260-18 luffing jib models.

CWA also ordered three Terex CDK 100-16 luffing jib derrick

Crane World Asia ordered 31 units of the CTL 260-18 luffing jib tower crane from Terex

cranes. In addition, it has ordered one CTL 650F-45 and nine



CTL 630B-32 luffing jib towers, which will be delivered for work in South Korea later in 2018.

Roger Poon, CWA director, commented on his choice of crane, "The thing that really sold us on the CTL 260-18 was its powerful performance characteristics, which are demonstrated by its ability to lift over three tonnes at 55 metres."



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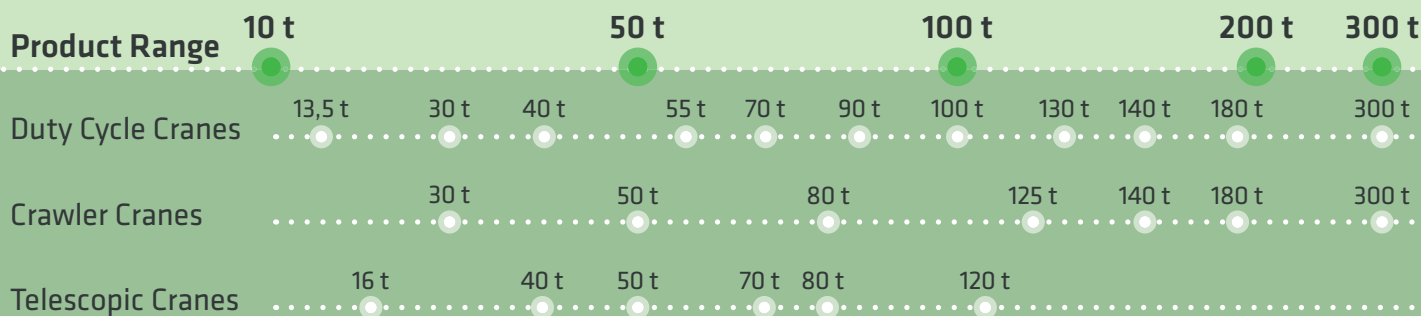


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Although some share prices have shown improvement, the general movement has been downwards, as THOMAS ALLEN reports

Rises and falls

Although there have been some mixed results over the past three weeks, there were more rises than falls in the share prices of the companies listed in the *IC Share Index* between weeks 31 and 34. This resulted in a drop in the overall index figure by 2.29 %.

The greatest decline was experience by Japanese firm Tadano, whose share price dropped by 10.26 % over the three-week period.

In its full-year 2017 annual report, the company recently announced a decrease in net sales from JPY 209.426 billion (US\$ 1.876 billion) in 2016 to JPY 179.676 billion (US\$ 1.609 billion) in 2017.

Koichi Tadano, the company's president and CEO, said, "Outside of Japan, market demand, which had peaked in 2012, continued to fall overall, with demand in Europe remaining flat and demand in North America, the Middle East, and Southeast Asia decreasing."

This was said to have been compounded by the rising value of the Japanese yen.

Tadano recently joined forces with Escorts in India to form the Tadano Escorts India joint venture. The two companies will jointly manufacture 20 and 80 tonne capacity truck cranes and rough terrain cranes for the Indian market.

Koichi Tadano said, "Tadano

India was established in 2012 for selling and servicing our mobile cranes. However, sales have been modest. The local, manufacturing merging Tadano's superior technology, featuring, safety, quality and efficiency will provide us with a competitive edge. This will further enable us to leverage our market presence in India supported by Escorts' wide distribution network."

Manitowoc saw a similarly large drop in its share price, which fell by 9.68 % between weeks 31 and 34.

On the positive side, Manitowoc announced a 14 % year-on-year growth in orders and a 103 % year-on-year increase in operating income in the second quarter of 2018.

Orders in the second quarter came to a value of US\$ 430.8 million and the company's backlog stood at US\$ 692.1 million at the end of June, representing a 41 % increase compared to the second quarter of the previous year.

Manitowoc's operating income in the second quarter of 2018 was US\$ 24.1 million, compared to US\$ 11.9 million in the corresponding period of 2017, and adjusted EBITDA (earnings before interest, taxes, depreciation and amortization) was US\$ 37.5 million in the second quarter of 2018, up from the US\$ 27.2 million recorded in the same quarter of last year.

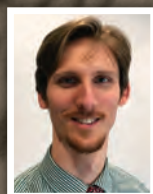
In terms of share price rises, LiuGong came out on top with a 7.12 % increase in its share price between weeks 31 and 34.

SEPTEMBER IC SHARE INDEX

STOCK	CURRENCY	PRICE AT START	PRICE AT END	PRICE CHANGE	% CHANGE	PRICE 12 MTHS AGO	12 MTH % CHANGE
IC Share Index*		56.42	55.12	-1.29	-2.29	59.71	-7.68
Legacy IC Share Index**		339.64	320.70	-18.93	-5.57	317.11	1.13
Dow Jones Industrial Average		25,326	25,680	353	1.40	21,988	16.79
FTSE 100		7,634	7,563	-71	-0.93	7,429	1.80
Nikkei 225		22,525	22,411	-114	-0.51	19,508	14.88
Hitachi Construction Machinery	YEN	3,530	3,320	-210	-5.95	3,095	7.27
Konecranes	€	32.93	33.27	0.34	1.03	36.80	-9.59
Kobe Steel	YEN	1013	941	-72	-7.11	1,308	-28.06
Liugong	CNY	11.09	11.88	0.79	7.12	9.16	29.69
Manitowoc	US\$	25.00	22.58	-2.42	-9.68	40.18	-43.80
Palfinger	€	32.15	31.60	-0.55	-1.71	38.80	-18.56
Sany Heavy Industry	CNY	8.94	8.92	-0.02	-0.22	7.77	14.80
Tadano	YEN	1,306	1,172	-134	-10.26	1,249	-6.16
Terex	US\$	41.06	38.15	-2.91	-7.09	39.06	-2.33
XCMG	CNY	4.07	4.24	0.17	4.18	3.83	10.70
Yongmao Holding	SGD	0.45	0.43	-0.02	-4.44	0.63	-31.75
Zoomlion	CNY	4.04	4.14	0.10	2.48	4.59	-9.80

*IC Share Index, 1 Jan 2011 = 100

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



ABOUT THE AUTHOR

THOMAS ALLEN is assistant editor on *ICST* sister publication *International Construction*

EXCHANGE RATES – VALUE OF US\$

CURRENCY	VALUE AT START	VALUE AT END	VALUE CHANGE	% CHANGE	VALUE 12 MTHS AGO	12 MTH % CHANGE
CNY	6.497	6.899	0.4028	6.20	6.88	0.30
€	0.8621	0.8652	0.0030	0.35	0.9355	-7.52
Yen	111.58	111.22	-0.36	-0.32	115.11	-3.38
UK£	0.7672	0.7801	0.0129	1.68	0.7974	-2.17

Period: Week 31 – 34

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Going higher



Another record year for the *IC* Tower Index ranking of the world's largest tower crane-owning companies. *ICST* reports

In continuing the trend of double digit increases, the *IC* Tower Index does not disappoint in 2018. This year's top 20 was 10.2 percent higher than the 2017 total. It was, however, only around a third of the 29 % increase in 2017 over 2016. Last year was an even bigger exception, though, as "usually" the increase is around 20 %. The 2016 figure

was a 21 % increase over 2015. The 2017 rise was largely due to the entry of Liebherr in the table for the first time.

There is no such major disruption in 2018 but the tower crane market continues to be a strong one worldwide. It is forecast to continue upward for at least another couple of years, in most if not all of the markets where it is already performing well, for example, the USA, Europe (especially France and Germany) and South East Asia.

Countdown

NFT is at the top of the table for the third year running and has further strengthened its position with a figure of 995,675 tonne-metres, 30 % up on the 765,780 of 2017. It is an impressive 25 % of the top 20 total. Looking at the top five companies, however, NFT is 42 % of the total and more than double the size of its nearest competitor, Liebherr, at number two with a fleet total of 475,010 tonne-metres, itself 4.6 % up on the 454,200 tonne-metre total from 2017, its first year in the table. It has also increased its lead over Pangyuan Machinery Rental from China in third place for the second year running.

Morrow retains its fourth position and increases the total over its 2017 figure by about 1 % or the equivalent of about ten

»



2018 RANK	2017 RANK	COMPANY	COUNTRY	NO. OF DEPOTS	NUMBER OF EMPLOYEES	SCOPE OF OPERATION	NO. OF TOWERS	LARGEST TOWER (MAKE AND MODEL)	LARGEST TOWER (TONNES)	IC TOWER INDEX 2018
1	1	NFT	UAE	20	2,000	Worldwide	2,000	Potain MD 3200	80	995,675
2	2	Liebherr Tower Crane Division	Germany	22	2100	Worldwide	1,793	Liebherr 1000 EC-H 50 Litronic	50	475,010
3	3	Shanghai Pangyuan Machinery Rental	China	2,428	3,915	National	2,131	Zoomlion D2500-120	120	447,624
4	4	Morrow Equipment	USA	23	329	Worldwide	666	Liebherr 1800 C-60	60	230,110
5	5	Tat Hong Equipment Service	China	16	3,000	National	930	Yongmao STT3330	160	200,495
6	6	Wolffkran	Switzerland	18	800	Worldwide	707	Wolff 1250 B	n/s	190,512
7	7	Matebat	France	12	227	National	990	Potain MD560	40	172,000
8	8	Maxim Crane Works	USA	52	3,500	National	350	Wolff 1250 B	60	153,802
9	9	Arcomet Group	Belgium	11	270	Worldwide	947	Terex Comedil CTT561-32	32	129,345
10	10	Neremat	Belgium	17	225	Continental	556	Potain MD689	40	117,911

2018 RANK	2017 RANK	COMPANY	COUNTRY	NO. OF DEPOTS	NUMBER OF EMPLOYEES	SCOPE OF OPERATION	NO. OF TOWERS	LARGEST TOWER (MAKE AND MODEL)	LARGEST TOWER (TONNES)	IC TOWER INDEX 2018
11	13	Bigge Crane and Rigging	USA	17	988	National	183	Comedil CTT 721-40B	40	116,677
12	11	Van der Spek	Belgium	7	200	Continental	430	Liebherr 1000 EC-H20/40 Litronic	40	113,250
13	12	Select Tower Cranes	UK	6	1,200	Worldwide	450	Comedil CTL 630	32	100,905
14	14	Wilbert TowerCranes	Germany	5	204	Worldwide	374	Wilbert WT 3000 e.tronic	200	98,450
15	15	Marr Contracting	Australia	4	35	Worldwide	58	Favelle Favco M2480D	330	75,417
16	16	Wasel	Germany	9	505	Continental	350	Liebherr 630 EC-H 40	40	71,200
17	17	Falcon Tower Crane Services	United Kingdom	3	460	Worldwide	410	Jaso J700	24	70,062
18	n/a	SanteCrane & Equipment	Singapore	6	100	Continental	181	Yongmao STT1330	64	65,166
19	18	BKL Baukran Logistics	Germany	5	200	Continental	412	Linden Comansa 21 LC 750	48	59,200
20	19	Tiong Woon	Singapore	1	60	Worldwide	110	Yongmao STT553	24	38,048.00

decent sized (300 tonne-metre) tower cranes. Tat Hong retains fifth place from last year, as does Wolffkran in sixth which has a good 6 % increase in its fleet over last year. More than double that increase at 14 % is Maxim Crane Works, again in eighth place like last year.

Arcomet from Belgium retains its ninth place and Neremat, also from Belgium, again rounds out the top ten but this year with a 3.4 % increase to 117,911 tonne-metres.

Heading two places nearer the top ten this year is Bigge in 11th with a 25 % increase in its fleet capability. The US company added 25 new tower cranes in one order for a range of different Potain units earlier in 2018.

Talking of adding cranes, the total number of tower cranes in the top 20 company fleets of 2018 is 14,028, up by 372 units, or 2.7 %, from the 13,656 in 2017. And it would be safe to say that almost all of these extra cranes that are

expanding fleets are most likely to be brand new units.

Employee numbers are also up, not something that is always the case in this very cyclical of industries. The 2018 top 20 total is 20,318 employees, up 6.7 % on the 19,041 of last year.

Another company showing a strong increase is Wilbert, still in 14th place but with a 16 % increase in its fleet capability from 85,100 to 98,450. The increase follows the involvement of a Chinese investor in the German company in 2014. Van der Spek from Belgium, UK-based Falcon Crane Hire and BKL from Germany have also expanded their fleets.

It was good to see five new entries this year, while two others were deleted from the data with old data. Of the new entries one, SanteCrane from Singapore, entered the top

20, at 18th place. The others were Espamex from Mexico at 23, Creative Lifting from the USA at 36, Compass Equipment from the USA at 38, and Open Frame from South Africa at 41.

A total of 43 entries this year beat the 2017 record of 40 so, if your company owns tower cranes, please do help us increase this further to give a better picture of the industry by completing and returning an entry form next year. Look out on www.khl.com for the announcements calling for entries. ■

IC TOWER INDEX

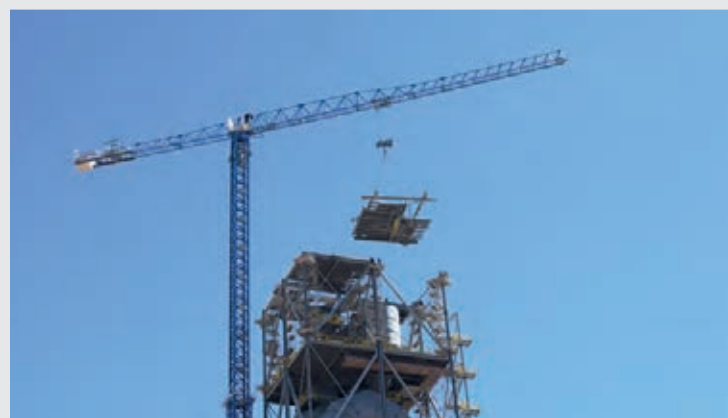
Companies are ranked by their IC Tower Index, calculated as the total maximum load moment rating, in tonne-metres, of all tower cranes in a fleet. All companies in the list, plus other prospective ones, have the opportunity to supply fleet information and other data. Where companies supply the full data the figure used is calculated by them. In cases of insolvency, acquisition or lack of information, companies are withdrawn from the table.

While we make great effort to ensure the accuracy of information provided, it cannot be guaranteed and *International Cranes and Specialized Transport* and its publisher, KHL Group, accept no liability for inaccuracies or omissions.

The IC Tower Crane Index will next be updated in the first half of 2019. If you think your company should be included please contact ICST for an application form.



Neremat's new 40 tonne Potain MD689 working for Sofral constructing the largest dome in Europe



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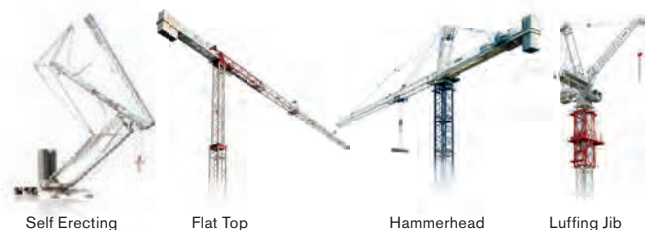
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A roundup of tower crane application stories from around the world

Liebherr tower cranes in Chile

In Chile, the Vinci-Astaldi consortium (comprising airport authority Aéroports de Paris, airport developer Vinci Airports and Italian contractor Astaldi) is using 23 Liebherr tower cranes for the construction of a new terminal at the Santiago Nueva Pudahuel International airport.

The cranes comprise 15 flat-tops and three high-tops. Liebherr Chile has already erected seven 250 EC-B 12 Litronics, four 150 EC-B 8 Litronics and one 280 EC-H 16 Litronic. Six cranes from Chilean crane dealer Maquinarias Cruz del Sur are also already in use: one 280 EC-H 12 Litronic, two 200 EC-H 10 Litronics, and three 90 EC-B cranes.

The 18 tower cranes have a jib lengths of 45 to 60 m and hook heights of 17 to 45 m; they have been working on the construction site, partly in double shifts, since the end of 2016. To date approximately 70 percent of the airport has been completed.

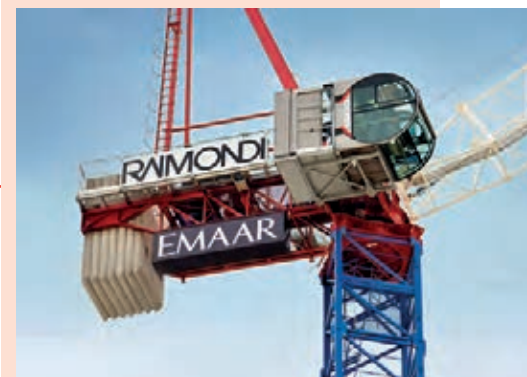
More Liebherr tower cranes will follow for



the construction of the multi-storey car parks, says Liebherr, most likely a 110 EC-B 6 and two 154 EC-H cranes.

As an additional safety measure, all cranes are equipped with an anti-collision system from the French anti-collision and zoning systems specialist AMCS Technologies. ■

RAIMONDI CRANES AT WORK IN THE MIDDLE EAST



Dar Al Adham Constructions (DAAC) has bought two new MRT111s

The construction boom in the Middle East is proving fruitful for Italian tower crane manufacturer Raimondi Cranes.

In the United Arab Emirates (UAE) construction company Dar Al Adham Constructions (DAAC) has bought two new Raimondi MRT111 flat top tower cranes to work on the Riviera residential project by Azizi Developments in Meydan, Dubai.

Also in the UAE, Turkish-headquartered international contractor Nurool Construction Company has taken delivery of five new Raimondi tower cranes to add to its existing fleet there. The order comprised two LR213s and three MRT294s.

And in Oman, construction company Al Akkad National Projects (Al Akkad) has purchased new additional tower sections for two of its Raimondi MRT111 flat top tower cranes which have been erected at a new high-profile mixed use development called the Al Khaiat Building project to meet the new development's work height requirements. ■

Potain MCH 125 lifts in Thailand

Bangkok, Thailand-based construction company Thai Obayashi is using a Potain MCH 125 luffing jib tower crane for lifting duties on the Samyan Mitrtown mixed-use development in Bangkok. According to the crane's manufacturer, Manitowoc, it is the first MCH 125 in Thailand and it has been

leased from local dealer SB Siam.

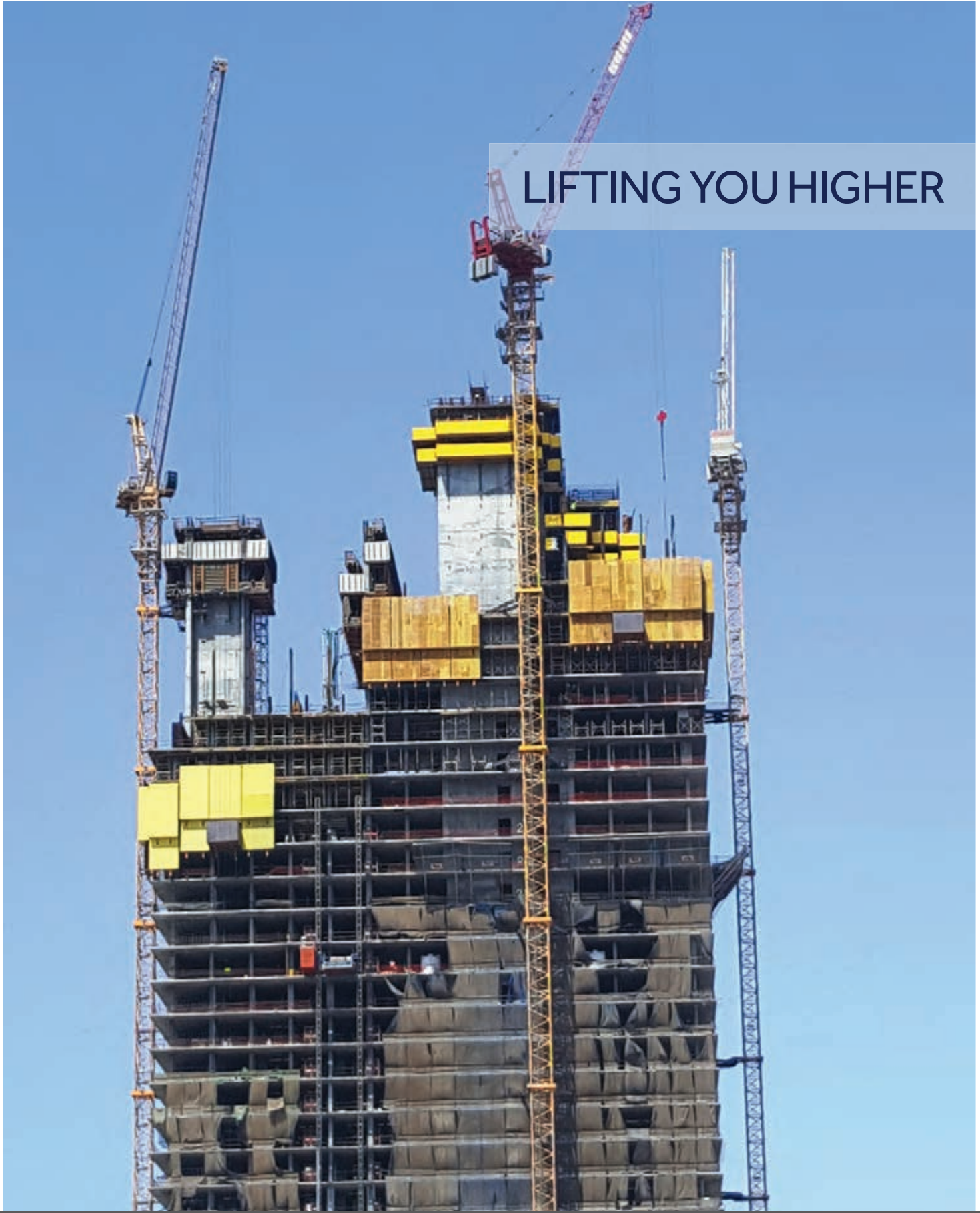
Thai Obayashi is using the crane to lift a range of materials, including three tonne concrete blocks and a five tonne transformer. It started work at a height of 51.4 metres, with a 40 m jib. The final working height for the crane will be 144.4 m when construction ends in May 2019. Capacity is eight tonnes and it lifts two tonnes at its maximum jib length of 50 m.

According to Manitowoc, the MCH 125 is Potain's first hydraulic flat top luffing jib crane. It uses what the company calls VWH hydraulic luffing technology to raise and lower the jib. This moves the jib from horizontal to 87 degrees in under two minutes. The design also eliminates the need for luffing ropes which, Manitowoc said, saves on assembly time. To further reduce on-site assembly time, Manitowoc said the crane's hydraulics are pre-connected at the factory.

"The MCH 125 is perfect for this project and Bangkok in general, as it has the technology and design to assemble quickly and operate easily on congested sites," said Julapong Janpengpen, construction manager at main contractor Thai Obayashi. ■

Samyan Mitrtown is being built by Golden Land Property Development and will cover 222,000 square metres. The development includes six floors of retail space, 31 of office space and 33 of residential. ■





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Luffing it up

New large luffing jib tower crane models are entering the high rise and general construction markets around the world.

HEINZ-GERT KESSEL reports

All over the world a growing number of midtown high-rise projects above 300 metres are under development. To shorten construction time and improve build quality, larger precast and prefabricated modules are becoming common. As these modules get larger and become more complicated their weight rises dramatically. Prefabricated pre-finished volumetric construction (PPVC) is particularly popular in Asia. Large and heavy concrete modules weighing between 40 and 60 tonnes have to be handled. This calls for space-saving, high capacity tower cranes as an alternative to conventional mobile cranes.

Industrial or infrastructure applications, for example, wind turbine construction or high bridge pylon construction, add to the demand for larger cranes with higher load moments. These tend to be for a capacity of 80 tonnes or more at short radius. Manufacturing costs, short erection time and safety reasons mean fixed ballast designs are used.

The 400 to 500 tonne-metre load moment class has been a standard in skyscraper construction for years. It is now a crowded market. Leading tower crane designers have shifted their focus to the 700 to 1,000 tonne-metre load moment class.

In this class the first European frequency converter-controlled electric alternative to diesel Faville Favco hydraulic luffers was the Wolffkran 700B, introduced at Bauma 2010. It was then followed in 2015 by the Liebherr 710HC-L.

A primary design feature of the 700B is a connecting block bringing together a lightweight folding counter jib, folding tower

An L630-50 electric and an LH800-63 diesel-hydraulic Zoomlion luffing jib crane working at a skyscraper construction site with two falls of rope



Wolffkran 700B in standard version with a mix of concrete and steel ballast giving 8.9 m tail radius



head section and triangular jib up to 70 m.

In addition to easy erection, connecting the jib above the back edge of the slewing ring allows a short minimum operating radius. Luffing and hoisting winches are on separate transport and erection modules bolted on top of the counter jib. Standard is a mix of concrete and steel ballast giving an 8.9 m tail radius. All steel ballast in the US version can reduce tail radius to 7.4 m. In the USA columns often have to be lifted off the street early in the morning before rush hour. During the day they are tailed and placed into position using an assist winch and fly jib.

On the power

Zoomlion used Wolffkran machinery deck design features on its luffing jib crane range, such as on the L630-50 and LH630-5 models, for example. These are diesel and electric

»

versions of the same model. It is common practice among Chinese manufacturers to cope with poor power supply on construction sites or to benefit from the freedom of electricity supply to a crane working at extreme heights on ultra-tall towers.

Standard tail radius is 9.4 m and 8.4 m on the short version while jib length is restricted to 60 m.

A current design trend followed by this crane is to minimise the number of falls of rope. It lifts 25 tonnes on one fall and the



As with many Chinese crane manufacturers, Yongmao offers electric versions as well as diesel-hydraulic in the same capacity class. In this case the STL1000 with 50 tonnes capacity and 25 tonne single line pull has standard steel ballast



Yongmao diesel-hydraulic STL660C with a new 46 tonne concrete ballast arrangement used as internal climbing crane in Taiwan

50 tonnes maximum with two parts of line. Capacity at the 60 m maximum radius is 9.5 tonnes. Its tower is 2.50 x 2.5 m with a 63.05 m free standing height.

Soon to be delivered from Zoomlion is the giant LH3350-120, a 120 tonne capacity internal climbing diesel hydraulic luffer. Fellow Chinese tower crane manufacturers Yongmao and Zhong Sheng Construction Machinery (ZS) are following Favelle Favco design principles with a compact split machinery deck and diesel hydraulic or electric winches. Yongmao recently delivered a 100 tonne STL2400 for the Haikou Tower 1 project in Hainan Province.

Down the capacity scale is the Yongmao STL660C, which has an economical alternative to steel ballast. Arranging the four ballast blocks around the machinery deck allows a tail radius of 8.5 m and reduces ballast height compared with the typical stack of concrete blocks on top of the machinery deck. Diesel and electric versions are available, both with one or two fall operation and a capacity of 32 or 50 tonnes.

A SLEW OF CRANES FROM SAEZ

In July 2018 Spanish tower and self-erecting crane manufacturer Saez Cranes launched the TLS 55 13 flat top. The company says it will be followed by a bigger version, the TLS 55 17, which will be launched this month (September 2018).

The cranes lift 1.35 tonnes and 1.75 tonnes respectively at 55 metres of radius and 6.0 tonnes behind. They incorporate a new electronic system comprising three inverters controlled by several safety modules and a programmable logic controller (PLC). They also incorporate a high-performance 24 kW hoist mechanism with a Lebus drum and Super-Lift mode as standard.

The difference between these two machines is in the tower sections, Saez explains. If the crane is erected on S12 sections, it is classified as a TLS 55 13; if it's erected on S17 sections, it is classified as the TLS 55 17, with a higher load chart. Users will be able to set the 55 13 and/or 55 17 load charts from the cabin display, during the erection of the crane, explains Saez.

Saez has also just launched the TLS 65 8T SR and TLS 65 10T SR flat-tops. Using a two-fall load chart, the cranes can lift 8 tonnes and 10 tonnes respectively. "The main advantage of these models is that they're faster than the standard cranes that have two falls and four falls, and the crane operator doesn't have to waste time switching between them either," comments Juan Ballester from Saez's sales department.

Luffing-jibs

In July 2018 SAEZ erected the first SL 450, its first 24 tonne conventional luffer. The crane has 93 kW hoisting and luffing mechanisms and Saez says it was launched in response to the demands of its clients, particularly in the UK and Australian markets.

Hydraulic luffing-jibs

In September 2018 Saez will launch its SLH 205 hydraulic luffer. The crane is a larger version of its SLH 190. It has a 55 metre jib length, a tip load of 2.5 tonnes, and a maximum load of



10 tonnes. All the electrical components will be the same as in the SLH 190, says Saez, in order to make aftersales service easier for its clients.

In January 2019 Saez will launch the SLH 300 hydraulic luffer. It will have a jib length of 60 metres, a tip load of 3 tonnes and a maximum load of 16 tonnes while keeping an out-of-service radius of less than 15 metres.

The crane will be available in a two-fall version (with a 75 kW hoist mechanism) and in a two/four fall version (with a 67 kW hoist mechanism). According to Ballester, "Once launched, this crane will be the biggest hydraulic luffer on the market."

Saez's erected its first 24 tonne conventional luffer, the SL 450 in July 2018

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A fly jib attachment is available for the Liebherr 710HC-L in the US market



used for anti-collision systems.

Liebherr designed the 710 HC-L so that it could be recovered by just using a Liebherr 200DR 5/10, the 10 tonne capacity derrick.

»

Both worlds

High line pull and fast hoisting speed is essential for mega skyscraper construction. Liebherr designed its 710HC-L as an electric crane to offer just that but, at the same time, to consider the environment, reduce operating costs and increase safety.

Electric cranes mean no refuelling every few days, no risk of large hydraulic oil spillage, no risk of fire from flammable substances spewed on the

Liebherr 710HC-L with its distinctive double deck machinery platform

machinery deck, and noise is at least 10 dBA lower. Electric tower cranes help comply with the emissions standards of today's inner city sites while moment and overload functions can be controlled by the LMI. Sophisticated steering systems also allow less overall power consumption and horizontal load path and integrated monitoring systems can be

NEW COMANSA FLAT TOP

Spanish tower crane manufacturer Comansa is expanding its range of high capacity tower cranes with a new flat-top model: the 21LC1050. Three versions of the new crane will be available with maximum load capacities of 25, 37.5 and 50 tonnes.

The 21LC1050 can be erected with reach of between 30 and 80 metres, with configurations available every five metres. An optional jib configuration is also available, enabling a reach of 85 metres.

Comansa says the new crane will be particularly suited to large industrial and mining applications, as well as the construction of heavy prefabricated buildings and steel structures.

The 21LC1050's slewing design is similar to its 21LC750 and 21LC660 cranes where the jib and counter jib join directly to the slewing part. This allows fast and safe assembly, says Comansa.

The 21LC1050 also shares a large part of the jib and counter jib sections with Comansa's smaller 21LC750 and 21LC660 models.

A number of different counter jib configurations are also possible, as the counter jib comprises five modular elements that enable up to six different configurations. For example, when the crane is assembled with its maximum 80 metre range, the counter jib radius is 31 m; this can be reduced to 27 m when the range is 50 m; or to 21 m when the reach is 30 metres. The counter jib radius can be reduced by another 0.9 metres in all its configurations by using steel counterweights, which are offered as an optional extra.

The 21LC1050 is erected on a new 2.5-metre-wide D36B tower section which is compatible with Comansa's other mast sections of the same width. With fixing angles the 21LC1050 can reach a freestanding height of 73.3 metres; when combined with larger width sections, this increases to over 98 m.

The 21LC1050's hoist cable is just 20 mm in diameter, enabling the drums to have a high cable capacity. The standard hoist is a

65 kW mechanism with the capacity for 720 metres of cable. It can reach speeds of up to 166 metres per minute in the 25 t and 37.5 t versions of the crane and 83 metres per minute in the 50 t version. For projects in which it is necessary to reach speeds of up to 300 metres per minute, 110 kW and 132 kW are available. In addition, drums can be issued with Lebus drums with a capacity for 1,570 metres of cable.

The crane can be switched between using a single or double trolley system, and has automatic reeving change. The single system provides improved tip loading capacity and can reach higher lifting speeds, says Comansa. With the double trolley system the crane can work with heavier loads.



It avoids the extra steps of different sizes of the recovery cranes.

Competing Favella Favco and Cornell diesel hydraulic luffers in this class meant only one or two fall operation would be accepted by high rise steel workers. Three fall operation was abandoned, partly due to a high risk of the hoist ropes twisting when operating at heights above 100 m. To help maximise rope life the design uses as few sheaves as possible between the hoisting winch and the jib tip section.

A short tail radius was required on the 710 HC-L so the hoist winch had to be placed on a second level above the centralised switchgear cabinet. Liebherr chose a 2 x 110 kw dual motor drive for 64 tonnes on two falls and 32 tonnes on one. Speed is up to 194 m/min in single line mode. The new 24 HC tower system allows 74.8 m free standing capacity on a 2.42 x 2.42 m tower with 30 m jib. All crane components, including the slewing ring support, fit into standard containers.

The all-new J780PA from Spanish manufacturer Jaso shares some design features with the Liebherr 710HC-L, for example, the machinery double deck. Its maximum jib length is 5 m longer at 70 m. The machinery deck is narrow and designed in two

pieces to ease erection and reduce rigging load weight. It has one motor in parallel to the drum and the electrical cabinets are deep in the structure and well protected from bad weather. For erection the heaviest item can be reduced to 10 tonnes.



Double deck counterjib of the all new Jaso J780PA with one hoisting motor on top positioned parallel to the drum to save space

A new 220 kW winch will be available, providing 28 tonnes on a single line pull and a 310 m/min maximum lifting speed. Its capacity of 75 tonnes makes it the strongest European-designed electric tower crane in its class in three fall mode.

Just one hoist motor is needed to reduce overall power consumption and optimise output according to requirements. In this way power consumption is minimised when the required power for speed is less, for example, when the crane is working at a low hook height at the start of a project. The load moment functions are controlled by the LMI and also electromechanically, in both cases managed by electronic safety controllers.

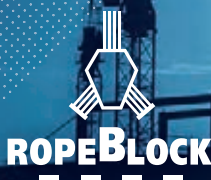
Technical development

Jaso has developed a gearbox where a constant input speed can provide multiple output speeds selected by the crane driver according to job requirements. On a one part line a slim line hook block is used. With two and three fall operation a semi-automatic change is possible. Unlike the Liebherr, the bridle and luffing rope on the Jaso are pre-installed on the counter jib to speed up erection.

The hoist rope runs inside the boom to reduce sway and to avoid relative movement

»

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between the hook and jib end when luffing. To minimise the size of the erection crane the counter jib and the A-frame are each split into two erection and transport units. Transport dimensions are optimised so a crane with 70 m jib and 37.8 m free standing tower can be shipped in 14 HC 40 foot containers and one FR40.

Maximum freestanding tower height is 86.1 m with a combined TSP20 and TSP24m tower system. Standard parking radius of the jib is 15 to 20 m which is impressive for this crane size and it can be further reduced with a parking device fixing the jib to the A-frame. Its full steel ballast means a lower centre of gravity and less wind load area. Tail radius is 9.5 m. A fly jib with a 9 tonne line pull will also be available.

In contrast to Wolff and Liebherr the Jaso crane's winch is on the machinery deck for easy erection. In addition to the 75 tonne J780PA.75, a 132 kW version with 16 tonne line pull is available.

The first J780PA.64 was put to work on the prestigious Ribbon project at Darling Harbour in Sydney, Australia. It was rigged in 2.5 days under cramped site conditions on a 52.8 m

free standing tower with a 60 m jib.

On Comansa's LCL700, a unique design feature in the 700 tonne-metre class is the placement of the hoisting winch in front of the deck. The idea is to allow a more direct path for the hoist rope to the jib tip section and to reduce the space requirement at the back of the machinery deck. From the side mounted operator cabin the driver has a direct view of the hoisting winch, giving visual additional



Top view of the wide hoisting winch platform in front of the Comansa LCL700 turntable

Installing the top section of the Jaso J780PA A-frame



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Placing the hoisting winch at the front leaves plenty of access room at the counter jib with the pre-reeved luffing rope arrangement

control. The large 200 kW winch with its motor and gearbox, however, puts a wide structure in front of the slewing ring which could require longer tie-in supports when the crane is climbing alongside a building.

In addition, when the crane is delivered without a hoist rope the erectors have to pull the rope all the way up to the drum under the jib. Temporary holders along the jib have to be used. The size of the crane means the hook block is not rigged already reeved together with the hoisting drum as happens with smaller Comansa luffers. The LCL700, however, is delivered from the factory with pre-assembled luffing reeving which reduces erection time.

An assist winch can be used to install the auxiliary ropes of the jib and the reeving pulleys without needing a truck crane. With concrete ballast tail radius is 9.5 m and with steel it is just 8.7 m. Change over from 64 tonne double fall to 32 tonne single fall



After minor modifications of the upper crane design, reducing the number of falls and replacing the boom nose with a standard jib end section for two fall operation, the Krøll K1650L becomes a versatile heavy lifter for precast concrete construction in Singapore

NEW TOWER CRANE AND FACTORY

USA-headquartered crane manufacturer Manitowoc is launching the Potain MCT 565 topless tower crane. It will be sold in all markets that currently receive cranes from the Potain factory in China.

According to Manitowoc, the MCT 565 is the largest topless crane being built at its factory in Zhanjiangang, China, and it has increased capacity options to reflect the growing scale of projects in the region. It will be officially launched at Bauma China in November 2018.

The MCT 565 will be available in three versions, offering maximum capacities of 20, 25, and 32 tonnes. All three have a maximum jib length of 80 metres. They feature a compact design that enables easy transport, claims Manitowoc, with the basic crane being able to be shipped in nine containers. The crane needs two days for erection and has one of the best load charts in its class, the company adds.

The crane has already been shown to a group of 40 potential customers from across the Asia-Pacific region.



Manitowoc has also opened a new factory in the Indian city of Chakan. The new factory replaces the company's old facility in Prune, India. Although the new factory is smaller in size, it will have the same manufacturing capacity. The factory produces Potain MCT 85 and MC 125 cranes for customers in India, as well as surrounding markets such as Sri Lanka, Bangladesh and Nepal. Production at the factory started in the first quarter of this year.

Manitowoc's new Potain factory in India

operation is done mechanically. Maximum lifting speed is 170 m/min. A freestanding tower height of 69.8 m can be achieved using the 2.5 x 2.5 m D36 tower system.

Towers for wind

After entering the wind turbine construction market, manufacturer Krøll Cranes in Denmark adapted three of its K1650L models for general construction work. They were put to work on a massive Jurong Town Corporation Logistic Hub industrial logistic

park project. Changes to the cranes included downgrading the capacity of 135 tonnes to 64 tonnes and transforming the typical jib nose for wind turbine installation into a light weight standard jib end section.

This general construction crane version delivered by local Krøll agent Buildmart Industries benefits from a high line pull of 32 tonnes and the fast rigging and easy transport devices originally developed for the wind turbine tower construction crane version. An example is the reeving of the luffing winch which remains installed during transport for the luffing winch located at the rear legs of the A-frame.

The walk-in electrical cabinet is integrated into the rear part of the machinery deck. A tail radius of 8.5 m is achieved by using 120 tonne steel counter weights and integrating the luffing winch into the A-frame. The split arrangement of the machinery deck is similar to cranes from sister company Favelle Favco. A semi-automatic fast change of the reeving between two-fall operation for 64 tonnes and one fall operation for 32 tonnes follows the design developed by Krøll for its K100L.

With respect to moderate project heights

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The general construction version of Krøll's K1650L has the fast rigging devices of the wind turbine construction model, as indicated by the luffing winch position at the back of the A-frame





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a 160 kW hoisting winch is used, offering a maximum lifting speed of 100 m/min.

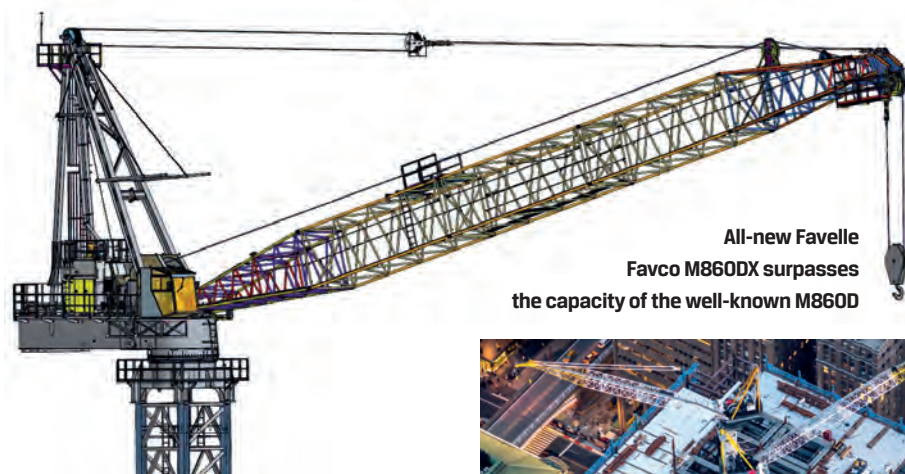
An alternative is a 300 kW unit for up to 200 m/min in single fall operation for ultra-high construction projects. The lifting capacity could also be easily adapted to 96 tonnes with three part lines and 135 tonnes on four part lines.

The 4 x 4 m M40 tower can be dismantled into pieces for easy transportation. It is somewhat lighter than the monoblock M33 tower system on the wind turbine construction version. Both construction versions will allow 110 m freestanding tower height. The cranes are working on a 40 m freestanding tower and can lift 42 tonne beams at 35 m reach.

Updates

In addition to introducing a new ergonomic cabin, Favelle Favco has updated the M860D, now called M860DX. It has a redesigned jib head section and is available with 32 tonnes capacity on one fall, 64 tonnes on two falls and 96 tonnes on three falls. Lifting capacity has been significantly improved, from 7.1 tonnes at the 70 m maximum radius to 9.5 tonnes. Maximum lifting speed is 196.6 m/min. A 12 tonne capacity fly jib is an option on the M860DX. Its maximum freestanding height on the standard tower system is 64 m. Tail radius is 9 m with steel ballast blocks for easy handling.

On the One Vanderbilt project in New York, USA, Favelle Favco M760Ds were installed very close together inside the central building core. The standard tail radius is 8.20 m but it was reduced to 7.63 m with a combination of long steel counterweight plates hanging at the rear, and one ballast block connected under



All-new Favelle Favco M860DX surpasses the capacity of the well-known M860D

the machinery deck. The crane provides 32/64 tonnes capacity in single and two fall operation. Maximum radius is 70 m and the auxiliary 12 tonne single fall hook makes it 74.37 m.

Diesel hydraulic cranes still dominate the Favelle Favco range but environmental concerns promote electric cranes. In many cities like New York a shortage of electricity requires large power pack type diesel site generators to run the cranes which is more negative in terms of pollution. While a diesel hydraulic crane might require 600 litres a week a typical generator for an equivalent electric tower crane alternative can quickly reach 2,000 litres.

Favelle Favco is responding to the trend towards electric cranes by combining Krøll drive components with its own proven machinery split deck design. Dynamic retarder systems are incorporated to cope with the reverse power problem. An example is the MK440 E with a 25 tonne main hoist and 10 tonne fly winch. In two fall condition the capacity reaches 50 tonnes. Due to the compact machinery deck with 7.15 m tail radius the walk-in electrical cabinet is part of the side mounted enlarged driver cabin unit.

Another customer-orientated design modification, developed mainly for the Chinese market, is where 5.5 tonne standard concrete block stacks replace the typical Favelle Favco compact steel ballast plates on cranes of the new F series. Largest so far is the M600F with 50/25 tonnes capacity in one



Two custom-built Favelle Favco M760Ds with reduced tail radius of 7.63 m to fit into the concrete core of the One Vanderbilt project in New York, USA

or two fall mode. Maximum boom radius is 62.6 m and the tail radius is 8.4 m.

Japanese manufacturer IHI has developed its new TS series with higher capacity models and delivered the first 27 tonne capacity JCC-TS750 units. Rope reeving has been simplified by decreasing the number of sheaves and pendant ropes. In addition, the sheaves are larger in diameter than, for example, the former JCC-V600 model. IHI says these design changes will increase the life of the wire rope by 95 %.

A new cabin with a walk-in electrical cabinet is another feature making the crane more compact. As on European-style cranes the freestanding tower height and boom length are increased. The new re-inforced compact 1.9 x 1.9 m K4 tower system gives a freestanding height of 50.35 m. It is 20 % smaller and 10 % stronger, IHI says. At the maximum radius of 52 m capacity is 7.5 tonnes. Tail radius is 8 m.

»



A cluster of all new IHI JCC-TS750s working in Tokyo, Japan



Interior view of the new IHI comfort cabin with large windows for a better view to the side and to the crane foot



An inside view of the Kitagawa JCL1000NK ergonomic crane driver cabin with a large hook camera monitor and a multi-functional touchscreen

As is typical for Japanese tower cranes the 132 kW hoisting winch is operated in constant four fall configuration and gives a maximum lifting speed of 114.7 m/min. For easy dismantling by recovery derrick the largest part of the machinery deck weighs 11 tonnes. To speed up erection the slewing ring with slewing ring support and central part of the machinery deck can be transported as one unit 3.29 m wide and 3.20 m high. A new larger TS series crane to replace the JCC-V900 in the 1,000 tonne-metre class is on the drawing board.



Also from Japan, Kitagawa sets new standards in its home market with the JCL1000NK. Thanks to the new MS25 tower system combined with the standard M23 system of the same 2.05 x 2.05 m dimensions, a free standing height of 56 m can be achieved. It is a compact crane with 6.7 m tail radius and lifts 33 tonnes. Capacity at the maximum 45 m radius still 16 tonnes.

For easy dismantling by a roof-mounted recovery derrick all components of the upper crane can be split to pieces weighing a maximum of 10 tonnes. As is typical for

To reduce erection weight the climbing frame of this Kitagawa JCL1000NK can be split into an 8.8 tonne upper part and 6.7 tonne lower

Japanese tower cranes the tower system is rigid and no counterweight is needed. The standard 145 kW hoisting winch allows a hoisting speed of 102 m/min.

Kitagawa introduced a simplified and variable hook reeving system on its small JCL105SK which it will apply to larger cranes. Changing between two and four or two to six falls can be done completely by remote control. On the drawing board are customised cranes for wind turbine construction as well as an improved version in the 1,200 tonne-metre class for high rise construction. In this case the JCL1200GK will use the same compact 2.05 x 2.05 m tower system but capacity on four falls increases to 40 tonnes up to 29 m radius while 20 tonnes can be lifted in two fall operation up to 46 m radius. A new 300 kW hoist will allow lifting speeds of 200 m/s and tail radius is kept within 8 m.

The GK (Global Kitagawa) series with improved performance, plus new transport and rigging conditions, may find a ready world market by combining the unique design features of Japanese tower cranes with the requirements of European standards. ■



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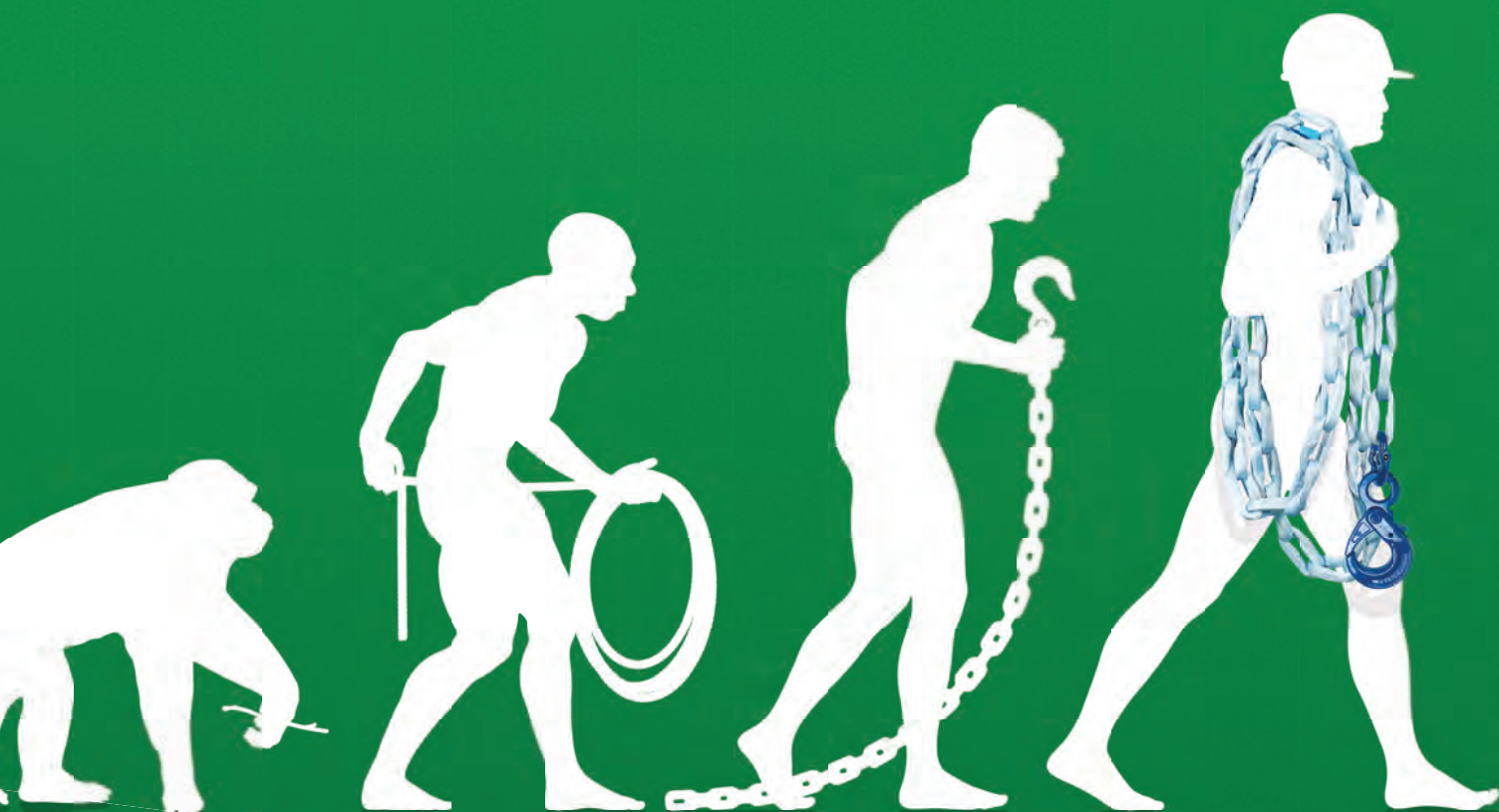
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New powered trailer system

International heavy lift and transport specialist Mammoet and specialized transport equipment manufacturer Scheuerle have collaborated on a powered trailer system designed to make heavy transport projects quicker, safer and more sustainable.

Trailer Power Assist (TPA) is manufactured by Scheuerle to Mammoet specifications. Each has a 1,000 hp diesel engine powering an hydraulic drive system. The TPA has a traction force of 400 kN which Mammoet said is more than any other solution in the powered trailer category. In addition, the TPA has no ballast requirement.

Mammoet said the advantage compared to using alternative systems is that the length and weight of transport solutions can be reduced, resulting in lower emissions and eliminating the need for multi-truck configurations. In so doing Mammoet said risks arising from the complexity of steering and braking on heavy transport jobs are greatly minimised.

TPA is based on the self propelled K25 modular platform and has four powered axle lines per six-axle trailer. It has a modular design that allows it to be coupled together to form a multiple vehicle network for even greater power.

Maximum assisted road speed on the TPA is 28 km/h, which Mammoet said is 20 times faster than a self propelled modular transporter (SPMT). Above 28 km/h the TPA



Scheuerle manufactures the TPA for Mammoet

will switch to freewheel mode, leaving the prime movers to haul the load at highway speed. TPA is designed for international operation. With the correct permissions in place it can be used on public roads across Europe, said Mammoet.

The TPA's hydraulic hub motors can be re-engaged to slow the load down hydrostatically, reducing wear and tear on brakes and helping improve control to navigate narrow or winding routes. When a load has been delivered TPA can be towed back to base in freewheel mode with engines off, to further improve efficiency.

Jan Kleijn, Mammoet COO, commented, "Trailer Power Assist is the most efficient, sustainable and cost-effective answer for the complex transport demands of large scale construction projects."

A YouTube video of the system can be viewed at: <https://bit.ly/2Pf2h8m>

HIGHLIGHTS



■ Freight forwarder **Fleet Line Shipping Services**, based in Dubai, United Arab Emirates, won a contract to move oil and gas industry equipment to Iraq. The work involves moving about 11,000 freight tonnes of oil and gas equipment and pipe from UAE to Iraq, by land and sea. Pictured is the first batch of pipe layers, each weighing 45 tonnes. They were loaded onto a roll-on, roll-off vessel and shipped from Jebel Ali in Dubai to Umm Qasir port in Iraq. Customs was cleared there and the loads were delivered to the project site by road 450 km away.



■ UK trailer and bodywork manufacturer **Tiger Trailers** said progress on its new 15608 square metre factory build has been rapid since construction started two months ago.

In the first five weeks of construction Tiger Trailers said its building contractor Bowmer & Kirkland shifted 50000 cubic metres of earth to complete the initial earth works. This cleared the way for 1,037 piles and 651 cubic metres of concrete, which has been poured to complete the foundations.

Groupe Cayon expands SPMT fleet with Cometto

French transport specialist Groupe Cayon has expanded its fleet of specialized transportation equipment with the purchase of four MSPE 48t self-propelled modules (a total of 20 axle lines) from Italian equipment manufacturer Cometto.

The order includes two six-axle MSPE 6/4 48t modules, two four-axle MSPE 4/2 48t

modules, two power packs (129 kW each), and side-by-side coupling accessories.

Groupe Cayon will use the transporters in both 10 axle line configurations and with 20 axles coupled side by side to transport wider loads. According to Cometto, the total carrying capacity of the equipment in the order is 850 tonnes.

New Cometto MSPE 48 t modules for Groupe Cayon in France



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Safety first

EVENT DETAILS

WHAT:

Cranes and Transport Middle East (CATME)

WHEN: Wednesday 10 October 2018

WHERE: Waldorf Astoria Palm Jumeirah, Dubai, UAE

ORGANISER: KHL Group & International Cranes and Specialized Transport

SUPPORTING ASSOCIATIONS: SC&RA, ESTA, PCN

CONTACT: Julia Bossie, delegate registration
Tel: +44 1892 7862204

E-mail: julia.bossie@khl.com

BOOK AT: www.khl-catme.com

Andrew Lees, corporate director of SHE-Q at Mammoet, is the latest speaker to be confirmed for Cranes and Transport Middle East (CATME), and he gives the safety component of the event a further boost with four speakers now focused on safety-related issues.

Lees, who joined Mammoet in 2006, will discuss safe working practices and, in particular, Mammoet's use of the Serious Injury Fatality (SIF) concept. This approach has been a great success and Lees will

The second Cranes and Transport Middle East (CATME) conference in Dubai on 10 October will offer expert safety advice and project reports, writes MURRAY POLLOK

explain how it was implemented globally by the company.

Another speaker, respected heavy lift and transport consultant Marco van Daal, will focus on the problems caused by poor communication on projects and highlight relevant safety practices developed in the USA by NASA for its space programme.

"Non-communication or lack of communication leaves room for interpretation. That is deadly in our industry", said van Daal, founder and owner of The Works International, who is speaking at CATME for the second time. "It can cost you dearly in terms of money as well as lives."

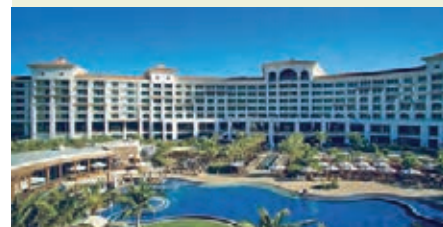
Van Daal will highlight strategies used in the airline and medical sectors that have been learned from NASA. "This method is so easy and simple to implement", said van Daal, "If we as an industry would implement this method, the number of mishaps would greatly reduce."

NEW VENUE

The Waldorf Astoria Dubai Palm Jumeirah is the new host hotel for CATME.

Centrally located and just 35 minutes from Dubai International Airport, the Waldorf Astoria is a high-quality conference venue and beach resort on the iconic Palm Jumeirah.

The hotel will provide an upgraded venue for the one-day event, with improved conference facilities, much easier parking for delegates, and a relaxed environment for networking.



»

CATME PROGRAMME

9.00 – 10.15

REGISTRATION

10.15 – 10.20

WELCOME

10.20 – 10.45

Aaron Chehab, chief commercial officer, KBW Investments



Middle East construction markets: an overview

10.45 – 11.10

John Woodward, owner, C&D Demolition Consultants

Crisis response: preparing your company in advance

11.10 – 11.40

MORNING COFFEE

11.40 – 12.10

Andy Lees, corporate director SHE-Q, Mammoet

Spot SIF before it spots you

12.10 – 12.35

Dr Shan Senthil, marketing manager, Integrated Logistics Company, Kuwait

Shagaya Wind Farm Project, Kuwait: transportation and erection of wind turbines

12.35-13.45

LUNCH

13.45 – 14.15

Marco van Daal, owner and founder, The Works International

Communication is key to great performance



14.15 – 14.40

Speaker to be confirmed, Al Naboodah Group

The use of telescopic crawler cranes on a major project

14.40 – 15.05

Nagham Al Zahlawi, strategy and marketing manager, NFT and Nawar Al Zahlawi, business development manager, NFT.

Topic to be confirmed

15.05 – 15.35

AFTERNOON COFFEE

15.35 – 16.00

Thorsten Hesselbein, sales director, Liebherr Tower Cranes, Germany

What really matters in tower crane safety

16.00 – 16.25

Edward Talbot, general manager – Middle East, ALE
Project report

16.25 – 16.30

CONCLUDING REMARKS

16.30 – 18.00

NETWORKING RECEPTION



Delegates at the first CATME conference in December 2016

Safe towers

The subject of safe use of tower cranes will be covered by Thorsten Hesselbein, sales director, Liebherr Tower Cranes, who is himself a qualified crane inspector. He will argue that tower crane operators and signal people should be trained together as a team. "At the last CATME [in 2016] there was a presentation about lift plans being required for every mobile crane lift. You cannot do that for tower cranes – if you did there would be no work done and a mountain of paperwork."

"The solution for tower cranes is training: you have to look into procedures to train signal persons and crane operators together. The industry does training, but not with signalmen and operators together."

Hesselbein's presentation - What really matters in tower crane safety - will consider other safety issues, for example, crane loadings on non-standard crane setups, and the need for proper crane inspections, which is a subject close to his heart; "I have encountered people doing an inspection without climbing the crane," he said.

Crisis planning

Of course, cranes and specialized transport can be a high-risk business, and if things do go wrong, you have to be prepared. Health

and safety consultant John Woodward, founder of C&D Demolition Consultants, will use his presentation to urge companies to develop a crisis plan.

"My presentation will provide food for thought about what to do in the early days after such an event", he said. "Business reputations can be ruined in seconds when such an event occurs and the media – both professional and social – start to become involved."

Other topics at the conference will include regional construction forecasts, reports on a major wind turbine project in Kuwait and a remarkable specialized transport project in the region.

At a time when construction activity is forecast to increase significantly in the region, according to the recent GCC Construction Outlook 2018 report by Middle East Economic Digest (MEED), CATME will hear from experienced construction executive Aaron Chehab about prospects and hot spots in the Middle East. Chehab is chief commercial officer at Dubai-based KBW Investments – owner of Raimondi Cranes – and a former business development manager at contractor Kier Group.

Investment in wind power is also growing, with 12 GW of capacity forecast to be added in

the Middle East by 2027. So the timing could not be better for Dr Shan Senthil, marketing manager at Integrated Logistics Co., to share the company's experience of working on a major wind energy project in Kuwait.

The company transported and installed five wind turbines on the Shagaya Energy Park. Dr Senthil will use his CATME presentation to describe the project in great detail, sharing best practices in wind turbine erection.

The aim is for CATME to give a rounded picture, incorporating safety, lifting and transport projects, market forecasts and crane technology. We hope to see you there. ■

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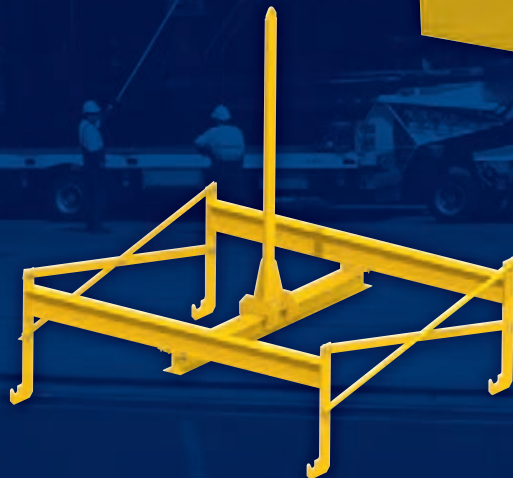
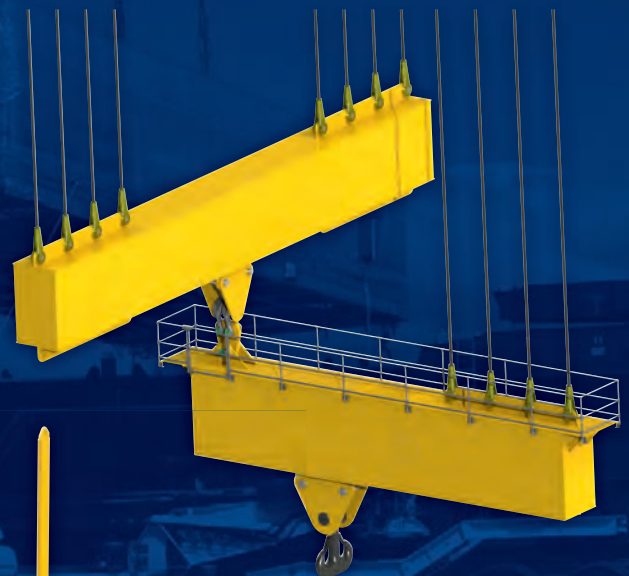


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Bound to be big

The properties of synthetic rope are making it an appealing alternative to wire rope argues DSM Dyneema, the creator of Dyneema fibre used in rope. CHRISTIAN SHELTON investigates

As the lifting and heavy transportation markets continue to evolve, operations are becoming more complex with increasing demands on operators and equipment. Cost-efficiency is also a driver, with growing pressure to deliver results faster and cheaper. Managing these conflicting demands is a major challenge for an industry faced with an ageing workforce and increasing safety regulations.

Addressing these issues requires significant changes in the way the lifting industry operates, says DSM Dyneema, a global supplier of Dyneema – which it proclaims as the world's strongest fibre. Synthetic lifting equipment made from Dyneema is up to eight times lighter than steel for the same strength, DSM says, meaning it can significantly reduce the equipment needed and the effort required by crews on a



The use of synthetic fibre ropes helps speed up operations and reduces the risk of injury, says DSM

job site. In some cases, synthetic ropes and slings can even be handled by a single person throughout an entire shift, it claims. Another benefit of its light weight is that by reducing the weight of ropes and slings, cranes can lift significantly heavier loads, says DSM.

Additional properties of Dyneema are that

it floats on water, it doesn't rust, and it doesn't kink or bird cage like steel does.

Synthetic solutions

DSM says Dyneema has already proven its performance, reliability and lifetime in the maritime and offshore industries while, onshore, slings made with Dyneema have also proven themselves in a range of applications. Now synthetic fibre link chains are also starting to enter the market, the company says. Nico Janssen, industry manager at Dyneema, elaborates, "There is a growing momentum to adopt and implement synthetic solutions. Together with the lifting industry, DSM is committed to accelerating this change by providing a stronger and lighter solution that increases safety and drives efficiency."

DSM points to a number of examples that illustrate its point: For example, when heavy lifting and transportation company ALE chose Dyneema synthetic slings for its 5000 tonne capacity AL.SK350, it says this freed up an



double drum configurations, Lang lay right and left ropes were used, Casar says, with DIN 3091 solid thimbles as end connections.

There are currently seven different classes of Multi-Taskers capable of varying load capacities and, depending on the class, the cranes spool between one and four layers. The most common rope diameter on the Multi-Taskers is 24 mm while the length varies by crane type, reports Casar.

German crane and mining rope manufacturer Casar reports that it has supplied around 30 Multi-Tasker rail-mounted cranes from German rail-mounted crane manufacturer Kirov Ardelt with hoist rope.

The Multi-Taskers are bound for the international market, says Casar, and have been fitted with Casar's rotation resistant Eurolift rope. Due to the Multi-Taskers' opposing

ROPES AND WINCHES

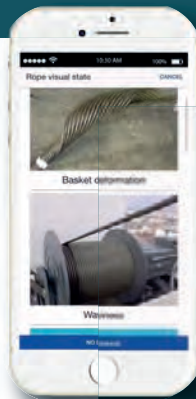
extra 57 tonnes of lifting capacity which contributed to the crane making a record-beating lift of 3,000 tonnes in 2017.

Another example DSM cites is Seaway Heavy Lifting (SHL), an offshore contractor in the global oil, gas and renewables industry, which used Green Pin Tycan synthetic link chains made with Dyneema, supplied by chain and steel wire rope supplier Van Beest, for the installation of the monopiles for the Beatrice Wind Farm project. Frits van Dorst, SHL project engineer, comments, "where possible, we prefer synthetic equipment for lashing and lifting for easier, faster and more ergonomic handling compared to steel."

Easy to handle

In addition to increasing payloads for lifting, DSM says synthetic lifting solutions offer several other benefits over steel. Their lighter weight makes them easier for crews to handle, speeding up operations while also reducing the number of personnel needed. Another difference, specifically for synthetic link chains and slings, is the reduced risk to damage cargo, DSM explains.

DSM points to trials conducted by heavy



Austrian fibre and steel wire rope specialist Teufelberger has launched a free app to help determine the discard status crane rope. Called SIDIS the app calculates the level of wear according to the discard criteria stipulated in ISO 4309. This makes it suitable for inspectors, maintenance managers and all those who inspect steel wire ropes, says Teufelberger.

In order for the app to make the point of discard calculation, users need to: enter basic rope data (such as rope length and design); enter the name of the company for which the rope inspection is being carried out; select the crane it was use on, including the specific rope application; and enter rope inspection data (such as the diameter of the rope, the number of wire breakages, whether there's any corrosion etc). Once this has been done, the app then makes the calculation.

lift and transport specialist Mammoet to enforce its point. Mammoet trialled lifting solutions made with Dyneema and concluded synthetics made their work more manageable, DSM says. Using Green Pin

Tycan Chain (which is made of Dyneema) from Dutch below-the-hook lifting and lashing fittings manufacturer Van Beest, Mammoet found that it not only allowed them to complete tasks faster and with smaller teams, but the lighter ropes and slings put less physical strain on personnel, an important factor with an ageing workforce, DSM points out. "The main benefit of Dyneema is the weight. It's more manageable. With steel, it's never manageable," says Bas Geerts, SPMT supervisor at Mammoet.

"At Mammoet, we pride ourselves on having the safety of our team as the safety of our team as our number one focus. Green Pin Tycan helps us achieve that," affirms Wouter van Noort, managing director of Mammoet Europe.

DSM believes the future for Dyneema is positive, with increasing numbers of companies utilising it. For example, US rope specialist Samson now offers the K-100 Dyneema based rope for mobile cranes while, offshore, Huisman and MacGregor also offer solutions using Dyneema (see the ropes and winches feature in the February 2018 issue of *ICST*). In addition, a general trend towards increased health and safety in the workplace means that the appeal of a lighter, softer alternative to steel is clear.

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ENTRY 1

Overnight bridge dismantling

Equipment user: **Schmidbauer**

Lifting equipment used: **Liebherr MK 88 Plus**

Location: **Germany**

Schmidbauer used a Liebherr MK 88 Plus to dismantle a cable bridge at a Munich hospital on the banks of the River Isar. The crane hoisted the cable bridge off its two support points, turned the bridge in the air so that its length was parallel to the road, and then it was slewed between overhead tram power cables and road light guys. In addition, power to the area was switched off at 2:30 am so the crane provided the main light source for the job.



ENTRY 2

World's tallest turbines

Equipment user: **Max Bögl**

Lifting equipment used: **Liebherr LTM 11200-9.1**

wheeled mobile hydraulic crane and a

Liebherr 630 EC-H 70 tower crane

Location: **Germany**

Max Bögl erected four wind turbines in the north-east of Baden-Württemberg. The turbines stand on top of 40 metre high concrete water storage basins, creating an overall total turbine height of 240 m. A Liebherr LTM 11200-9.1 was used to build the basins while a 630 EC-H 70 top slewing tower crane carried out the remaining work on the turbine towers.



Best of

The 2018 TopLift competition feature a diverse selection of impressive lifts from around the world completed in the last 12 months. To determine the winner, please pick your favourite lift from our selection of 10 outstanding projects

ENTRY 3

Record vessel lift

Equipment user: **Zagrebtrans**

Lifting equipment used: **Demag CC 3800-1**

lattice boom crawler

Location: **Croatia**

Zagrebtrans used its latest acquisition, a 650 tonne capacity Demag CC 3800-1 lattice boom crawler, to assemble an offshore platform crane at the Uljanik shipyard. Lifts included components weighing up to 400 tonnes and were carried out over a period of six months, withstanding extreme weather conditions.



ENTRY 4

Floating crane wind work

Equipment user: **Asian Lift Smit Singapore Pty and Keppel Fels**

Lifting equipment used: **Asian Hercules III**

Location: **Aberdeen Bay, 3 km off the east coast of Aberdeenshire, Scotland**

The 5,000 tonne capacity Asian Hercules III floating crane was used to lift and install 11 steel wind farm jacket foundations for the Aberdeen Offshore Wind Farm. Weighing 1,800 tonnes, the foundations were 77 metres high.



ENTRY 5

Public library demolition

Equipment user: **Smith Bros. & Wilson**

Lifting equipment used: **Terex CTL 430-24**

luffing jib tower crane

Location: **Canada**

Smith Bros. & Wilson carried out the demolition and reconstruction of the eighth and ninth floors of the downtown Vancouver Public Library using a freestanding 24 tonne class Terex luffing jib tower crane which was anchored using a 'floating' concrete base.



the year

by completing and returning the form over the page.

Alternatively, you can also vote online at: www.khl.com/cranes or on our Facebook (@InternationalCranes) and Twitter (@KHL-IC) social media accounts

ENTRY 6

African module lift

Equipment user: **ALE**

Lifting equipment used: **AL.SK350**

Location: **Nigeria**

ALE used its heavy-duty jib for the first time to lift a 1,276 tonne floating production storage and offloading (FPSO) unit in Lagos. The AL.SK350 was rigged in its biggest configuration with a 124 metre A-frame main boom, a 49 m ballast radius, and the 38 m jib for additional outreach, along with a heavy winch system and 4,000 tonne ballast.



ENTRY 9



Building bridges

Equipment user: **Route du Littoral consortium**

Lifting equipment used: **Jack-up barge (the Zourite) with 4,800 tonne capacity, 30-metre-Enerpac overhead travelling crane**

Location: **Reunion Island**

Supplied a barge-mounted overhead travelling crane (OHTC) to lift, move and lower concrete gravity bases, pile heads, and pier segments for the construction of an offshore highway on Reunion Island. The OHTC had a lifting capacity of 4,800 tonnes. Enerpac used winches and a trolley system to manoeuvre the bridge parts into place, as well as a pier positioning system – to place piers with millimetre accuracy.



ENTRY 7

Railway bridge replacement

Equipment user: **Sarens**

Lifting equipment used: **Liebherr LR 1600/2 crawler crane**

Location: **Belgium**

Two parallel railway bridges crossing the Sambre river in Tamines, had to be replaced by a single bridge. Sarens used its Liebherr LR 1600/2 crawler crane to remove the two old bridges, install foundations and then place the new bridge, which weighed 360 tonnes.

ENTRY 10



Protecting Venice

Equipment user: **Fagioli**

Lifting equipment used: **Fagioli in-house launching system**

Location: **Italy**

Fagioli completed phase two of a project to install barriers to isolate and protect the Venetian Lagoon area from the Adriatic Sea. Fagioli used an in-house built launching system to install 19 gates, each weighing 450 tonnes. The launching system had a lifting capacity of 690 tonnes, a loading capacity of 870 tonnes, and contained a movable tower capable of rotating 180 degrees.

ENTRY 8

Chemical plant completion

Equipment user: **Mammoet**

Lifting equipment used: **Mammoet PTC 200-DS ring crane**

Location: **USA**

Mammoet completed 62 heavy lifts at Lotte Chemical's mono-ethylene glycol project in Louisiana. The lifts ranged from 27 to 1,451 tonnes, the largest of which was a 100 metre high wash tower. Mammoet used its PTC 200-DS with a total reach of 217 metres.



2018 voting form

ENTRY 1

Overnight bridge dismantling

Equipment user:
Schmidbauer



Pick your favourite lift from the entries, mark it clearly and e-mail, post or fax us your choice. You can also vote through our Facebook: @InternationalCranes or Twitter: @KHL_IC social media accounts. Get voting!

ENTRY 2

World's tallest turbines

Equipment user:
Max Bögl



ENTRY 5

Public library demolition

Equipment user:
Smith Bros. & Wilson



ENTRY 8

Chemical plant completion

Equipment user:
Mammoet



ENTRY 3

Record vessel lift

Equipment user:
Zagrebtrans



ENTRY 6

African module lift

Equipment user:
ALE



ENTRY 9

Building bridges

Equipment user:
Enerpac



ENTRY 4

Floating crane wind work

Equipment user: Asian Lift
Smit Singapore Pty and
Keppel Fels



ENTRY 7

Railway bridge replacement

Equipment user:
Sarens



ENTRY 10

Protecting Venice

Equipment user:
Fagioli



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NOTE: To ensure a fair competition all entry forms must be completed in full. Employees of the companies entered in TopLift 2018 are **NOT** eligible to vote.

CLOSING DATE FOR ENTRIES: MONDAY 5 NOVEMBER 2018



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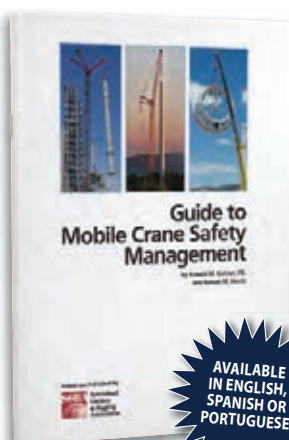


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Skidding a load

MARCO VAN DAAL explains
some of the many ways to
move a load by skidding

After rolling loads (see October 2013 article), skidding is probably the second oldest method of moving a load from an origin to destination.

At first glance it is a relatively low technology but that impression can be deceiving. There are many different types and sizes of skid systems around. Most of them have been designed and built in-house due to a lack of commercially available units. As our industry grew, however, the need for such units was recognised and nowadays various companies offer skidding systems.

This article looks at the basic skidding components, the advantages and disadvantages of applying skidding methods.

Although skidding systems can vary from very basic to quite complicated equipment, four basic components can be recognised in all applications.

1. Skid beam

The skid beam is the component that is in contact with the load to be moved. When the skid beam moves, the load moves.

In principle the skid beam can be of two different types. It can be a true load bearing skid beam strong enough to support a concentrated load or point load (see Figure 1) or it can be a low profile skid beam with the characteristics of a "plate" rather than a "beam" as shown in Figure 2. It goes without saying that the latter is much less suitable for a concentrated load and is often used in



FIGURE 1

combination with load spreading equipment, see again Figure 2.

2. Low friction material

To skid a load with the least amount of effort (or energy) it generally skids on a low friction material. Low friction materials have a low coefficient of friction, they feel "slick" to the touch, and need to be durable so they can be used over and over again.

The coefficient of friction is indicated with the Greek letter μ , pronounced as "mu". We recognise three main material options:

OPTION A

The earliest heavy loads in our industry (not counting the early Egyptians) were skidded on hardwood timber blocks with grease (lots of it) in between. This is by far the easiest and probably cheapest way of skidding a load. As wood is an organic material it is also the most unpredictable material. One hardwood block does not necessarily have the same friction properties as the next.

When it has been used multiple times the surface becomes less smooth and the friction may increase.

Hardwood with grease has a friction coefficient of $\mu = 4$ to 10%.

OPTION B

The next skidding material used is steel-on-steel with grease in between. This method is still widely applied as it is an easy method, without the drawback of hard wood timber, as only the grease is to be re-applied for each skidding operation. After the operation, the

grease provides a protective layer in avoiding rust when the system is stored over extended periods of time. This method is often used for skidded load-outs. Steel on steel with grease applications have a friction coefficient of $\mu = 6$ to 15%. The higher end of this range is often caused by required "break out" forces.

OPTION C

The last and most popular skidding material is stainless steel on polytetrafluoroethylene (PTFE) commonly referred to by the Dupont trade name Teflon. Teflon has by far the lowest friction coefficient $\mu = 2$ to 6%. A drawback of Teflon is that it is relatively expensive and has a limited life.

Also, once it is damaged, which is not uncommon as it is a plastic, the friction factor increases significantly. Mostly the Teflon is used in thin sheets or blocks (usually a bit thicker). The use of sheets or blocks makes it easy to exchange them in case of damage.

When using Teflon as the low friction material there are two approaches. The first (shown in Figure 2) is where Teflon blocks are placed in the track. The skid beam is fitted with a stainless steel underside that skids over the Teflon blocks. A disadvantage of this is that the number of Teflon blocks is determined by the skidding distance, this can become costly. Another disadvantage, not an operation disadvantage but a practical one, is that Teflon is often a wanted material. If the skid system is left overnight, blocks can disappear.

Another approach is shown in Figure 1. In this figure the Teflon blocks are not placed in or on the track but mounted against the underside of the skid beam. The track contains a stainless steel skid surface. This approach is less common but solves the two previously mentioned disadvantages: the number of Teflon blocks is limited to the length of the skid beam and not determined by the length of the skid track; and the blocks are no longer readily accessible and can therefore not disappear overnight.



FIGURE 2

ABOUT THE AUTHOR



MARCO VAN DAAL has been in the heavy lift and transport industry since 1993. He started at Mammoet and later with Fagioli from Italy, both leading companies in

the industry. His 20-year-plus experience extends to five continents and more than 55 countries. His book *The Art of Heavy Transport*, is available at: www.khl-infostore.com/books. Van Daal has a passion for sharing knowledge and holds training seminars around the world.



FIGURE 3

A NOTE ON FRICTION: The friction coefficient between two materials is not a fixed value; it is, rather, a range with a minimum and maximum value that are determined empirically. The actual coefficient of friction depends on many factors such as smoothness of the surfaces, contamination between the surfaces, humidity, temperature, and many more.

If a 100 tonne load is to be skidded on a flat surface with a friction factor of $\mu = 10\%$, the effort required to move this load equals $F_w = F_n \cdot \mu$

3. Propulsion unit (push-pull cylinder)

In almost all cases and applications the propulsion unit consists of one or multiple hydraulic cylinders. These hydraulic cylinders can be external from the skid beam (see Figure 3) or these can be built into the skid beam as shown in Figure 4. The latter allows for a more compact setup but in terms of operation there is no difference between them. The hydraulic cylinder is often a double acting cylinder that allows the skid beam to be pushed as well as pulled. Keep in mind that the pulling capacity of a hydraulic cylinder is less than the pushing capacity due to its construction.



FIGURE 4

The propulsion unit can also be a strand jack (as this also uses a hydraulic cylinder) but that is outside the scope of this article.

4. Skid track

The entire assembly, skid beam, low friction material and propulsion unit runs on or in a skid track. Various types of skid track are used. A skid track can have a centre guide, as shown in Figure 5. Or, the skid beam can run in a channel, as shown in Figure 6. Lastly, the skid beam can run on top of a regular off-the-shelf I-beam, as shown in Figure 7. Needless to say there are many other variants.

Regardless of the layout, the skid track serves three purposes.

PURPOSE A is that the skid track guides the skid beam. Without it the skid beam would move in the direction of the least resistance and that is unlikely to be the desired direction.

PURPOSE B is to provide the base for the low friction surface.

PURPOSE C is the support for the propulsion unit. The hydraulic cylinder needs to push against "something" to move the skid beam with load forward. This something is the skid track.

NOTE: When comparing skid tracks you can see that there are low profile skid tracks as shown in Figure 2 and Figure 5. These low profile ones are less capable of handling concentrated loads than the tracks that consist of an I-beam type construction such as in Figure 7. Generally, when the skid beam consists of a low profile construction, the skid track is often of a heavier construction. Vice versa, when the skid beam can handle concentrated loads, the skid track can be of a lesser construction. The goal is to avoid that the underlying surface is subject to a concentrated load as it is often not designed for that.

In case of a low profile skid beam and a low profile skid track as shown in Figure 2 the surface on which the track is laid out must be able to support the concentrated loads imposed.

Disadvantages

As with any technique, skidding has its disadvantages as well as advantages. Skidding can be carried out in one direction only. You cannot make a turn while skidding. If a change in direction is required, the load will have to be

raised and the tracks and beams repositioned.

The second disadvantage is that skidding systems don't handle uneven surfaces very well. Most skidding operations use four skid beams (four-point suspension) and you can imagine that when the surface is uneven one of the skid beams could be exposed to a higher load than expected. Even worse, another skid beam could be released from its load and, if not properly secured, stay behind during the push stroke. This jeopardises the entire skidding operation.

When more than four skid beams are used, uneven ground underneath quickly turns into a real operational nightmare.

Last but not least, skidding systems are not designed to skid uphill or downhill. This is for the simple reason that during the retract stroke of the hydraulic cylinder the skid beam with load is held in place in or on the skid track solely by friction. As the low friction material offers a very low friction surface, even a slight incline of decline could cause a "runaway" load.

Latest developments

To overcome the above disadvantages there are some options on the market, see Figure 8. The skid beams in this figure look entirely different from conventional skid beams. For starters, it has an hydraulic jack built in. This jack compensated for any unevenness in the ground. The jack strokes in or out as required to maintain an even load on each skid beam.

Second, during the retract stroke this skid beam applies a brake to the skid track which allows skidding operations on slight inclines and declines.

Anybody who has ever performed a skidding operation knows that the skid beam has some "freedom" when it runs in or on the skid track. Freedom in the sense that the skid beam can move slightly to the left and right during the performance of the skidding operation. This freedom is a few centimetres at the most. This means that when the skidding operation reaches its destination, the final alignment can be off by the same few centimetres. The skid beam shown in Figure 8 has a built-in side shift that can compensate for this.



FIGURE 5



FIGURE 6



FIGURE 7



FIGURE 8



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Safety is always more than just a word

"Safety first" is so common a core value for companies across the spectrum of industry that we tend to either assume it's an ever-present priority or expect it's a daily focus on any project.

Construction and transport companies the world over are quick to proclaim through slogans, mastheads, prepared statements or even news articles how steadfast their commitment to safety truly is. Which is great. But there's an additional piece to the safety puzzle: safety as part of the bottom line.

As is similar with so many other details that comprise the productive growth of a company, safety can be measured and charted on a spreadsheet. In fact, the current cost of a workplace accident in the USA, according to the U.S. Occupational Safety and Health Administration (OSHA), is US\$ 129,336 (January 2018). This includes what a company will be fined for a workplace accident if willful neglect can be found, or if it is a repeat offence.

In 2017 the European Agency for Safety and Health at Work (EU-OSHA) together with the International Labour Organization presented findings showing that worldwide work-related injury and

illness result in the loss of 3.9 percent of GDP, at an annual cost of roughly €2,680 billion. In the USA, the U.S. Centers for Disease Control and Prevention have looked at the cost of a worker's life calculated it to be approximately \$1 million – which factors in hospitalisation costs (if

the employee lived long enough to make it to the hospital), worker's compensation, general medical expenses, legal costs and property loss.

Keeping similar numbers in mind, the UK consistently has one of the lowest rates of fatal injury across the EU. In recent years, the standardised rate was 0.55 per 100,000 employees, which compares favourably with the EU-28 average of 1.8.

The business of business being what it is, still, many companies overlook the hidden costs of a workplace accident or fatality: replacing damaged tools and equipment; time lost and overhead costs incurred by disrupted work; lost orders or billing rights for government contracts; failure to meet production deadlines; and the cost of bad publicity. Add in legal costs and various HR issues – decreased morale or break-up of work crews, or related difficulty attracting new hires – and the cost of a human life, whether through fatality or prolonged injury, is nearly impossible to calculate.

Ultimate stakes

According to OSHA, nearly 6.5 million people work at approximately 252,000 construction sites across the USA on any given day. The fatal injury rate for the construction industry is higher than the national average in this category for all industries.

That said, truckers occupy one of the deadliest jobs in the country. In 2018 nearly 800 drivers were killed while working. Opinions vary on what makes trucking so deadly but some underlying themes are universal, no matter the country: fatigue and inattentiveness, inexperience, speeding, and improperly secured loads. Sobering as it is, road crashes are expected to become the fifth-leading cause of death in the USA by 2030 – with more than 4,000 of those fatalities involving a commercial truck.

On a brighter note, according to trucksafety.org, from 2009 to 2015, EU truck crash fatalities decreased by 23.4 %.

In our line of work safety is always more than just a word or a concept. It simply must remain an unwavering standard. When the ultimate stakes at play are workers' lives, winners in this game are the workers who make it home alive at the end of the day, and the companies that make sure they do.



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Leading experts share their tips on wire rope deterioration on crawler cranes in high-lift applications. MIKE CHALMERS reports

Wear in the rope

How does the use of crawler cranes on high-lift job sites and operating conditions generate unique wire rope deterioration?

Tony Fastuca, vice president at rope company ASC/Python America, explored this topic at an SC&RA Crane & Rigging Workshop with other leading industry experts: Justin Brown, who works at Uniroppe Limited in Canada and is product manager for Python rope in North America; Dave Sleightholm, manager, customer technical support at Bridon Bekaert, The Ropes Group;

and Mario Hartl, (at the time) head of field engineering R&D at Teufelberger.

Fastuca and his panelists shared their insights on the behaviour of wire rope in such circumstances and provided guidelines for inspection, repair and-or replacement. "We wanted to give clarity on some of the things that can happen with these high-engineered ropes when they have a lot of rope on the drum – and a lot of weight on the rope from a high lift," Fastuca explained. "That creates a significant amount of stress and certain types of abuse on the rope – and especially on the drum."

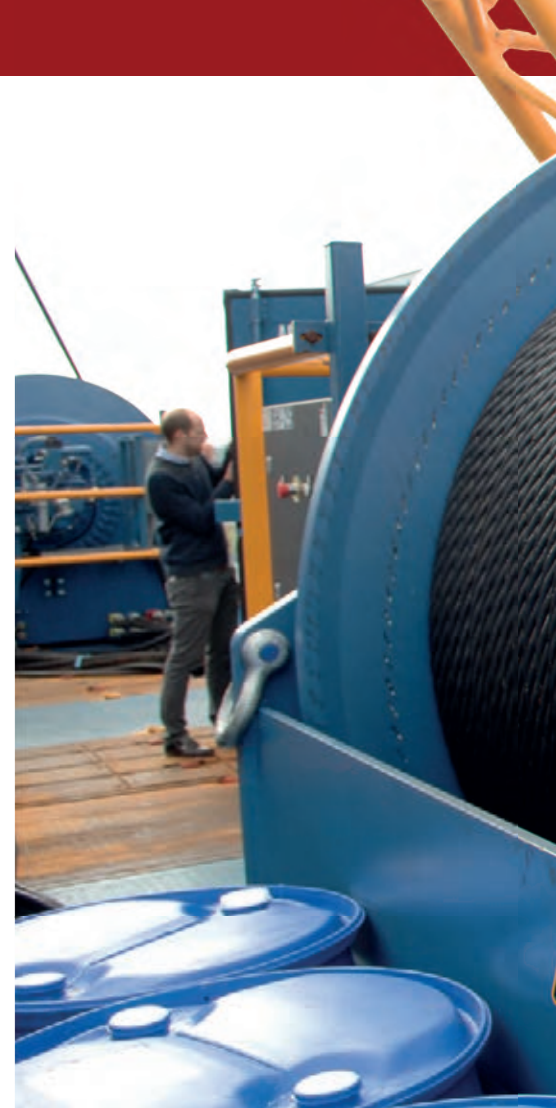
Fastuca and his group wanted to create an increased awareness of how important, even critical, it is to make sure that high-performance rope – the hoist line – is tensioned and very tight when workers are spooling it up on the drum.

"Also critical is training the rope," he added. "Meaning, once you've put the tension on the rope, you should put a lot of weight on it and run it up and down at least 25 times so that you're training the rope to seat itself in the proper position on the drum."

A third takeaway was rope allotment. "It is important to only have as much rope as you possibly need on the drum – footage wise. Many times, workers will have to put more rope on the drum at the beginning because of how far up they have to go to make a lift. But we wanted to highlight that excess rope on the drum only serves to potentially cause unnecessary stress on itself.

"That said, I think one of the more consistent, and major, issues with wire rope is to do with installation on the drum. When

Tony Fastuca, vice president at rope company ASC/Python America



taking it off the reel and putting it on the drum – proper installation is everything."

Block twisting

"When we are called to cranes dealing with a cabling problem, we have to determine whether the cabling is caused by incorrect rope selection or torque being introduced through a crane setup issue, installation, a component like a bad sheave or operational issues," explained Brown. "The first step is a rather simple calculation to determine if a rope is designed with enough rotation resistance considering the lifting height, line spacing and specific rope factors. If the rope construction is okay, we simply turn to troubleshooting the other potential issues one by one, checking off the list. So, block twisting is reasonably straightforward and solvable, but when a user is experiencing it in the field, it can be extremely frustrating.

Brown added, "For the end user, the way these ropes are damaged is the most critical thing to understand and most often misunderstood. The industry has known for years that wire ropes used on multi-layer drums are typically retired because of the damaging effects of winding a highly tensioned rope in multiple layers. So, it was always assumed that the same holds true for boom hoist ropes, especially since these





ropes are permitted to be used with smaller drums and typically higher loads than main-hoist ropes. However, there is an x-factor in boom hoist ropes, being the high number of bending cycles the rope is subjected to in the bridle reeving. When you combine the operating conditions with a high number of bending cycles and the vibrational fatigue from the lifting conditions, it creates an entirely new dynamic where ropes tend to fail due to wire breaks within the bridle reeving."

Brown indicated that the breaks cannot be identified by merely looking at the rope on the drum, and inspecting the reeving from the crane deck is impossible without lowering the boom to the ground. "That makes inspections of boom hoist ropes highly inconvenient and time consuming, but utterly necessary."

Fastuca agreed. "You can't forget about the boom hoist rope," he said. "Everyone thinks that rope is going to last forever, and it's such a critical rope – raising and lowering the boom to the proper angle to make a pick. That rope needs to be looked at daily."

Best choice

According to Brown, rope selection is also critical. "Historically, swage compacted six-strand ropes have been the rope of choice because they are strong, cheap and don't

crush as easily on multi-layer drums," he explained. "But since the main deterioration occurs within the reeving from fatigue factors, these rope types don't hold up and have been known to fail from the inside out, making inspections increasingly more difficult, if not impossible. Instead, using a rope that does not fail on the drum too early, or fail from undetectable wire breaks, is crucial. An eight-strand rope with compacted outer strands and a plastic-coated core suits this purpose very nicely."

Rope deterioration is also a major point for Fastuca. "One of the things we see is that, when we have more rope on a drum, we see more bearing pressure put down, especially on the lower layers, and especially if the rope is not very tight on the drum (where you have gaps between the layers). A big lift causes those upper layers to suck down into some of the lower layers," he explained. "You end up creating premature wire wear, which can create all that crushing and abrasion on the rope."

Fastuca also underscored the ultimate focus: safety. "Clearly, there's a huge safety component here that's front and centre. One of the major and critical issues is always continuous training and safety programmes – making sure folks realise this rope is a machine for them, and probably



Justin Brown, who works at Uniropo Limited in Canada and is product manager for Python rope in North America

the most critical tool for them on that lift. They have to make sure they're following the installation guidelines and, if they're questioning anything, then they need to go to the resources provided by the manufacturer and double, even triple, check."

Fastuca will be moderating a session on synthetic rope at the upcoming SC&RA Crane & Rigging Workshop in Louisville, Kentucky, USA, 26 to 28 September. "It's a trend we need to talk about," he says. "We can never have enough information on rope." For more information, see: www.scranet.org/events ■



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Anti-collision system used on London build

French company AMCS Technologies installed anti-collision and zoning systems on three tower cranes working on the prestigious 70 St Mary's Axe office project in London, UK, which is widely known by the nickname the 'Can of Ham' due to its shape.

AMCS Technologies installed its DCS 60 driving control system on: a Wolff 224B, a Wolff 180B, and a Wolff 166B. According to AMCS, in addition to anti-collision and zoning functionality, the system works as a display unit and data logger.

Adam Blakeley, lifting operations manager at international construction company Mace Group (which is building the office building and started on site in June 2018), commented, "The DCS 60 allowed the crane operator to work closer to the opposite crane



and did not interfere with the lifting operations. The screen in the operator's cab is clear and precise.

"The anti-collision function can be set up very quickly indeed and the DCS 60 continually saves the crane's movements and all parameters. They can be logged, downloaded and shared by email, which helps facilitate crane maintenance."

"We used the DCS 60 as it was the customer's preference and we were impressed with the features. There have been no reported issues and the system has performed as required," added Julian Dyer, senior sales manager at HTC Wolffkran, whose cranes are fitted with the AMCS systems.

■ For more information see: www.amcs.fr

LTC ORDERS 100TH BLOKCAM SYSTEM



UK tower crane sales and rental firm London Tower Cranes (LTC) has bought its hundredth Blokcam camera system. LTC bought its first hook-block mounted camera system two years ago and the company now fits and supports all its own systems having attended Blokcam's product training programmes.

Martin Harvey, LTC managing director said, "The quality, ability, and value of the Blokcam camera systems are second to none. We've found them to be an invaluable asset for our crane operators, for our lifting teams, and for the business as a whole."

■ For more information see: www.blokcam.com

Crane and winch inspection

Offshore engineering specialist MacGregor has signed two inspection service agreements with dry bulk shipping operators ESL Shipping and Wagenborg Shipping to ensure that MacGregor equipment is in good working order and that any issues are identified quickly to avoid unexpected downtime.

The first inspection agreement is a three-year contract with Finland-based ESL. It will see MacGregor inspect the folding hatch covers and K-cranes fitted onboard a barge and a fleet of

nine bulk carriers.

The second is a two-year service agreement with the Dutch shipowner and broker, Wagenborg, to inspect hatch covers and winches onboard 19 of its bulk carriers.

International shipping specialist, Wagenborg Shipping, owns around 170 vessels; most of which are ice-classed dry cargo ships designed for worldwide operations. "Wagenborg knows us and we understand its needs," says Gust Versmissen, branch manager, Benelux, MacGregor.

"This new agreement covers the inspection of both hatch covers and winches."

■ For more information see: www.macgregor.com

SIGN OF THE TIMES

Canadian simulator vendor CM Labs Simulations has launched a new Signaller Training Station that it says is designed to foster effective teamwork and communication.

According to CM Labs, the training station enables one trainee to operate a virtual tower crane while another provides signals and guides the operation through to completion via webcams and picture-in-picture displays. CM Labs claims that the signaller station provides a focussed approach to reducing training costs and makes it possible for organisations to train in ways that are too risky or expensive to replicate in real life.

■ For more information see: www.cm-labs.com





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11 October 2018

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www.awrf.org

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www.breakbulk.com

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29 November 2018

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www.liftandmoveusa.com

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www.khl.com/wds

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www.bauma-china.com

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www.bcindia.com

2019

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LIFT & MOVE USA

9 May 2019

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PICTURE OF THE MONTH



Four flat top cranes from Comansa working in Red Square, Moscow, Russia, near St. Basil Cathedral. The photo was taken by the Spanish tower crane manufacturer's area sales manager for Russia, Greg Teyf.

PEOPLE NEWS

■ JOHN

GARRISON, Terex

president and chief executive, has also taken the position of chairman of the board as of 15 August 2018. Garrison succeeds David Sachs, non-executive chairman. Sachs was appointed lead director in May 2013 and will now again take up that role. Commenting on his appointment, Garrison said, "I appreciate the Board's support and confidence and I look forward to leading Terex on our mission to provide solutions to our machinery and industrial product customers that yield superior productivity and return on investment."



be a member of the Cargotec Executive Board. He moves from General Electric from the role of vice president and CEO Mining. Previous experience includes the construction and mining industries, working for Sandvik and Caterpillar, among others. Commenting on his appointment, Scott Phillips said, "With the dedicated team of over 3,500 people, my ambition is to continue pioneering in technology, services, and supporting our customers throughout the lifecycle of the product."

Outgoing Hiab president, **ROLAND SUNDÉN**, will move to corporate development, reporting to Mika Vehviläinen and as a member of the Cargotec Executive Board.



■ Materials handling equipment group Cargotec has appointed **SCOTT PHILLIPS** as the president of its Hiab crane manufacturing division. Phillips starts on 1 October, reporting to CEO Mika Vehviläinen and he will

■ Steel and synthetic rope specialist Bridon-Bekaert Ropes Group has appointed **BRETT SIMPSON** as CEO. Matthew Taylor, CEO of Bekaert and CEO ad interim of



Bridon-Bekaert Ropes Group, said, "We want to accelerate the turnaround efforts at Bridon-Bekaert Ropes Group to help the business achieve its true potential. I am convinced Brett Simpson is the right person to take the helm and lead the team that I enjoyed working with in the past months. Brett will join the company on 1 September 2018, upon which I will entirely focus on my role of CEO of Bekaert again."



■ Fleet Advantage, a truck fleet business analytics, equipment financing, and lifecycle cost management company in the USA, promoted **MATT HENDRIX** to senior director, fleet services. Hendrix has also been appointed the company's representative on the Board of Governors of the National Private Truck Council (NPTC). In his role he will liaise between fleet services and business development teams.

■ Please 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, United Kingdom, 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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Kilometers	138,341 km
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Brand	Terex-Demag
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Liebherr LTM1200-5.1 yom 2013



Liebherr LTM11130-5.1 yom 2014



Liebherr LTM1095-5.1 yom 2012



Grove GMK4100L yom 2012



New second winch Liebherr
LTM1100-5 yom 2017



Used hookblock 5-sheave Grove
GMK6300L yom 2014



Tadano GR750XL-2 yom 2014



Tadano GR550XL-2 yom 2014

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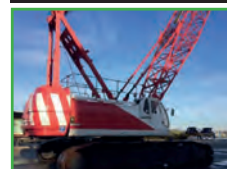
50 t Sennebogen 640 RHD
Boom 31 Metre



65 t RB-International CH 65 P
Boom 36 Metre



100 t Sumitomo SC 1000 S2
Boom 48 Metre



100 t Sumitomo SC 1000 DD
Boom 48 Metre - 30 t. winches



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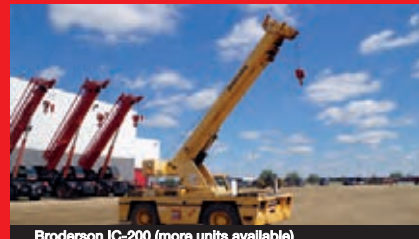
Used equipment

CRANES FROM 10-5000T

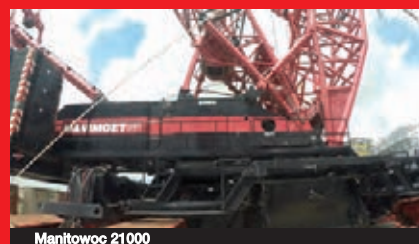
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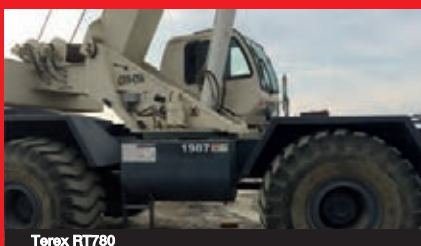
Kobelco CKE1100 (more units available)



Broderson IC-200 (more units available)



Manitowoc 21000



Terex RT780



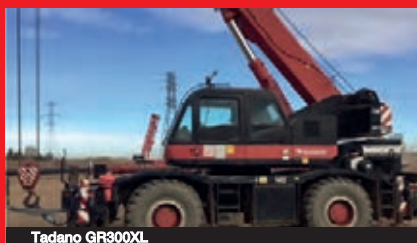
Mercedes-Benz Actros 4165 SLT 8x4



4- and 6-line Kamag SPMT (more units available)



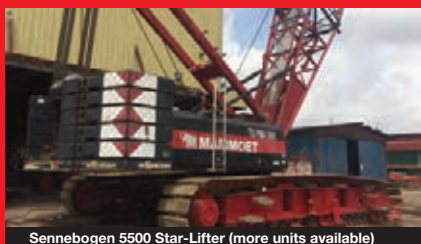
Liebherr LR1200 SX (more units available)



Tadano GR300XL



Liebherr MK80



Sennebogen 5500 Star-Lifter (more units available)



Nicolas trailer (also 2 and 4-lines available)



Tadano-Faun ATF85G-4



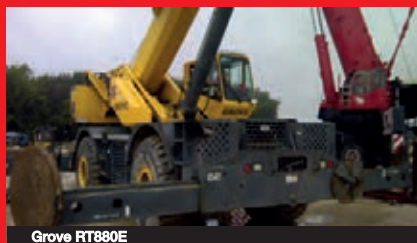
Terex-Demag CC2800-1 (more units available)



Liebherr LR1300 SX (more units available)



Grove TMS900E (more units available)



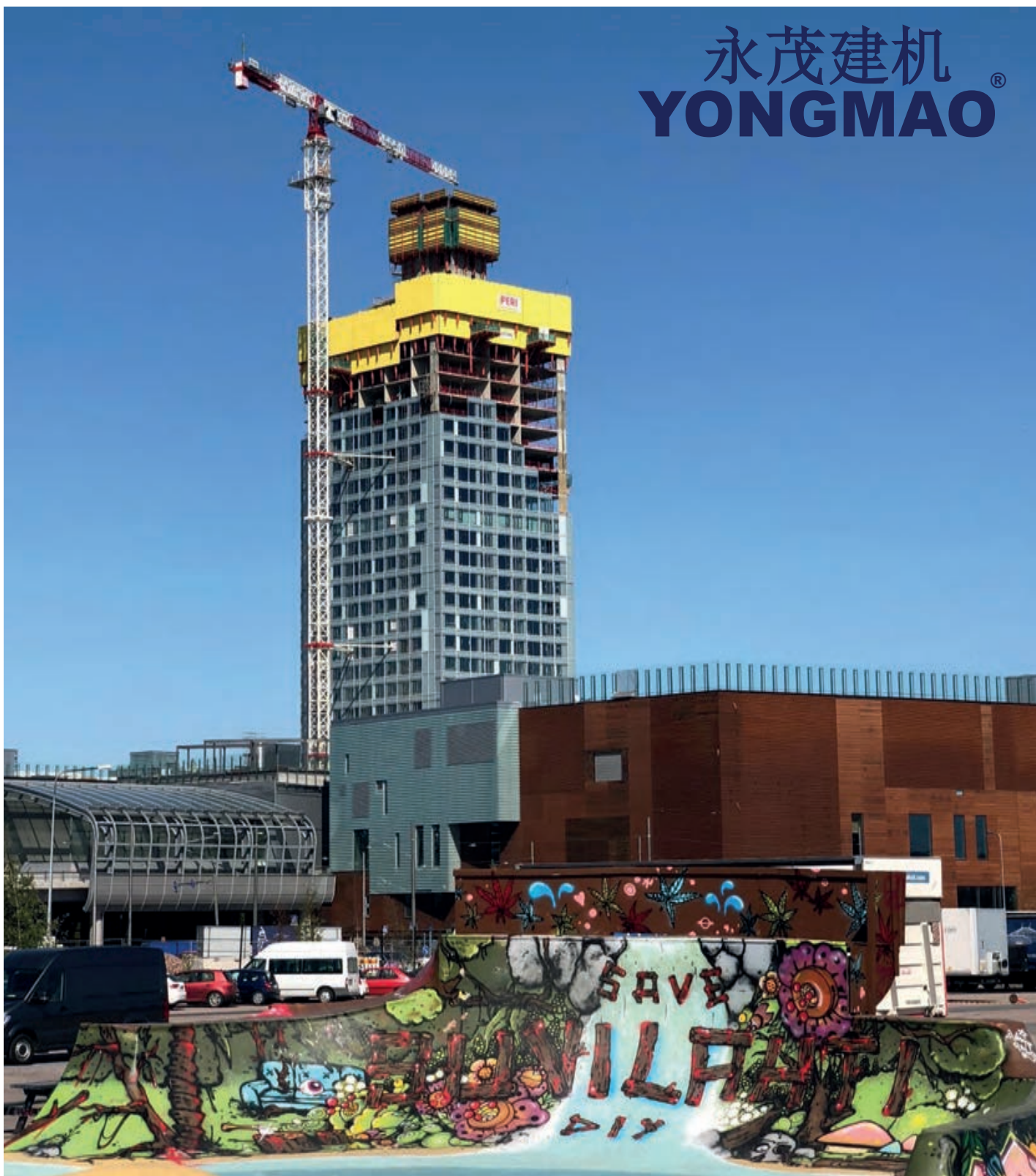
Grove RT880E

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- Link Belt HC 238
- Manitowoc 3900 T
- American 4450
- P&H 790
- Demag MC 300
- Grove GMK 4080
- Grove GMK 4080-1
- Grove GMK 5200
- Grove GMK 5220
- Grove GMK 6250
- Kato KR 300
- Tadano TR 300 EX
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1x	100 t	Liebherr LTM 1100-5.2	NEW!
1x	100 t	Tadano ATF 100G-4	2016
1x	200 t	Liebherr LTM 1200-5.1	NEW!
1x	250 t	Liebherr LTM 1250-5.1	NEW!

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1x	55 t	Tadano GR 550XL-2	2013
1x	75 t	Tadano GR 750XL-3	2015
1x	80 t	Terex RT 780	2016
1x	120 t	Tadano GR 1200XL-3	2018

CRAWLER CRANES

1x	250 t	Kobelco CKE 2500-2	2008
1x	250 t	Kobelco CKE 2500-2	2010
1x	400 t	Demag CC 2400 SL	2009
1x	500 t	Liebherr LR 1500	NEW!
1x	650 t	Demag CC 3800 SL + wind kit	NEW!
1x	650 t	Demag CC 3800 SL	2013

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8 t



Liebherr MK 80,
2008

35 t



Liebherr LTM 1030-2,
2004

45 t



Liebherr LTM 1045-3.1,
2007 & 2004

55 t



3 x Grove GMK 3055,
2007

55 t



Liebherr LTM 1055-3.1,
2007 & 2004

65 t



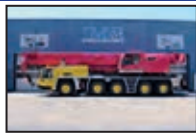
Tadano Faun ATF 65G-4,
2009

80 t



Demag AC 80-2,
2004

160 t



Tadano Faun ATF 160G-5,
2006

ALL CRANES



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TELESCOPIC AT-CRANES

Capacity	Manufacturer	Type	Year	Drive/Steering	Boom/jib (m)	Delivery
450 t	Liebherr	LTM 1450 N	1992	16 x 8 x 14	50 / 61 / 84	direct
400 t	Liebherr	LTM 1400	1988	16 x 8 x 12	50 / 61 / 84	direct
300 t	Liebherr	LTM 1300/1	2000	12 x 8 x 10	60/21/42/70	direct
200 t	Terex-Demag	AC 200-1	2007	10 x 8 x 8	68 / 17	direct
200 t	Grove	GMK 5200	2006	10 x 8 x 10	60 / 22+run	direct
160 t	Liebherr	LTM 1160-5.1	2008	10 x 8 x 10	62+7 / 36	direct
160 t	Faun	ATF 160 G-5	2005	10 x 8 x 8	60 / 5,4 + run	direct
120 t	Terex-Demag	AC 120-1	2009	10 x 6 x 8	60 / 17	direct
120 t	Faun	ATF 120-5	1998	10 x 8 x 10	49 / 16,2 / 30	direct
120 t	Liebherr	LTM 1120	1990	10 x 8 x 8	42 / 17	direct
100 t	Terex-Demag	AC 100-4 L	2012	8 x 8 x 8	60 / 19	direct
100 t	Terex-Demag	AC 100-4	2010	8 x 8 x 8	50 / 19	direct
100 t	Grove	GMK 5100	2005	10 x 6 x 10	51 / 18	direct
100 t	Terex-Demag	AC 100	2005	10 x 6 x 8	50 / 17	direct
100 t	Demag	AC 265	1989	8 x 8 x 8	37 / 17	direct
90 t	Liebherr	LTM 1090-4.1	2008	8 x 6 x 8	50 / 19	direct
90 t	Liebherr	LTM 1090/2	1999	8 x 8 x 8	52 / 19	direct
80 t	Grove	GMK 4075	2004	8 x 6 x 8	43 / 17	direct
70 t	Liebherr	LTM 1070-4.1	2007	8 x 6 x 8	50 / 16	direct
70 t	Liebherr	LTM 1070-4.1	2005	8 x 6 x 8	50	direct
60 t	Terex-Demag	AC 55 L	2008	6 x 6 x 6	44 / 15	direct
60 t	Faun	ATF 60-4	2005	8 x 6 x 8	40 / 16	direct
60 t	Faun	ATF 60-4	2004	8 x 6 x 8	40 / 16	direct
60 t	Liebherr	LTM 1060/2	2002	8 x 6 x 8	42 / 17	September
60 t	Faun	ATF 60-4	2000	8 x 6 x 8	40 / 16	direct
55 t	Liebherr	LTM 1055-3.1	2007	6 x 6 x 6	40 / 2,5	direct
55 t	Liebherr	LTC 1055-3.1	2007	6 x 6 x 6	36 / 7,8	direct
55 t	Grove	GMK 3055	2006	6 x 6 x 6	43 / 15	direct
55 t	Liebherr	LTM 1055-3.1	2005	6 x 6 x 6	40 / 16 + 2,5	direct
55 t	Liebherr	LTM 1055/1	2004	6 x 6 x 6	40 / 16	direct
55 t	Grove	GMK 3055	2007	6 x 6 x 6	43 / 15	direct
50 t	Terex-Demag	AC 50-1	2007	6 x 6 x 6	40 / 17,6	direct
50 t	Terex-Demag	AC 50-1	2006	6 x 6 x 6	40 / 17,6	direct
50 t	Terex-Demag	AC 50-1	2004	6 x 6 x 6	40 / 17,6	direct
40 t	Liebherr	LTM 1040-2.1	2010	4 x 4 x 4	35 / 9,5	direct
40 t	Terex-Demag	AC 40-1 City	2009	6 x 6 x 6	31,2 / 13 / run	direct
40 t	Liebherr	LTM 1040	1993	6 x 4 x 6	30 / 14,5	direct
35 t	Liebherr	LTM 1030-2.1	2007	4 x 4 x 4	30 / 15	direct
35 t	Terex-Demag	AC 35 L	2005	4 x 4 x 4	37,4 / 8	direct
35 t	Terex-Demag	AC 35 L	2004	4 x 4 x 4	37,4 / 8	direct
30 t	Faun	ATF 30-2 L	2004	4 x 4 x 4	28,5 / 12	direct
25 t	Krupp	KMK 2025	1992	4 x 4 x 4	23 / 13	direct

ROUGH TERRAIN CRANES

45 t	Tadano	TR 400 E	1984	4 x 4 x 4	32,5 / 9,8	direct
35 t	Grove	RT 540 E	2012	4 x 4 x 4	31 / 13,7	direct
25 t	Kato	KR 250	1998	4 x 4 x 4	26,7 / runner	direct

LATTICE BOOM TRUCK CRANES

125 t	Luna	GC 125	1986	10 x 6 x 6	63	direct
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ALL TERRAIN-CRANES

Make / Type	y. o. m.	Drive	Boom / Fly Jib
35 t Terex-Demag AC 35 L	2004	4x4x4	37,40m + 8,00m
35 t Liebherr LTM 1030-2.1	2007	4x4x4	30,00m + 15,00
40 t Liebherr LTM 1040-2.1	2010	4x4x4	35,00m + 9,50m
40 t Terex-Demag AC 40 City	2009	6x6x6	31,20m + 13,00m + 1,20m
50 t Terex-Demag AC 50-1	2004	6x6x6	40,00m + 17,60m
50 t Terex-Demag AC 50-1	2007	6x6x6	40,00m + 17,60m
55 t Terex AC 55 L	2008	6x6x6	44,00m + 15,00m
55 t Grove GMK 3055	2006	6x6x6	43,00m + 15,00m
55 t Liebherr LTC 1055-3.1	2007	6x6x6	36,00m + 7,80m
55 t Liebherr LTM 1055-3.1	2007	6x6x6	40,00m + 2,50
60 t Liebherr LTM 1060-2	2002	8x6x8	42,00m + 17,00m
90 t Liebherr LTM 1090-2	1999	8x8x8	52,00m + 19,00m
90 t Liebherr LTM 1090-4.1	2008	8x6x8	50,00m + 19,00m
100 t Terex-Demag AC 100-4L	2012	8x8x8	59,40m + 19,00m + 1,35m
100 t Terex-Demag AC 100	2005	10x8x8	50,00m + 17,00m
120 t Terex-Demag AC 120-1	2009	10x6x8	60,00m + 17,60m
120 t Faun ATF 120-5	1998	10x8x10	49,00m + 16,20m - 30,10m
130 t Grove GMK 5130-1	2007	10x8x10	60,00m + 18,00m
160 t Liebherr LTM 1160-5.1	2008	10x8x10	62,00m + 7,00m + 36,00m
160 t Tadano Faun ATF 160G-5	2005	10x8x8	60,00m + 5,40m
200 t Grove GMK 5200	2006	10x8x10	60,00m + 22,00m

RT-TELESCOPIC-MOBILE CRANES

25 t	Kato KR 250	1998	4x4x4	26,70m + 7,00m
40 t	Tadano TR 400 E	1984	4x4x4	32,50m + 9,80m

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120 t Sennebogen HMC 6120	2000	8x4x8	37,00m
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