

INTERNATIONAL CRANES AND SPECIALIZED TRANSPORT

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■ AUGUST 2017

Environmental
matters

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INTERNATIONAL CRANES AND SPECIALIZED TRANSPORT

VOLUME 25 ■ NUMBER 11 ■ AUGUST 2017



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MARKETPLACE

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EDITOR'S VIEW



Several things have come up this month which, when you put them all together, are starting to make a more solid case that things in the market are turning around. It is beginning to look more and more as though there will be a return to growth by the end of this year or, at the latest, by later on in 2018.

Financial results announced by manufacturers are one thing and a standout performer here is, as has been the case for some time, Palfinger. Double digit growth posted by the Austria-based hydraulic crane manufacturer in the first half of 2017 is forecast to follow through to the end of the year for the full 12 months. Fellow loader crane manufacturer Hiab has also posted better results in that sales and profitability were up in the first half over the same period of 2016. Both are covered in the News this month.

At Terex in the second quarter its figures show that Terex Cranes returned to profit, after making a loss in the second quarter of 2016. The order backlog has also increased but sales were down by 15 percent on the US\$357 million figure in the same period a year earlier. The return to profit at Terex Cranes likely had a positive impact on the share price of fellow US-headquartered crane manufacturer Manitowoc which saw its share price leap 15 % in one day, after the Terex results were published.

Reports from the US market are that things are looking better there, with infrastructure spending going up, oil rigs being built and crawler cranes busy with wind energy work. Similarly, positive signs are also emerging from China again where in the last six months infrastructure projects have been launched and manufacturers are already posting improved results.

Also, on the transport side, from our own research in this month's special issue, we still have growth in our IC Transport 50 top ranking of the world's largest specialized transport companies. It is a much smaller increase than last year but an increase all the same. For the first time in its history there is also a change in position at the top but that is another story... see page 21.

ALEX DAHM

Editor



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ON THE COVER



Austrian company Knoll International Transporte moved an oversize and overweight load in the form of a 167 tonne cement mill from Austria to Germany. See page 47.

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HIGHLIGHTS

■ German lifting and transport specialist Dietmar Flossdorf has taken delivery of a Liebherr LTM 1500-8.1 wheeled mobile telescopic crane. It replaces the company's seven-year-old LTM 1350-6.1 on a six axle carrier. According to Liebherr, the LTM 1500-8.1 is the first eight-axle crane in the Flossdorf fleet. With a capacity of 500 tonnes it will be used, among other places, in the wind power sector for repairs and repowering.

■ Matex Wire Rope, Inc. has been acquired by SBP Holdings, through its wholly owned subsidiary Bishop Lifting Products in the USA. Described as a bolt on acquisition, Bishop said it fits its growth strategy for Texas and Louisiana. The price was undisclosed. For more than 50 years Matex has supplied lifting equipment and services, including: sling fabrication, wire rope and rigging hardware, fall protection, cable service, recertification and custom lifting. Services from Matex also include: oilfield wireline spooling, electromechanical cable splicing, wireline sheave repair, inspection, as well as recertification.

■ Hydraulic crane and excavator manufacturer Atlas in Germany has appointed Esa Puustinen as its distributor for Finland. Helsinki-based Esa Puustinen has been in the heavy machinery business for nearly 20 years, internationally and domestically in Finland, Atlas said. Its full range of services includes financing solutions. A new investment in support capability includes facilities being built in Nurmijärvi for service and spare parts plus premises for equipment installation and servicing.

Major management changes at Tadano Faun

Kenichi Sawada has succeeded Alexander Knecht as Tadano Faun president in Germany.

Sawada started at Tadano, in Middle East sales, more than 25 years ago. He moved into sales promotion and planning before taking over as president at Tadano America.

Knecht leaves after eight years. He has nearly 40 years of experience in the industry. Sawada commented, "Mr Knecht did a brilliant job for the company, and I would like to thank him cordially on behalf of the entire Tadano Group for doing so. I intend to build upon Mr Knecht's work and use my own experience to lead the company to a successful future."

Other management changes are as follows: Ulrich Zschenderlein, formerly general manager material management,



will add responsibility for production and steel construction to that and take the title director of operations.

Hiroaki Sakai, most recently responsible for quality and service as a director at BQ Tadano in China, is taking over quality management.

Yuji Muneno continues in his position as research and development director.

Rolf Sonntag, already at the company in Germany for more than 25 years and a member of the board of directors since 2007, will head the sales and marketing, order processing and human resources departments.

Sonntag will take on the responsibilities of Thomas Schramm, general manager for sales and marketing, who is leaving the company.

Klijn appointed ESTA director

Ton Klijn has been appointed as director at ESTA, the European association for abnormal road transport and mobile cranes. Klijn is stepping down from his position as managing director at Dutch heavy lift and transport company, Wagenborg Nedlift.

He moves from his voluntary position as ESTA secretary, taking over from Søren Jansen



Ton Klijn, ESTA director

who retired at the end of June. Klijn has been managing director at Wagenborg Nedlift since 2003 and started out in the lifting and transport industry in 1977.

In addition to Wagenborg and ESTA, Klijn is a board member of the Dutch association VWT, and also chair of the supervisory board at Aboma, a Dutch crane safety, certification and inspection company. A major project for Klijn at ESTA is the European Crane Operator Licence (ECOL) scheme.

Klijn said, "I am looking forward to my new role immensely, and the opportunity to build on the tremendous work done by my predecessor, Søren Jansen. These are very important times for ESTA. Our influence is growing steadily and we will continue to take every opportunity to

improve our industry's safety and professionalism. Apart from ECOL – which is a huge undertaking – we will also be paying particular attention to the problems of permit granting and the harmonisation of rules and regulations."



KOBELCOS FOR UK NUCLEAR PROJECT



Four new Kobelco G2 Series crawler cranes have been supplied to BYLOR for construction of the UK's Hinkley Point C nuclear power station. BYLOR is a Bouygues TP and Laing O'Rourke joint venture company, the main civils contractor.

The cranes are a 100 tonne capacity CKE900G-2 and three CK800G-2s, which lift 80 tonnes at 3.0 metres radius. Power is from Stage IV/Tier 4 Final diesel engines.

Alain Mazzia, BYLOR equipment and operations lead. "BYLOR will be delivering over 40 major structures across the project and the cranes will be extensively used as our programme intensifies."

Hinkley Point C received full approval towards the end of 2016.

Terex Cranes returns to profit, sales down

Second quarter figures at Terex Cranes show a return to profit. Income in the second quarter was US\$ 14.5 million or 4.8 percent of net sales, against a loss of \$12.8 million in Q2 2016.

Sales in the period, however, were down 15 % to \$303.8 million from \$357.4 million in the same quarter a year earlier.

John Garrison, Terex Corporation president and CEO, said, "Our Cranes segment returned to profitability in the second quarter, realising benefits from its restructuring programme. Our Materials

Processing (MP) segment continued its excellent performance, growing sales and operating margin for the third consecutive quarter. Aerial Work Platforms (AWP) sales were better than expected on the strength of the North American market, however, operating margins compressed on pricing dynamics, higher steel costs and the strength of the US dollar."

Order backlog at Terex Cranes was up 29 %. "Looking forward, backlog in our three segments grew substantially, up 36 % year-over-year. This is the

second consecutive quarter that we increased backlog in each segment," Garrison said.

Looking ahead, Garrison commented, "We continue to follow our disciplined capital allocation strategy. We monetised \$277 million of Konecranes shares for a year-to-date total of \$549 million. We repaid the \$254 million remaining on our 6.5 % notes and repurchased 9.4 million Terex shares for \$316 million, bringing our total to 15.9 million shares for \$517 million for the first six months of the year."

Pedestal version of Demag 3800-1

Versatility is a key feature of the new Demag PC 3800-1 pedestal crane. It is a version of the 650 tonne capacity CC 3800-1 lattice boom crawler.

Access can be gained to sites

not possible with the crawler versions, the manufacturer said. In addition, the stronger load charts, especially on main boom only, mean less ground preparation and easier transport, Demag said.

The PC 3800-1 only needs four areas of ground to be prepared for the outriggers. Perfect levelling is unnecessary as the hydraulic cylinders on the outriggers can compensate for up to 2.1 degrees on a 12 x 12 metre outrigger base.

Applications include refineries, harbours and bridge installation from river banks.

Hydraulically extendable and foldable outriggers can be set at 12 x 12 m, 14 x 14 m

HIGHLIGHT

■ On-road load handling equipment manufacturer Hiab, part of the Cargotec group, has received an order for 50 loader cranes from Shanghai Longcheng Special Purpose Vehicle Company in China.

The value of the order is around US\$ 1.2 million and it is for the 10 tonne-metre rated Hiab 111B-2CLX hydraulic loader crane to be delivered by the end of 2017.

Five new rough terrain cranes have been acquired for Freeport on Grand Bahama Island in the Caribbean primarily for ship maintenance work in dry docks.

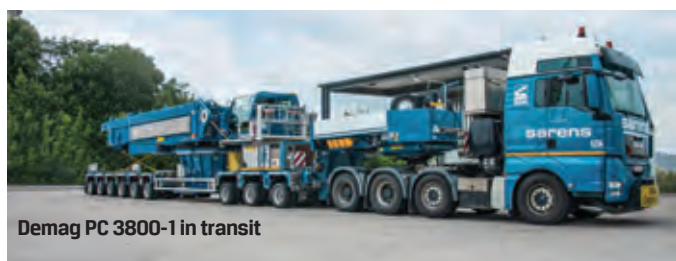
The XCMG cranes are working more than ten hours a day, the Chinese manufacturer said. Felix Fang, project manager, said he was impressed with the performance and reliability of the cranes since their arrival on 1 March 2017. There are two 25 tonne capacity RT25 and three 70 tonne capacity RT70U models.

Full extension and capacity at long reach are requirements for ship maintenance work at the port. Maximum height on the 25 tonner is 33.15 metres while the 70 tonner reaches 60.7 m.

The cranes are designed to have an energy-saving hydraulic system for maximum power delivery which also reduces fuel consumption by 15 percent, XCMG said.



in all configurations, including superlift. A 16 x 16 m outrigger setting without superlift "offers additional possibilities for long-reach lifts where the lifting capacity of a crawler crane would normally be limited." The new pedestal crane also provides increased lifting performance in several configurations or requires less counterweight.



Demag PC 3800-1 in transit

SECOND MEGA JACK

International heavy lift and transport specialist ALE is building a second Mega Jack 800 for its fleet. It is an 800 tonne capacity jacking system launched in 2014 and has been used around the world. Demand is such that another system is now needed, UK-headquartered ALE said. It will have four 12 metre towers, including starter cassettes, and bracing cassettes, to connect braces for jacking higher.

Ronald Hoefmans, ALE technical director, said, "Since we launched the Mega Jack 800 it has been constantly used on different projects, ranging from jacking bridges and offshore modules to heightening cranes. Clients like the versatility and time efficiencies of the system. A second system will not only be able to fulfil the demand, but the way it is built will give us the capabilities to jack-up bigger modules using up to eight towers and the possibility of putting two towers side by side with starter beams to give up to 1,600 tonnes capacity."

Strong first half year sales for Palfinger

In the first half of 2017 Palfinger group increased its revenue by 13.2 per cent to €753.8 million from €665.6 million in the same period a year earlier. It was a new record for half year results at the company.

Much of the success was attributed to good performance in Europe, Russia and China, plus acquisitions made by the Group since 2016. Palfinger splits into two groups: the Land segment and the Sea segment. The former includes hydraulic loader cranes and growth was 6.3 % to €624.6 million. In the sea segment which includes offshore cranes, revenue was up 65.2 % to €129.2

million, from €78.2 million in 2016. Acquisition of the Harding Group was the primary reason for the increase.

Commenting on the figures, Herbert Ortner, Palfinger CEO, said, "We are continuing to grow. Our flexibility enables us to utilise market opportunities that present themselves to varying degrees in the different regions across the globe. In addition, we have already met our profitability target for 2017, which is to achieve two-digit EBITn margin. We are optimistic that due to the continuously high number of incoming orders

we will again achieve record revenue for the 2017 financial year. Our ongoing restructuring efforts are expected to have a positive impact on earnings on a long-term basis."

Palfinger said the economic recovery is still being felt in the EMEA region. Particularly in construction and infrastructure. A benefit is equipment replacement, which had been suspended in recent years.

In outlook Palfinger forecasts that the overall business performance will continue to be satisfactory throughout the rest of the financial year and that Palfinger will grow again.

German Army buys 71 Liebherrs

The German Army has ordered 71 armoured mobile and rescue cranes from Liebherr.

The €150 million (US\$ 177 million) order was placed by the Federal Office of Bundeswehr Equipment, Information

Technology and In-Service Support (BAAINBw). Armoured cabins have been ordered on all 33 of the G-BKF recovery cranes and the 38 G-LTM 1090-4.2 cranes. Deliveries are due to start in the second half of 2018 and be completed by 2021.

The G-BKF is on a four-axle chassis and can lift loads or recover vehicles. It has a 20.9 metre telescopic boom to handle up to 20 tonnes. Two recovery winches and a towing device at the rear help it to recover and tow a wide range of vehicles.

Also on four axles, the G-LTM 1090-4.2 is derived from the standard 90 tonne capacity LTM 1090-4.2 wheeled mobile

telescopic crane. Both cabins are armoured. Its telescopic boom is 35.7 m and there is a recovery winch at the rear. In the order 21 units will have 22.5 tonnes of counterweight and carry the designation Very Heavy Duty Mobile Cranes. The remaining 17 units will have 8.4 tonnes of counterweight and be designated Heavy Duty Mobile Cranes.

For the armoured cabins Liebherr worked with military equipment supplier Rheinmetall. The driver's cabins are designed to protect the crew from ballistic, mine and IED explosions. A nuclear bacteriological and chemical (NBC) ventilation system will also be included.



UK-based rental company Berry Cranes used a Tadano all terrain crane rigged with three spreader beams from below-the-hook equipment manufacturer Modulift to lift a wooden bus shelter at the Bicester Village shopping outlet in Oxfordshire, UK.

Berry was tasked to lift the fragile 12.5 tonne bus shelter from its roadside location, relocate it to a storage area half-a-mile away, and eventually return it to another location at the retail village.

The crane rental company chose a Tadano ATF 70-G4 from its 12-crane fleet, a Modulift MOD 24 spreader, two Modulift MOD 12s (used in a one-over-two spreader beam configuration), and other rigging equipment. The same equipment will be employed when it is time to reposition the bus shelter. The crane used 30 metres of main boom, which provided 22.8 tonnes of capacity at a 6 m radius.

Greg Allen, contract lift operations manager at Berry Cranes, said, "The biggest issue was that the bus shelter was originally built in situ during the 1960s so no-one could know how stable it was until we lifted it. Further, the lift required extensive planning as the location gets extremely busy during hours when the retail park is open to shoppers."



Liebherr G-BKF rescue crane using its rear towing device

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LIFETIME EXCELLENCE

Hiab cranes positive for Cargotec in first half

For the first six months of 2017 sales at hydraulic loader crane maker Hiab were up 4 per cent to €552 million from €529 million in the first six months of 2016.

Sales at parent Cargotec's other divisions, Kalmar and MacGregor, however, were both down, negatively impacting the performance of parent Cargotec. At port crane and handling equipment division Kalmar orders declined year-on-year. Orders in the second quarter at marine crane and equipment

division MacGregor were higher than the first quarter but the market remains difficult, Mika Vehviläinen, Cargotec CEO, said.

Group sales were €1,638 million, down 5 per cent from the €1,727 million for the same period a year earlier. Operating profit was €116.7 million, down from €120.2 million in H1 2016. That figure was 7.1 % of sales, up on the 7.0 % in the first six months of 2016.

Vehviläinen said, "The development of our business

continued to be positive during the second quarter of 2017.

The operating profit, excluding restructuring costs, was the highest in Cargotec's history. The business developed particularly well at Hiab, where the orders received increased by 17 percent and profitability improved to a record high level."

In outlook for 2017 Cargotec forecasts operating profit, excluding restructuring costs, to improve from the 2016 figure of €250.2 million.

HIGHLIGHTS

■ Energy and industrial supplier Sparrows Group, has been awarded a contract to fully refurbish two offshore cranes for British multinational utility company Centrica in the East Irish Sea. Centrica will spend up to £60 million (US\$ 78 million) to refurbish the 27-year-old cranes on the Morecambe gas field's DP6 and DP8 platforms, off the UK's Lancashire and Cumbria coast.

■ German manufacturer of wireless crane control systems, HBC-radiomatic, has celebrated 70 years since it was founded in 1947 by Alfred Huber and Martin Brendel. It now has 450 employees and threw a large party for them and their families. More than half of the company's systems are exported worldwide.

Six Raimondi towers up in Paris

French Raimondi dealer GP Mat International has installed six of the Italian manufacturer's tower cranes on a jobsite in a suburb of Paris, France.

The university jobsite, MINES ParisTech, is at Saclay, a southwestern suburb of Paris and the cranes will be there on site for between 18 months and two years.

Main contractor is Cardinal Edifice which already owns Raimondi cranes. On this job Cardinal used its MRT189, MRT223 and three MRT243s. It also added a new 16 tonne capacity MRT294. All are flat top towers, erected to heights

ranging from 34 to 52 metres. On this job they were each erected in about 16 hours over two days.

Frank Torchard, GP Mat president, led the ten strong team to erect the cranes, including elevators for the operators. "It was imperative to have cranes with high lifting capacity on this site due to the heavy prefabricated components. The cranes will be used in the construction of a set of offices over five levels, and will be lifting form panels, concrete, and prefab elements over the duration of the construction process," Torchard explained.

To comply with French labour

law, both of the cranes exceeding 50 m in height were fitted with elevators for operator access.

MAMMOET RUSSIA LOADS OUT 7,400 TONNE OIL PLATFORM

A 7,400 tonne oil platform was loaded out by Mammoet Russia before its transport to Lukoil's Vladimir Filanovsky field in the Caspian Sea. It was the offshore, ice-resistant, stationary platform LSP-2 which Mammoet loaded out onto a barge using an hydraulic push up system.

Filanovsky is the largest oil discovery in Russia in 25 years.

It is in the northern part of the Caspian Sea, 220 km from Astrakhan. Reserves are anticipated to be 129 million tonnes of oil and 30 billion cubic metres of gas. Output of the new platform, which is for Phase two of the development, will equal 6 million tonnes a year.

In 2014, working for Lukoil on the same field, Mammoet Russia worked on the construction and load-out of a central processing platform (CPP) weighing nearly 10,000 tonnes. The latest contract was won on the back of this earlier. Mammoet Russia was contracted for the weighing, jacking and load-out of LSP-2. For weighing and jacking Mammoet used its JS2400 push-up system.

It means large and heavy structures can be built on the ground and raised to the correct height for load out. A load-out frame was inserted during jack up to provide sufficient height for installation at sea. Using this system removes the need to work at height, significantly increases safety and reduces the time needed for the operation. Weighing, jack up and load out took less than 40 days, Mammoet said.



Six Raimondi flat top towers installed by GP Mat International in Saclay, Paris, France



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Share prices continued to rise for the major crane manufacturers between weeks 26 and 31. THOMAS ALLEN reports

Gathering pace

On the whole, major crane manufacturers enjoyed continued rises in their share prices between weeks 26 and 31, with the *IC* Share Index jumping once again by 9.47 percent over the six-week period, compared with the rise of 6.38 % seen in weeks 22 to 26.

Most notably, USA-based Manitowoc Cranes leapt by 23 % between weeks 26 and 31, reaching its highest price since March 2016. The jump was attributed to an announcement by Wall Street analyst Robert Baird that the company's shares would be upgraded ahead of its financial results for the second quarter of 2017.

The reason for this upgrade

was that one of Manitowoc Cranes' main competitors, USA-headquartered crane manufacturer Terex – whose share price rose by 7.52 % between weeks 26 and 31 – announced a significant increase in earnings, driven partly by a return to profitability from its crane division. It was believed that this bodes well for Manitowoc Cranes.

Two Japanese firms also saw their shares rise sharply, with Kobe Steel increasing by 15.29 % and Hitachi Construction Machinery up by 10.76 % over the six-week period.

Kobe Steel's financial results for the first quarter of 2017 – between 1 April and 30 June –

showed a 7.6 % growth in net sales, from JPY404.46 billion in the first quarter of 2016 to just over JPY435 billion in Q1 2017. This was said to have been aided by the continued gradual recovery of Japan's economy.

Hitachi revenue also increased, by 31.1% like-for-like, from JPY161.302 billion in the first quarter of 2016 to JPY211.499 billion in Q1 2017.

Just two of the companies listed in the *IC* Share Index recorded a fall between weeks 26 and 31. The most significant of them was Singapore-based Yongmao Holding, whose share price dropped by 8.70 % over the six-week period. This reflects the 1 % drop in the company's revenue compared to the same period in the previous year. In the first quarter of 2016, revenue was RMB154.642 million, whereas it was recorded as RMB153.165 million for the first quarter of 2017.

Austria-based Palfinger's share price dropped by 6.52 % between weeks 26 and 31, despite the fact that the group reported a growth in revenue in the first half of 2017. Revenue increased 13.2 % to €753.8 million from €665.6 million in the same period a year earlier. This was a new record for half year results at the company.

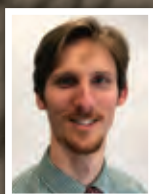
Looking at the major currencies, the US Dollar was down 3.29 % against the Euro, 0.45 % against the British Pound, 0.94 % against the Chinese Yuan, and 1.52 % against the Japanese Yen.

AUGUST *IC* SHARE INDEX

STOCK	CURRENCY	PRICE AT START	PRICE AT END	PRICE CHANGE	% CHANGE	PRICE 12 MTHS AGO	12 MTH % CHANGE
<i>IC</i> Share Index*		55.71	60.98	5.27	9.47	46.66	30.67
Legacy <i>IC</i> Share Index**		342.01	376.12	34.10	9.97	253.38	48.44
Dow Jones Industrial Average		21399	22093	693	3.24	16514	33.78
FTSE 100		7354	7522	168	2.28	5993	25.51
Nikkei 225		20220	20056	-164	-0.81	17698	13.32
Hitachi C onstruction Machinery	YEN	2817	3120	303	10.76	1758	77.47
Konecranes	€	37.45	38.80	1.35	3.60	21.10	83.89
Kobe Steel	YEN	1138	1312	174	15.29	123	966.67
Liugong	CNY	8.61	9.11	0.50	5.81	7.50	21.47
Manitowoc Cranes	US\$	5.87	7.22	1.35	23.00	14.20	-49.15
Palfinger	€	40.80	38.14	-2.66	-6.52	25.35	50.45
Sany Heavy Industry	CNY	8.18	8.88	0.70	8.56	6.00	48.00
Tadano	YEN	1337	1369	32	2.39	1281	6.87
Terex	US\$	36.68	39.44	2.76	7.52	17.27	128.37
XCMG	CNY	3.75	3.97	0.22	5.87	3.73	6.43
Yongmao Holding	SGD	0.69	0.63	-0.06	-8.70	0.15	320.00
Zoomlion	CNY	4.53	4.95	0.42	9.27	5.04	-1.79

**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 of *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	6.783	6.719	-0.0634	-0.94	6.06	10.87
€	0.8761	0.8473	-0.0288	-3.29	0.7376	14.88
Yen	112.54	110.84	-1.71	-1.52	102.51	8.13
UK£	0.7699	0.7664	-0.0035	-0.45	0.6119	25.26

Period: Week 26 – 31

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The 40-metre-long, 50 tonne bridge being moved through central Nagasaki

Sankyu on bridge in Nagasaki

Japanese logistics, engineering and heavy lift specialist, Sankyu, has successfully transported a prefabricated bridge – weighing around 50 tonnes and with a length of 40 metres – across the centre of the Japanese city of Nagasaki. The bridge now connects Nagasaki and the island of Dejima, in the bay of Nagasaki.

To transport the bridge through the densely-built urban area Sankyu used

12 lines of SPMT from Scheuerle, part of German heavy load transportation specialist Tii Group. “Sankyu has been relying on self-propelled transport solutions from Tii Group for a long time,” said Ralf Grützmaier, area manager sales at Tii Sales responsible for Asian markets. “Manoeuvring the 40 metre long Dejima bridge through the old town of Nagasaki required experience and precise vehicle control. Here, our vehicles along with

the Sankyu specialists did an excellent job.”

According to the Tii Group, Sankyu has been a long-standing customer and has more than 250 of its SPMT axle lines.

BIGMOVE CHOOSES FAYMONVILLE

The BigMove group, a European special and heavy haulage logistics network comprising 15 companies from across Germany, the Netherlands, Belgium, Austria and Poland, has taken delivery of 21 extendable Faymonville MegaMax low bed semi-trailers with pendular axles and hydraulic suspension.

Faymonville says the MegaMax is suitable for transporting high goods, industrial parts or machines. The semi-trailer has low beams with a height of just 225 mm. It also says the MegaMax offers manoeuvrability and flexibility in use with a steering angle of 60 degrees thanks to its pendular axles and a total lift of 600 mm.

“The manoeuvrability and stability of the Faymonville semi-trailers is very good. The fact that the low bed is equipped with pendle axles and therefore [is suitable] for an axle load of 12 tonnes was one of the decisive factors behind our decision to order,” commented Ralf Reschka, administration director at BigMove.

ALE in Nordlink milestone

A milestone was reached with ALE’s delivery of the first two transformers, each weighing more than 200 tonnes, on the Nordlink energy project in Norway.

Known as the Green Cable project, Nordlink is a joint Norwegian and German renewable energy scheme in Tonstad,

Norway. It exchanges renewable energy between Germany and Norway. The 623 km high voltage direct current transmission line is one of the longest of its type in Europe, ALE said. UK-based international heavy transport and lifting specialist ALE is responsible for engineering, transport and installation of 14 transformers. Seven are going to Tonstad and the others to Wilster in Germany.

In June ALE received the transformers at the Port of Kvinesdal in Norway. They were transported on the AL100 girder frame and 26 axle lines of conventional trailer. It was a technically challenging 70 km route through the Norwegian mountains, ALE said. ALE’s new local team used its girder frame for the first time in Norway on this project.



Tradelossa has expanded its transport fleet in Mexico with nine new extendable trailers from German manufacturer Goldhofer. All are types STZ-DL 4 AAA and STL-DL 3 AAA with four and three axles. Closed they are 17 metres long and they extend to 53 m. Capacity is 30 tonnes.

In addition to transporting wind turbine blades 65 m or even longer, they will also be used for pipe, steel and concrete beams, EOT crane bridge beams and so on, the company said.

ALE delivering the first two transformers on the Nordlink project



More beer in Burton

Burton-on-Trent in the English Midlands can trace its history of brewing beer back to the 11th Century when monks first started under the guidance of Wulfric Spot, Earl of Mercia, writes David Weston.

Since 2011 US brewer Molson Coors has been carrying out a multi-million pound investment programme. New fermentation vessels are being installed. Each one can hold 400,000 litres of beer which is the equivalent of 840,000 (imperial) pints. Three new 20 metre-long fermentation vessels made the more than 600 mile (close to 1,000 km) trip

MAMMOET DONATES TRUCK TO DUTCH RED CROSS



International heavy transport and lifting company Mammoet, has donated a truck to the Red Cross in the Netherlands.

Carine Miras, head of national emergency support in the Netherlands at the Red Cross, commented, "The Dutch Red Cross often provides support during crisis situations in the Netherlands, together with local authorities. In addition, the Red Cross provides first aid during various events. We often need materials such as stretchers and blankets on site to do our work and we need a truck to transport them."

"The Red Cross does important work and we wanted to help the organisation on a practical level with something they could put to good use," said Theo Kroese, Mammoet director of marketing and communication. "Moreover, it's connected to our own area of expertise."

The Red Cross is very happy with the gift, said Carine Miras. "It's obviously great to receive a new truck. Our previous truck was almost sixteen years old and was ready for replacement. It wasn't very environmentally friendly. During crisis situations in the inner cities, we would sometimes receive fines for driving our truck into a low emission zone. We are very happy that Mammoet recognised this problem and decided to help us out."



by sea and land from the manufacturer in Holland, arriving in the United Kingdom at Ellesmere Port on the north west coast.

For the subsequent road trip to Burton the vessels were transported by three haulage companies: Bolk from the Netherlands, Potteries Heavy Haulage, and Collett. The brewery vessels had a road-going travel height of just over 6 metres. Their journey from Ellesmere Port was never going to be an easy one, never mind finding a route around many low bridges, but there were also going to be problems along the route. These included electricity cables and low hanging phone lines that would require lifting to allow the loads to pass by.

Something that has been sadly neglected in recent years by councils in the UK is the job of tree trimming along major



routes so the three vessel convoy travelled with a team of tree surgeons. The convoy had been due to travel though the week but fell short of its target. The photos were taken on the Sunday morning before they set off again from Kelsall at 08.00. The convoy travelled from Kelsall via Winford to Holmes Chapel. The tree surgeons had their work cut out for them around Winford as it looked like no one had trimmed any of the trees in the last 10 years. It helped the convoy manage a sedate pace as having set out at 08.00 from Kelsall they had only just cleared Winford after 14.00 with them getting into Holmes Chapel a couple of hours later. The following days would see the convoy travel along one of the most used abnormal load route in the country which helped with progress in arriving at the brewery on time.

Ethiopian transport jobs

The Djibouti, Africa-based division of heavy lift and specialised transport specialist Steder Group, Steder Group Djibouti, has successfully completed the transportation of four transformers in Africa.

The transformers weighed 92 tonnes each and were transported from the port of Djibouti to the Sululta and Debre Birhan substations in the neighbouring country of Ethiopia. According to the Steder Group, the project was conducted under 'extreme time pressure' but despite this it reports that all

four units were safely transported to the arrival site and well within the deadline.

In a separate job, Steder Group Djibouti also announced the safe delivery of two ball valves from the port of Djibouti to the Genale Dawe hydropower project – a hydro power dam project in Ethiopia.

According to the Steder Group, each ball valve weighed 130 tonnes, the distance travelled was approximately 1,450 km, and the ball valves were safely delivered on schedule.



Steder Group Djibouti says it transported the 92 tonne transformers safely and quickly

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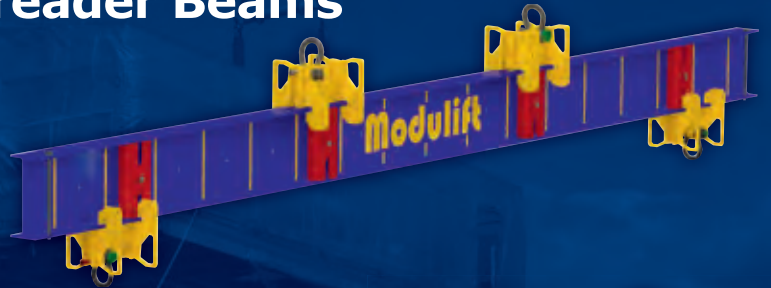
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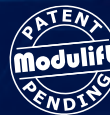
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New 50 tonner from Talbert

North American heavy-haul and specialized trailer manufacturer, Talbert Manufacturing, has launched a 50 US ton (45 tonne) capacity bus hauler trailer, called the 50CC-BH. It can be used to haul a wide range of oversized equipment, including buses, excavators and class A trucks. The trailer is also suitable for hauling equipment with a low clearance and a long wheel base.

Talbert said it designed the trailer with an in-deck winch enabling users to load equipment from either the front or rear of the trailer. Talbert designed the 50CC-BH with extra steel in the main and side beams of the deck, as well as in the gooseneck and rear axles. It claimed this design allows the trailer to achieve its 50 ton capacity rating without significantly increasing its weight.

The trailer has rollers and a snatch block that allow users to pull equipment from either end of the trailer using a 20,000 pound (9 tonne) planetary in-deck winch. Users can operate the winch via remote control, which eliminates the need for additional people



The new 50 US ton (45 tonne) Talbert 50CC-BH

when loading inoperable equipment. Talbert said it also saves customers from the hassle and cost of hiring a towing company.

The 50CC-BH has three close-coupled axles and has a 22-foot, 6-inch (6.9 metre) lower deck length, plus a 20-foot, 5-inch (6.2 m) rear bridge, creating a 43-foot (13 m) load base. Talbert said this provides ample space for hauling large equipment. It has a 21 inch (533 mm) deck height and a 24 inch (610 mm) flip-up gooseneck that increases the unit's 84 inch (2.1 m) swing radius to 108 inches (2.7 m). This allows use with three- and four-axle trucks and keeps the trailer within US regulations (that stipulate an overall length limit of 53 feet (16 m) when running empty). Talbert said this can help customers save on permit costs.

Talbert offers the 50CC-BH with heavy-duty, 10 foot (3 m), removable aluminium ramps which can be stored in compartments at the gooseneck. The 50CC-BH is designed with a low front and rear load angle for loading large, low-profile equipment.

The 50CC-BH is made from heavy-duty, T-1, 100,000-psi minimum yield steel for durability and longevity and is coated with Valspar R-Cure 800 paint to help prevent corrosion and provide a long-lasting finish. ■

FIRE SERVICE CHOOSES MERCEDES-BENZ UNIMOGS



Three new all-terrain Mercedes-Benz Unimog trucks have been bought by Suffolk Fire and Rescue Service in the UK. The fire department said the purchases have enhanced its ability to deal with a wide variety of incidents in difficult places.

The new vehicles are 14-tonne gross weight U423s with 4x4 chassis powered by 170 kW (231 hp) Euro VI engines. They are fitted with dropside bodies by Guildford-based fire engine specialist John Dennis Coachbuilders and have Palfinger PK 9001-EH high performance cranes which were supplied and fitted by TH White, of Devizes, Wiltshire. They also have 6.0-tonne Bushey Hall winches.

The cranes are used primarily to rescue horses and other large animals trapped in water or other hazards, with equipment that includes strops, harnesses and skid boards, all carried in a dedicated locker.

They also lift mission-specific demountable 'pods' on and off the vehicles. One of them, a rescue pod, contains an inventory for use by Suffolk's water rescue teams; as an extension to the Unimog's role, the new vehicles also tow rigid inflatable boats (RIBs).

Volvo FH16 8x4 for KKB

Remediation and recycling specialist KKB Group in the UK has taken delivery of a new Volvo FH16-750 tridem 8 x 4 tractor unit.

M C Truck and Bus of Aylesford supplied the truck for Kent-based KKB to haul its growing plant fleet between job sites around the country.

Craig Hore, KKB plant and operations manager, said, "With gross vehicle weights already exceeding 100 tonnes and expectations that with new plant investments, this could creep higher still, pure muscle is a consideration that we had to factor in."

The 150 tonne GCW tractor has a 750 hp D16K engine, full air suspension and a steered pusher axle. It has a Volvo I-Shift automated transmission with enhanced software for off-road driveability and starting. An 32:1 crawler gear provides exceptional pull from stationary, Hore said, "This truck future proofs us for the next three years."

Additional features include nearside and forward facing cameras, as well as near and off-side rear facing cameras on the Nootboom 'Pendle' 4-axle low bed trailer that it pulls. ■



KKB usually replaces its trucks every three years or after covering 300,000 km

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ICT50 TRANSPORT

Growth, albeit far less than last year, is still there in the Transport 50 ranking for 2017 but there is also another big change – a new number one, for the very first time. *ICST reports*



Change at the top

THE TRANSPORT 50

The Transport 50 Index is calculated using the total carrying capacity in metric tonnes of all specialized transport equipment in a company's fleet. The two main sections are specialized trailers and modular trailers and SPMT.

It is very much a work in progress and will always be evolving and changing. We largely rely on the submission of entry forms completed by the companies listed. We are always interested to hear from companies that have not yet entered the Transport 50. If yours is one of them, please let us know and look out for the 2018 Transport 50 entry forms and calls for entries on the KHL web site during the second quarter of the year. You are welcome to enquire at any time about the next T50.

For the first time since any of the *ICST* toplists started, well over 20 years ago, we have a different company at the head of the table. In this year's *IC Transport* 50 ranking of the world's largest specialized transport companies we have a new number one. ALE has increased its capability sufficiently to displace Mammoet and move into the top spot. The top two companies have swapped places.

Since last year's table, UK-headquartered ALE has added 3.4 percent to its Transport 50 Index, taking its T50 Index total from 200,318 to 207,093 tonnes. Mammoet, on the other hand, has reduced its fleet by basically the same amount, 3.3 %, from 207,300 to 200,480 tonnes, in what is very close to being a reversal of numbers. Our interview with Jan Kleijn, Mammoet CEO, in *ICST* July 2017 gives some insight into the company's situation and its approach to the future that might be linked with this.

Catching up fast in third place is Sarens from Belgium which has added 30,475 tonnes of capacity in the last 12 months, an increase of 26 % over its 2016 fleet total of 116,491.

Showing a steadier increase behind them is Fagioli from Italy which increased its fleet by 2.3 % this year, less than the 10.9 % in the year before. It is interesting to also compare the numbers for all of the above companies in the *ICST* June issue's *IC50* ranking of the world's largest crane-owning companies.

All the rest of the top ten in the Transport 50 have remained the same as 2016's table, other than Challenger Motor Freight and All Erection and Crane Rental, the former now up to seventh again, having changed places with All Erection which is now at 8th once again.

In terms of overall totals, for modular equipment in the top 50, the figure was up 3.99 % (41,070 tonnes) while for specialized trailers it was up 6.29 % or an equally impressive 44,361 tonnes. The number of tractor units was up by 1.9 % or 433 units on 2016. This was far less than the 10 %, or 2,067 unit increase the year before.

The two figures that are down this year are the number of employees, by 0.7 %, or 672 people, and the number of depots, by 2.4 %, from 3,209 to 3,131. The year before (2015 to 2016) they were both up, employees by 2.9 % »

(2,692 people), and 8.9 % or 262 depots.

Outside the top ten, among the most notable increases was posted by Maxim Crane Works, up to 15th place from 31, following its acquisitions of AmQuip and Essex. Burkhalter entered the top 50 by moving up an impressive 21 places from 67 to 46. Another notable increase was posted by Vietranstimex, up nine places from 43 to 34.

There are eleven new entries for 2017, five of them in the top 50. Highest are a crop



2017 RANK	2016 RANK	COMPANY	COUNTRY OF HQ	DEPOTS	AREA OF OPERATION	EMPLOYEES
1	2	ALE	United Kingdom	40	Worldwide	1,865
2	1	Mammoet	Netherlands	90	Worldwide	5,000
3	3	Sarens	Belgium	90	Worldwide	4,195
4	4	Fagioli	Italy	10	Worldwide	630
5	5	Landstar	USA	1,400	International	1,200
6	6	ATS Specialized	USA	16	National	1,321
7	8	Challenger Motor Freight	Canada	5	International	2,200
8	7	All Erection & Crane Rental	USA	37	International	1,500
9	9	Bennett Motor Express	USA	130	International	300
10	10	Barnhart	USA	45	Continental	1,200
11	12	Bigge Crane and Rigging	USA	17	International	932
12	11	Daseke (Lone Star Transportation)	USA	47	International	2,949
13	13	Al Jaber Heavy Lift & Transport	Abu Dhabi, UAE	8	Worldwide	850
14	14	NTC Logistics India	India	12	Continental	2,639
15	31	Maxim Crane Works	USA	47	National	1,450
16	17	Deep South Crane & Rigging	USA	6	International	600
17	16	Big Move	Europe	13	Europe	1,230
18	15	Emmert International	USA	3	International	95
19	21	Entrec	Canada	16	Canada and USA	550
20	23	Transport Bellemare International	Canada	7	International	675
21	19	NCSG Crane and Heavy Haul	Canada	26	Western North America	1,000
22	n/a	Sterett Crane & Rigging	USA	7	National	62
23	n/a	Combined Transport	USA	1	International	578
24	n/a	Daily Express	USA	8	International	148
25	20	Heavy Transport Inc (Bragg Companies)	USA	9	National	200
26	n/a	MSA Delivery Services	USA	6	International	75
27	22	Sankyu	Japan	10	Japan and Asia	300
28	24	Hareket Heavy Lifting and Project Transportation	Turkey	5	Turkey, CIS and Middle East	400
29	26	Tradelossa	Mexico	6	Mexico, South USA, Central America	263
30	27	Edwards Moving & Rigging	USA	6	International	125
31	25	Lampson International	USA	9	Worldwide	300
32	28	Tutt Bryant Group	Australia	8	National	550
33	30	Transportes Montejo	Colombia	9	South America	788
34	43	Vietranstimex	Vietnam	4	Vietnam, Laos and Cambodia	346
35	33	Van der Vlist	Netherlands	11	Worldwide	550
36	32	Nippon Express	Japan	840	Worldwide	52,024
37	n/a	SOP&G	Russia	5	Russia and CIS	700
38	37	Allelys Heavy Haulage	United Kingdom	2	UK, Ireland and mainland Europe	155
39	34	Miller Transfer & Rigging	USA	18	International	85
40	39	Lift and Shift India	India	4	India, Middle East, Sri Lanka, Bangladesh, SE Asia	250
41	35	Havator	Finland	45	Northern Europe, Russia	600
42	36	Locar Guindastes e Transportes Intermodais	Brazil	10	National	1,229
43	42	Megatranz Transports	Brazil	3	Brazil, Bolivia, Paraguay	114
44	29	Berard Transportation	USA	4	National	75
45	38	Irga Lupercio Torres	Brazil	9	South America	200
46	67	Burkhalter Rigging	USA	5	North and South America	150
47	41	Collett & Sons	United Kingdom	4	UK, mainland Europe, worldwide	145
48	40	Nabros Transport	India	2	North, West and South India	250
49	50	Transportes Noroccidental	Ecuador	12	Ecuador, Peru	600
50	44	Stiglich Transportes	Peru	4	Peru, Chile	139



of four: Sterett, Combined Transport, Daily Expresss and MSA Delivery Services, from the USA, and numbers 22, 23, 24 and 26, respectively. Last of the top 50 new entries is SOP&G from Russia in at 37th place. Nine companies were removed, mostly because it was old data. Just three of them were from the top 50.

Omega Morgan from the USA entered for the first time and came in at number 65

SENIOR CONTACT	WEB ADDRESS	NUMBER OF TRACTOR UNITS	MODULAR TRAILERS/ DOLLIES	SPECIALIZED TRAILERS	T50 INDEX 2016	T50 INDEX 2017	2017 RANK
Mark Harries, Global managing director	www.ale-heavylift.com	151	197,778	9,315	200,318	207,093	1
Jan Kleijn, CEO	www.mammoet.com	494	200,480	n/s	207,300	200,480	2
Wim Sarens, CEO	www.sarens.com	344	123,064	23,902	116,491	146,966	3
Fabio Belli, CEO	www.fagioli.com	122	94,940	11,100	103,640	106,040	4
Rusty Cody, VP heavy specialized and intermodal	www.landstar.com	9,434	2,622	89,905	96,645	92,527	5
Gary Stang, vice president	www.atsinc.com	919	15,182	65,255	95,616	80,437	6
David Einwechter, general manager	www.challenger.com	1,500	0	72,381	72,381	72,381	7
Michael Liptak, president	www.allcrane.com	381	1,728	60,384	74,088	62,112	8
David Lowry, CEO	www.bennettig.com	895	2,567	45,178	49,284	47,745	9
Alan Barnhart, CEO	www.barnhartcrane.com	299	23,349	24,041	45,575	47,390	10
Weston Settlemyer, president and CEO	www.bigge.com	72	32,396	9,140	39,341	41,536	11
Don Daseke, CEO and chairman	www.daseke.com	3,021	0	39,227	40,620	39,227	12
George Koshy, business devel. director	www.ajhl.com	0	34,476	0	34,476	34,476	13
Diwan Babu, chairman's assistant	www.ntclogistics.in	685	11,006	23,051	34,057	34,057	14
Frank Bardono, COO	www.maximcrane.com	350	4,928	25,323	14,072	30,251	15
Mitch Landry, vice president	www.deepsouthcrane.com	77	13,270	14,822	24,963	28,092	16
Horst Wallek, chairman of the board	www.bigmove.net	668	4,968	21,376	26,344	26,344	17
Terry Emmert, president	www.emmertintl.com	89	22,580	3,620	31,194	26,200	18
John Stevens, president and CEO	www.entrec.com	182	15,840	10,220	20,898	26,060	19
Jean-Luc Bellemare, president	www.transportbellemare.com	225	6,148	17,966	18,507	24,114	20
Ted Redmond, president and CEO	www.ncsg.com	205	8,805	15,132	23,918	23,937	21
Tres Sterett, president	www.sterettheavyhauling.com	73	12,923	9,233	n/a	22,157	22
Michael Card, president	www.combinedtransport.com	645	11,340	10,288	n/a	21,628	23
Mark Eyer, vice president	www.dailyexp.com	288	1,057	19,927	n/a	20,984	24
Robert Weyers, general manager	www.braggcrane.com	110	13,971	6,985	20,956	20,956	25
Jerry Rozum, president	www.msadelivery.com	60	0	20,598	n/a	20,598	26
Masaharu Miyazono, general manager	www.sankyu.co.jp	38	17,243	990	19,744	18,233	27
Engin Kuzucu, general manager	www.hareket.com.tr	68	12,077	5,711	17,524	17,788	28
Carlos Carcamo, sales manager	www.tradelossa.com	150	8,069	7,324	14,907	15,393	29
Mark Edwards, CEO	www.edwardsmoving.com	29	10,304	4,836	14,740	15,140	30
Bill Lampson, president and CEO	www.lampsoncrane.com	30	12,706	1,775	17,058	14,482	31
Robert West, general manager	www.tuttbryant.com.au	28	13,054	1,758	14,332	14,332	32
Fernando Montejó, general manager	www.transportesmontejo.com	117	9,600	4,669	14,269	14,269	33
Vo Duy Nghi, CEO	www.vietranstimex.com.vn	80	9,368	4,796	10,624	14,164	34
Dirk and Nico van der Vlist, directors	www.vandervlist.com	246	3,364	10,139	13,210	13,503	35
Naomi Fujita, group general manager	www.nipponexpress.com	21	11,598	1,894	13,492	13,492	36
Ildar Akhmetov, director	www.sopig.ru	95	8,440	4,890	n/a	13,330	37
David Allely, director	www.allelys.co.uk	48	8,400	4,835	11,757	13,235	38
Mitchell Unger, president	www.millertransfer.com	139	0	13,074	13,069	13,074	39
Sameer Parikh/Romil Parikh, directors	www.liftandshift.co.in	10	12,700	270	11,246	12,970	40
Jussi Yli-Niemi, CEO	www.havator.com	50	8,806	4,110	12,916	12,916	41
Julio Simões, President, director	www.locar.com.br	55	9,950	2,305	12,015	12,255	42
Renato Zuppardo, commercial director	www.megatranz.com	52	11,140	735	10,640	11,875	43
Brett Berard, VP operations	www.berardtrans.com	42	10,120	1,355	14,320	11,475	44
Lupercio Torres Neto, president	www.irga.com.br	81	7,442	4,014	11,456	11,456	45
Brooke Burkhalter, president	www.burkhalter.net	68	7,729	3,493	n/a	11,222	46
David Collett, managing director	www.collett.co.uk	68	5,764	5,445	10,899	11,209	47
Nilesh Patel, chairman	www.nabrotransport.com	73	6,000	5,003	11,003	11,003	48
Edgar Andrade, business manager	www.noroccidental.com	150	5,905	4,000	9,095	9,905	49
Aldo Macassi Pereyra, ops. manager	www.stiglich.com.pe	78	5,567	4,295	9,862	9,862	50

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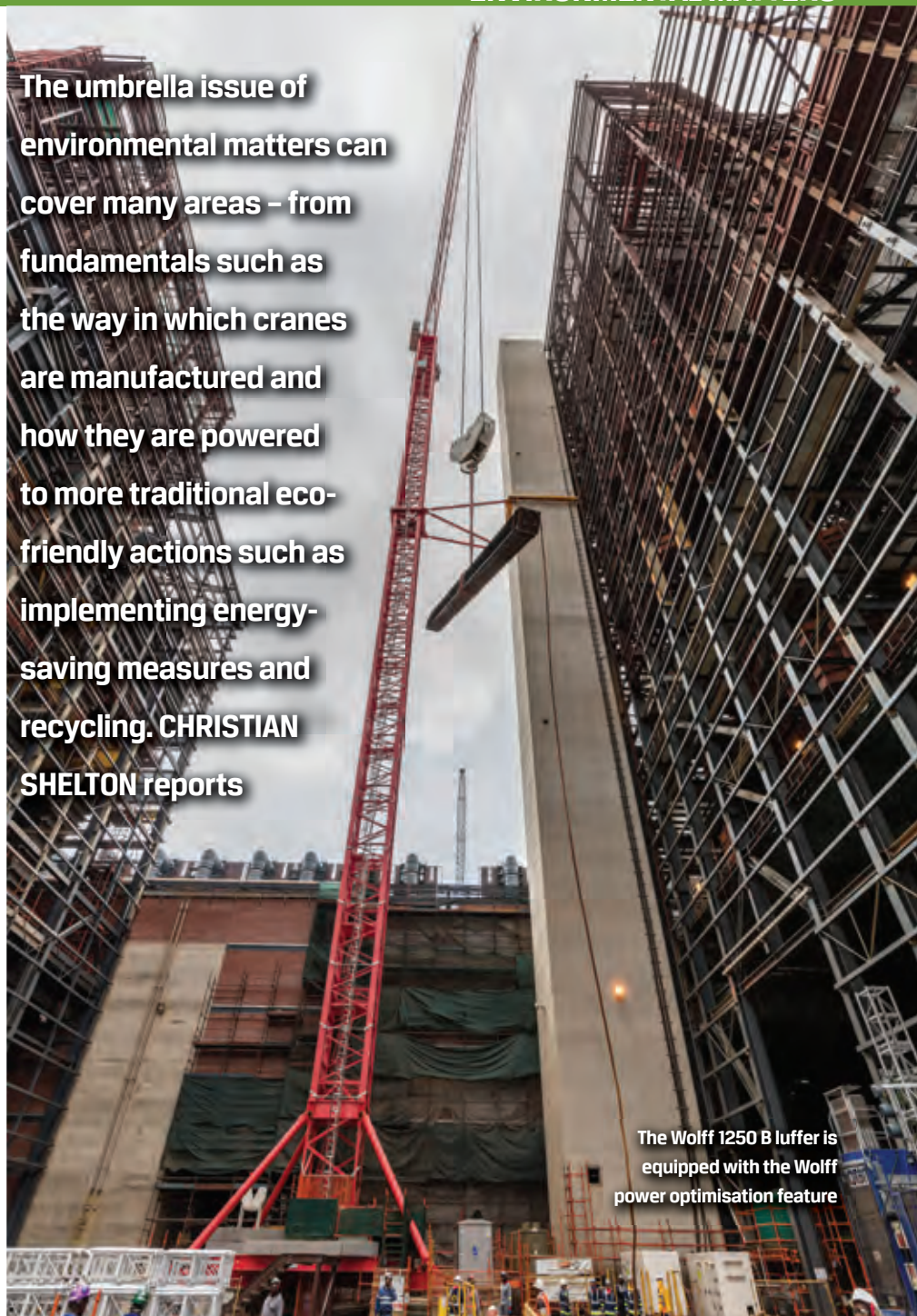
Going green

In the last month, environmental matters hit the headlines in the UK with the news that the government plans to ban the sale of new petrol and diesel cars by 2040. It also revealed plans to spend £246 million (\$320 million) over four years to fund research on batteries, as there is currently little capacity to store renewable energy in the UK. Although the government initiative is aimed at consumers, industry will surely follow suit. Henrik Henriksson, president and CEO at VW truck business Scania, commented recently, "As a company focusing on sustainability, we are pushing for renewable fuels – biodiesel, bioethanol, biogas. And here we see a strong demand coming not only from our customers but, even more encouraging, from our customers' customers."

A recent study, the *Non-road Mobile Engine and Aftertreatment Forecast* by consultancies Knibb Gormezano & Partners (KGP) and Off-Highway Research, looked at engine emissions across the diesel-powered construction, agricultural and materials handling equipment sectors. It identified an expected swing towards compliance with standards over the coming years. In 2013 more than 50 per cent of diesel engines fitted in new equipment globally met an emission standard of Tier 2 or less. By 2023 that proportion is expected to fall to just 4 %. Machines fitted with Tier 3 engines will be the largest part of the non-road mobile machinery market by that point, with significant numbers at Tier 4 Interim or higher. This includes Stage V engines, which will start to be fitted to new machines in Europe from 2019.

It is encouraging to see, however, that many companies in our industry are ahead of the curve. For example, Italian crane manufacturer Locatelli Crane says it abandoned the use of Tier II engine versions around ten years ago, even though they are still allowed in some countries. Since 2015 Locatelli claims to have been the first manufacturer to have adopted Tier IV Final engines on its complete range of rough terrain cranes. The company says that thanks to the use of the latest technology, its Tier IV Final engines are able to reduce nitrogen

The umbrella issue of environmental matters can cover many areas – from fundamentals such as the way in which cranes are manufactured and how they are powered to more traditional eco-friendly actions such as implementing energy-saving measures and recycling. **CHRISTIAN SHELTON reports**



The Wolff 1250 B luffer is equipped with the Wolff power optimisation feature

oxide and particulate matter emissions to the lowest levels ever for off-road machines without compromising the performance of its cranes. In addition, it says fuel savings of up to 20 % are possible compared to previous models. Locatelli says it has achieved this through optimising its cranes' hydraulics and control systems and via electronic management of the engine – an approach we will see a number of other manufacturers have also adopted.

Locatelli says it is working with its suppliers to develop Tier V engine options to offer solutions to its main customers in the contracting, rental and shipyard markets – as these are the areas it has found to be most concerned with environmental matters and minimising harmful emissions.

Engine efficiency features

Another company to optimise its drive and control systems to reduce fuel consumption and maximise the reliability and productivity of all its new duty cycle crawler cranes (HS-Series) and lift cranes (LR Series) as well as all piling and drilling rigs, is German crane manufacturer Liebherr. For example, all the company's Stage IV/ Tier 4 Final engines have a limited maximum speed of 1,700 min⁻¹; this, the company says, contributes to fuel savings of approximately five percent compared to previous engines.

Optimised hydraulic systems also enable the size of the crawler cranes' engines to be reduced without any negative effect on their productivity, says Liebherr. This way, it maintains, efficiency is increased and fuel

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consumption decreased. In the new Liebherr HS 8130 HD duty cycle crawler crane, for example, the engine power has been reduced to 505 kW compared to 670 kW in the preceding model.

Another efficiency-enhancing engine feature Liebherr introduced is a lower engine speed while idling. This is significant as Liebherr says that duty cycle crawler cranes can be in idle mode for up to 45 % of their operating time. It states this figure is closer to 60 % for crawler cranes. Liebherr claims that with the lowering of the engine speed from 950 to 750 min⁻¹ while the cranes are in idling mode, up to two litres of fuel per hour can be saved. In addition, an automatic engine stop control switches the engine off during longer work interruptions, after having checked it is safe to do so. This, Liebherr says, saves fuel and reduces emissions. At the same time the cranes have fewer operating hours, thus increasing their residual value and extending their warranties and maintenance intervals.

Finally, an Eco-Silent Mode means the engine speed is reduced to a predefined, required level. Liebherr says this results in a notable reduction in diesel consumption without any impact on operational output. In addition, noise is also reduced by the Eco-Silent Mode.

Liebherr is keen to point out that environmental and economic interests can align. Crane buyers should consider low fuel consumption, longer service intervals, as well as a longer service life when buying a crane, it says, not only because these things are good for the environment but because they can save a considerable amount of money over the lifetime of the machine.

Power optimisation

German tower crane manufacturer Wolffkran has also implemented a number of power optimisation and control features to improve the environmental credentials of its electrically-operated tower cranes. For example, it says all drives are regulated by a frequency converter, making them more



Buying reconditioned engines helps reduce waste

energy efficient than conventional electric cranes or diesel-powered cranes. The company also says that the hoisting and luffing gear it uses can achieve high working speeds with comparatively small motors. It says this is because the drives automatically adjust the power output so that full power is available at all times, increasing working speeds by up to 40 %. Comparable speeds using drives without this feature could only be achieved by using much larger motors which would mean a much higher consumption of energy, Wolffkran says. In addition, smaller motors have lower transportation and assembly weights. This also has a positive impact on the environment, Wolffkran says, by reducing fuel consumption and resulting pollution. The control and drive technologies are also installed in a single cabinet facilitating energy compensation between the drives, reducing the amount of power needed to operate them, Wolffkran says.

Load sensing controls

Wolffkran also makes full use of load sensing controls. For cranes fitted with hydraulic luffing drives, such as the Wolff 166 B, the load sensing control automatically adjusts the performance of the hydraulic pump to the required capacity. In other words, the system uses sensors to measure the load and then regulates the oil flow into the hydraulics as required, rather than continuously supplying the maximum amount of oil. Therefore, the Wolff 166 B only needs a relatively small

motor with 22 kW – which requires less power than a larger motor.

Wolffkran also uses an automatic start-stop system. The cylinder that moves the jib of the 166 B is driven via a hydraulic unit. An electric motor drives the hydraulic pump and supplies the hydraulic cylinder with oil. With the Wolff start-stop system, the drive automatically switches off if the luffing gear is not being used.

Another company incorporating load sensing and power optimisation techniques to minimise the environmental impact of its loader cranes is Swedish on-road load handling specialist Hiab. One of the company's innovations is the electric power take off (ePTO) system for loader cranes. It's an electro-hydraulic system that is installed alongside the traditional engine-driven system that enables the crane operator to work with the engine switched off. When the loader crane is not in use, the electric pump automatically switches off to save energy and battery capacity. The crane uses an advanced load stabilisation system, LSS, to enable quick and easy crane operation, as well as a hydraulic system that cuts energy losses to a minimum, Hiab says.

Using electric power instead of conventional diesel power offers considerable benefits, claims Hiab, including improved energy efficiency, lower noise, and less environmental impact. It also means ePTO enabled loader cranes can be used indoors as no exhaust fumes are produced at the point of use.

Hiab says the ePTO system means that the energy required to operate the crane is 60-70 percent less than that required for a conventional crane. The system comprises a lithium-ion battery, an electric motor, a hydraulic pump and a smart electronic control system all packaged in a stainless steel box mounted on the truck's chassis. A display mounted inside the truck cabin provides information about the current status of the ePTO, which can also be started and stopped via the display. Hiab says the system's battery has a capacity of 40 kWh, which is sufficient



Hiab's ePTO system for loader cranes enables operators to just use electric power

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for a normal day's crane work and that, because the system is so quiet, it can also be used in cities and residential areas at night without disturbing people sleeping.

Eco-efficient oil tank

Hiab has also developed a system for maximising the efficiency of hydraulic oil tanks for trucks. The system is called the Cyclone tank due to the use of a 'cyclone' to remove air from the hydraulic oil. Hiab says the cyclone principle allows for much smaller tanks, which means reduced weight and less installation space is needed. When using a 125 litre cyclone tank, a basic truck with an installed crane can save up to 600 kg a year in carbon dioxide (CO₂) emissions compared to a truck with a standard 300 litre hydraulic tank, says Hiab. This is made possible by the reduced weight of the smaller tank, which allows for more payload. Cost savings are also made possible due to lower hydraulic oil consumption, says Hiab.

Reconditioned engines

An eco-alternative to using optimised engines is the option of reconditioning engines. This is a service Belgian company Hamofa Industrial Engines offers. The company says it reconditions more than 900 diesel engines a year. Hamofa claims that the cost for reconditioning an old engine is several times lower than purchasing a new engine. It also says that, where possible, the reconditioning process reuses major engine parts, such as the block, crankshaft and cylinder head, which reduces negative environmental impact.

Crane designs

So far we have looked at the way in which cranes are powered and the optimisation of their drive systems; however there are many other approaches manufacturers are adopting to improve their green credentials. For example, Wolffkran says that all its cranes are constructed with a focus on keeping assembly times as short as possible.



The LCL700 luffing jib tower crane was designed with environmental criteria in mind, says manufacturer Linden Comansa

How does this translate into improved green credentials? According to Wolffkran, faster assembly means the time (and size) of the mobile cranes assisting in the assembly are in turn reduced, resulting in less fuel consumption. Wolffkran also claims that by speeding up assembly time road closures are kept to a minimum, thus reducing pollution from exhaust fumes. Wolffkran points out that many of its crane components come as pre-assembled units directly from the factory; for example, the Wolff patented hoisting gear design, which is incorporated in the tower top, has the hoist rope already pre-reeved in the pulley block – speeding up the assembly of the jib. Wolffkran adds that the patented design of the tower-top-counterjib unit of its luffers keeps the weight of individual components down, enabling smaller (and more environmentally friendly) mobile cranes to be used for the assembly.

Wolffkran also has a modular crane system to enable efficient utilisation of tower sections and cross frame elements (for the base). Since these components can be combined and easily adapted to suit different crane configurations, Wolffkran says there is less need to transport them back and forth between the yard and the construction sites, reducing fuel consumption and pollution. In addition, older cranes can be combined with new components so that there is not always a need to buy a completely new one, saving natural resources, says Wolffkran.

The company has also implemented additional features on its cranes to improve their environmental credentials. For example, the heater in the Wolff cab has a timer. Rather than running the heater all night to make sure that the windows are defrosted in morning, Wolffkran says the timer can be set to start heating in the morning, thus reducing electricity consumption. Finally, Wolffkran says its cranes are coated with environmentally friendly water-based paints with almost no solvents.

Another company that has been actively evaluating the eco credentials of its crane designs is tower crane manufacturer Linden Comansa. Linden Comansa also already uses mast sections that can be dismantled into flat panels to reduce the number of trucks or containers used during the crane's transport. It claims all of its tower cranes are designed to be easily erected, saving time and the fuel consumption of mobile assist cranes. It also uses high-speed hoist winches (called Effi-Plus) which offer improved efficiency so users reduce power consumption.

In 2015 the company adopted what it calls 'a procedure for the sustainable management of new projects'. The main



Hamofa Industrial Engines reconditions more than 900 diesel engines a year, thus helping reduce negative environmental impact

goal of this was to consider environmental criteria when designing new tower cranes without compromising either the price or the quality of the crane. This plan was followed in the design of the LCL700 luffing-jib tower crane, which Linden Comansa launched in February 2017. The company says this helped it reduce the waste of raw materials and use components or materials with less (or zero) environmental impact – not only during the manufacturing process but also when the life of the crane is over. The company also designed an optional soundproofing box for the crane to reduce the noise emissions of the hoist mechanism.

Offices and factories

There are also various ways in which companies are reducing their negative environmental impact at crane manufacturing facilities. For example, Linden Comansa created an internal energy efficiency group with the end goal of becoming an ISO 50001 certified company. Linden Comansa says the group works on different projects that allow it to progressively introduce new elements into its manufacturing to help reduce consumption of energy and other resources. For example, in 2016 Linden Comansa says it reduced its energy use by 14 % compared to 2015, despite working hours increasing by 22 %. This was achieved through a number of different actions, including: changing the lighting system to LEDs across a large part of the factory; adopting a new lighting policy across the entire plant; and switching off the fans in the painting tunnel during short breaks. This year Linden Comansa is looking at installing solar panels on the factory roof and recovering residual heat produced in its facilities.

US crane manufacturer Link-Belt says it has long been committed to environmental consciousness. The company claims it prescribes to a decision-making strategy of safety, quality, cost, delivery and environment. In addition to protecting the surrounding Bluegrass Region at Link-Belt's home in Lexington, Kentucky, the company

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says that being a responsible corporate citizen provides operational and financial benefits. Link-Belt's ISO 14001 registered environmental management system, part of the company's overall business management system, formalises this commitment and provides it with a strategic framework, the company claims.

Link-Belt has measured its progress toward meeting sustainability targets yearly. In comparing 2016 to base year 2013, Link-Belt says it reduced annual water consumption by 52 % (or 7.6 million gallons), annual office paper consumption by 29 % (or 772,500 sheets), and annual purchased material that is ultimately scrapped and must be landfilled or recycled by 39 percent, or 2,126,445 pounds 965 tonnes). A major reason for those results, it says, has been a company-wide campaign named Re-Think which is aimed at getting employees focused on reducing, reusing, and recycling.

Link-Belt also says it tries to encourage the reuse of products or materials. For example, it receives products from Cummins, AxleTech and Titan Wheel on returnable pallets. Link-Belt also uses plastic lumber in place of wood for landscaping and wagon cribbing, and donates items such as light fixtures, furniture, and cafeteria appliances to global housing charity Habitat for Humanity.

From 2014 through to 2016 Link-Belt says it diverted 12,020,226 pounds (5,452 tonnes) of material from landfill for recycling. "Link-Belt minimised hazardous waste, producing 28,874 gallons (7,900 litres) of recycled solvent through distillation in 2016," says Ken Johnson, Link-Belt supervisor of environmental and security management.



Link-Belt's Ken Johnson
in front of the company's
pervious car park in Kentucky, USA

"The company also has systems in place for recycling by-products like cardboard, metal, batteries, plastic banding, paper and wood. We have increased our recycling rate from 89 percent in 2013 to 98 percent last year." Link-Belt says its vision is to be the first North American crane manufacturer to have a zero landfill facility.

Carbon footprint reduction

Link-Belt is also seeing positive results in reducing its carbon footprint. The company says that in 2016 it was 24 % (4,290 tonnes) less than what it was in 2013. The company's strategy for reducing its carbon footprint looked at energy efficiency, starting with a computerised energy management system for monitoring consumption and controlling equipment. "The manufacturing facility's HVAC and compressed air equipment isn't needed 24-7. We are automating those utilities to operate when the work begins," explains Link-Belt facilities and maintenance manager, James Bowman.

Energy consumption has also been reduced by installing low wattage automatic lights and utilising high-volume, low speed

fans for recirculating tempered air, and using exhaust air from large air compressors to supplement shop heating. Private office areas utilise a heat recovery type HVAC system that doesn't use a backup type heat. Open office areas are fed by a series of dual stage variable speed heat pumps and air handling units with natural gas back up heat.

Paint line process improvements have also helped reduce demand for natural gas, says Link Belt.

Finally, Link-Belt claims another significant improvement to its facility is a 27,500 square foot (2,555 square metre) pervious parking lot built in 2016. It stores approximately 25,700 cubic feet of water to greatly reduce storm water runoff.

A new wetlands and riparian buffer is also being constructed in the southwest corner of the property. A study is being made to identify other potential storm water best management practices. These projects are a joint effort between Link-Belt and the Lexington Fayette Urban County Government Division of Water Quality.

Link-Belt says its environmental management system extends beyond



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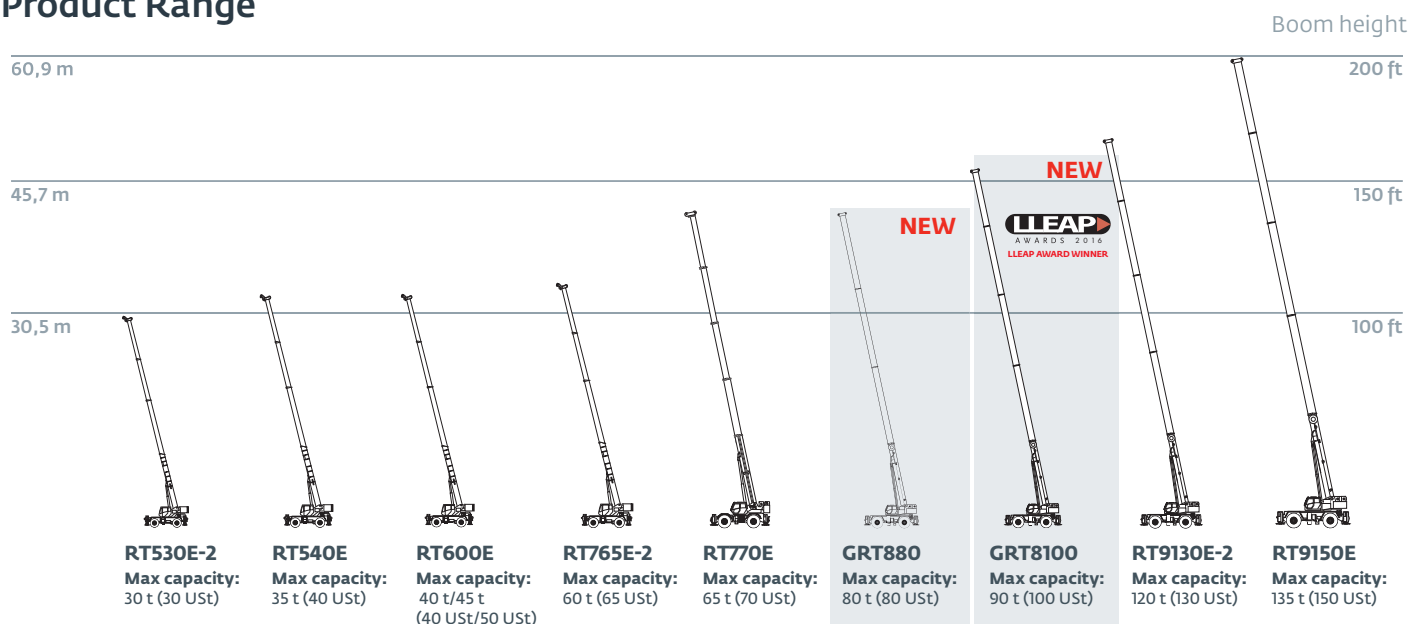
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employees to onsite contractors who must communicate Link-Belt's methods to their employees to minimise impact and maintain compliance. Parts suppliers are asked to share environmental information about their operations and are invited to learn more about Link-Belt's. This, Link-Belt says, encompasses its dedication to manufacturing cranes with the latest diesel engine technology to reduce exhaust emissions and increase fuel efficiency. Link Belt says it was the first mobile crane manufacturer in North America to achieve Tier IV Final compliance across its product line.

Heavy lift specialist Sarens also reports a number of company-wide procedures designed to reduce its environmental impact. The company's 'safety, health, environment and quality policy statement', signed by CEO Wim Sarens in March 2017 states, "Our activities not only need to comply with the needs and requirements of the market but must also be implemented with respect for the environment. Sarens is committed to the prevention of pollution and therefore restricts the production of waste and emissions to a minimum; it takes measures to use energy and natural raw materials sparingly, and investigates alternatives to the use of hazardous substances."



Underscoring this statement of intent, Kleopatra Kyrimi, group marketing and communications manager, reports a tangible change in the state of mind of its employees towards considering the environment – an attitude that is fostered by Sarens.

For example, the company introduced 'tulips' – compact office bins designed to ensure that users sort waste in the proper manner – in its Belgium headquarters. It is now expanding this project worldwide. The number of wastepaper bins under employees' desks has been reduced and bin sharing is encouraged to make people consider exactly what they are throwing away. Signs

Sarens has introduced the 'tulip' recycling bin into some of its offices to encourage recycling

around Sarens offices encourage employees to preserve energy and recycle. Even little actions, such as adjusting printer settings and using glasses instead of paper cups for drinking water, add up when multiplied by 4,180 employees and 60 locations worldwide, Kyrimi says. In India, Sarens has one switch that turns off all superfluous electrically powered devices, including the air-con, to simplify energy saving. Finally, Sarens' booming merchandising market will also be served by local factories around the world to reduce the impact of transportation.

"We might not work in a particularly green industry," concludes Kyrimi, "but it's not all black and white." Kyrimi is referring to the wider picture, in which the increasing number of renewable energy sector projects many crane and heavy transport users are involved with are key to constructing a more environmentally sustainable future. And with increasing regulations in areas such as carbon emissions and waste, coupled with a change in mindset at an individual level, it looks like the importance of good environmental practices will continue to be increasingly recognised. ■

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Dockside pair up with Steil

German crane company Steil chose a 650 tonne capacity lattice boom crawler crane for a project to assemble a pair of dockside cranes at the port of Mannheim.

ICST reports

Cranes assembling cranes is an every day activity but as cranes get larger the ones used to assemble them need to be bigger too. For this project, Trier, Germany-based Steil was working on behalf of Kranwerke Mannheim. Before the cranes could be assembled, one of the main steel beams for the crane had to be loaded at Speyer Port for transport to Mannheim by ship.

Steil wanted a crane that could do both jobs so it chose a Terex Superlift 3800, now known as a Demag CC 3800-1. Steil has seven of these in its fleet and describes them as indispensable. Sebastian Sehl, Steil project manager, said, "Without this crane, we wouldn't have been able to take care of these jobs with the kind of flexibility we needed."

Steil lifted the 78 metre, 105 tonne main girder for manufacturer Tobies onto a pontoon at Speyer Port. Using a crawler crane meant the lift from the truck to the pontoon could be made even at low tide, when the required radius could increase by up to three metres. "That's why we had a variable Superlift counterweight of 65 to 125 tonnes. That allowed the crane to work flexibly with a radius

of 28 to 30 metres," Sehl explained. With the pontoon loaded it left for Mannheim.

On arrival Steil's work to erect two container cranes at the shipyard involved a number of components, including the main beam. To begin with, the hinged legs for dockside crane 1 were erected with 130 and 200 tonne capacity assist cranes. At the same time, the Superlift 3800 lifted the fully assembled 241 tonne beam.

It was configured with 54 m of main boom, 50 tonnes of central ballast, 165 tonnes of superstructure counterweight, and a 54 tonne Superlift counterweight. The assembled beam was lifted 30 m and then

the crane crawled about 15 m carrying the load. At a radius of 16 to 18 m, the crane then lifted to a height of 32 m and turned the load so that it was parallel to the dockside crane's hinged legs, Terex said. The legs were then bolted to the rail bogies and to the beam before the two assist cranes were moved so that they could bring the fixed legs in for installation on the bogies. "During all this work, the crane had to hold the heavy crane girder in the required position without the girder swinging back and forth, which definitely was made more difficult by the wind hitting them, but never to the point that it became critical," Sehl said. After that the 15 tonne trolley was lifted onto the runway girder using a pair of 200 tonne wheeled mobile cranes.

Tailored by a drive

Canadian heavy haul trailer manufacturer Aspen has two new designs it is promoting in the North American market: the Aspen E-Series Transporter and the Aspen Dual Lane Transporter. The E-Series heavy haul transporter is available in capacities ranging from 55 tonnes (8 axles) to 85 tonnes (13 axles) and has a redesigned jeep that Aspen says is light but strong. It also has a hydraulic gooseneck that Aspen states can be put on and removed easily – even on uneven ground. Aspen claims the hydraulic system is easy to operate and that the main deck of the trailers can be easily reconfigured. It is also simple to swap and move around D-rings, chain pockets, cross chain tie downs, and swingout outriggers, Aspen adds. The E-Series includes Aspen's patented auto-shim design booster. The company says this helps users save time as the system shims automatically. These features allow heavy haul trucking companies to safely haul more payload in less time, Aspen claims.

The Dual Lane Transporter, the company says, offers heavy haul companies a configurable, efficient option for loads that are too large for a 13-axle trailer. It comprises

a configurable set of lightweight dual lane jeeps, dual lane dollies, and double gooseneck decks. The Dual Lane Transporter can expand into two traffic lanes on the fly, without stopping and without drivers having to crawl underneath the loaded unit to expand the suspension or adjust steering components, says Aspen. These features allow heavy haul trucking companies to safely haul the maximum load regulations allow, with little downtime, Aspen states.

Tailored solutions

Also focusing on the North American market is German manufacturer of heavy-duty road haulage and oversized cargo vehicles, Goldhofer. "We are looking closely at the regulations in place and the transport infrastructure in our export markets to ensure that our products meet the requirements of our various customers," says Stefan Kohler, regional director of sales.

For the North American market, Goldhofer recently launched two new modules: the Goldhofer THP/DC dual-lane modular trailer and the STZ-P9 highway semitrailer. Goldhofer says the THP/DC was designed to meet the broad range of different vehicle registration requirements in the USA's individual states. From a basic width of 4,260 mm, the modules can be widened step by step up to a maximum of 6,100 mm while the vehicle is on the move and under load (maximum 24 tonne axle load at 40 km/h). This is done via a hydraulic system that is operated by remote control. The standard running height of 1,300 mm can also be adjusted by up to 700 mm. Goldhofer says that in many cases, flexible width adjustment avoids the need for escort vehicles, including police escorts, helping users save money.

The STZ P9 highway semitrailer is also tailored to the needs of the US transport industry, Goldhofer says. The vehicle has 3 x 3 twin-axle bogies with pendular axles and a maximum steering angle of 60 degrees for optimum manoeuvrability. It also has a low running height to help with loading and unloading a wide range of cargo. The axle spacing between the bogies can be adjusted to meet the various US regulations, while the rear bogie can be retracted under load for greater flexibility when negotiating tight bends and roundabouts. On completion of the manoeuvre, the tractor is used to return the vehicle to the original extension. Goldhofer

The specialized transport sector is thriving; manufacturers are continuing to innovate with a range of products while end users are working across a range of industries, with the wind sector in particular being a key focus. CHRISTIAN SHELTON reports



Felbermayr faced tough terrain challenges in Styria, Austria

Goldhofer's FTV 300 was used to transport wind turbine rotor blades up the slope of a volcano in Guatemala, South America

says this means time savings and reduced transport costs, as just one tractor is needed for even the most challenging journeys.

It's not just North America where Goldhofer says it is enjoying demand for its products. "At present, we are especially in demand in Europe, Asia and parts of South America," continues Kohler. "In Colombia, for example, an 800 tonne mining excavator was recently moved 25 kilometres over demanding terrain on a self-propelled Goldhofer PST side-by-side combination."

Wind turbine transport

The wind power industry is also keeping specialist transport companies busy. Goldhofer reports high demand for its products from this sector. For such operations, Goldhofer developed the FTV 300,

for innovation



a rotor blade adapter that allows the wind turbine's blade to be raised hydraulically up to an angle of 60 degrees.

In Guatemala, South America, the FTV 300 module was used to transport rotor blades up the slope of a volcano; in Germany lifting and transportation specialist Hofmann Autokrane used a PST 8-axle line module and an FTV 300 in April to manoeuvre the rotor blades for three wind turbines through a densely forested area without the need for any tree felling.

Heavy lift specialist Mammoet delivered the last wind turbine components for the extension of the Clyde Wind Farm situated near Abington, in Scotland. Energy supplier SSE is extending the existing 152 turbine wind farm with an additional 54 turbines. Mammoet was responsible for the transport

ALE used a Trojan truck to transport 110 pieces of cargo across Oman



of all the turbine components during the construction of the extension (which will be finished later in 2017). The company was tasked with transporting 584 components and 125 containers weighing up to 87 tonnes and with lengths up to 49 metres from the port of Glasgow to the site 60 km away. The last part of the route involved negotiating particularly complex terrain, says Mammoet, with inclines up to 14 percent over a 22-kilometre site road. For this Mammoet utilised 8x8 individual-wheel drive units to pull the trucks up the steep hills.

A similar set of terrain challenges faced Austrian special and heavy goods transportation company Felbermayr in a recent specialized transport job. It too is busy in the wind power sector and is erecting 13 wind power turbines for the Windpark Handalm project in Styria, Austria. The wind farm will produce renewable energy for approximately 21,000 households, making it the most powerful wind farm to date in Southern Austria.

In addition to the erection of the wind turbines, Felbermayr was tasked with transporting the components from the manufacturer's factory to their final location – a distance of approximately 1,300 km. To achieve this Felbermayr used blade trailers to transport the 39.5 m rotor blades, which weighed 9.6 tonnes. The tower segments, measuring 11.33 metres long and 4.4 m in diameter, were transported in a self-supporting fashion using tower lifters. And double-telescoping semi-trailers and semi-flatbed trailers were used in convoys of up to three vehicles to transport the system parts. Yet it was the mountains around the turbines' final destination that caused the biggest transportation challenges.

The wind farm is 1,700 m above sea level on the Styrian Handalm pasture. A temporary road needed to be built up to the construction

site but this couldn't be finished in time due to the weather. "We would have been ready to implement the lifting job in mid-April 2017," says Günther Wimmer from Felbermayr's project department. "However, due to persistent wintry conditions, the temporary road leading to the construction site could only be finished in early May." As a result Felbermayr had to store the wind turbine components at an interim storage site, namely its heavy-load port in Linz.

Once the road had been completed Felbermayr transported the wind turbine components to a transshipment site 1,400 m above sea level. From here they then had to be transported 2.35 km along a country road and then 2 km along a logging road. The last seven kilometres to the wind power construction site were via the temporary road. The roads comprised tight corners and gradients of up to 20 per cent, said Felbermayr. Using the blade lifter allowed the blades to be raised by 60 degrees, which made it possible to negotiate the tight, tree-lined corners. Eight heavy haulage axles, pushed and pulled by two heavy haulage tractor units, were used to provide the required weight distribution and traction to transport the components across this difficult terrain. Felbermayr says it expects to finish the work this summer.

UK-based heavy transport and lifting specialist ALE reports that its busiest markets for moving oversize and overweight loads are the wind and power generation sectors. It says it is also seeing a lot of oversized and overweight cargo moves taking place in the Middle East region. In Oman, for example, ALE is using one of its Trojan trucks to transport 110 pieces of over-dimensional and heavy-lift cargo, weighing up to 390 tonnes. The Trojan enables multiple tractor units to be linked in a command and drone convoy. The command vehicle controls not only itself but all tractors in the convoy. Using the Trojan, the »

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Collett transported a 28-metre-long, 140 tonne de-aerator vessel 180 km from the factory where it was built to the Port of Immingham, UK

cargo is being transported 640 km on what ALE describes as 'a challenging route' from the Port of Duqm to the new IBRI IPP power plant project site in Ibri, Oman.

Yasser Al Yasin, ALE's country manager in Oman, said, "We had seen a great start to the project, with all pieces being delivered safely and on schedule. We are facing challenges that we have had to negotiate, such as complying with the authorities to gain special permissions so that two items are transported per convoy to avoid delays to the overall schedule. And the limited storage at the port has meant that we have had to find a mutually beneficial solution to tranship the cargo to our yard in Duqm to resolve port congestion.

"Furthermore, at 9.5 m wide and over 75 tonnes, the sheer size and scale of the pieces means that we have had to build a

2 km bypass route to avoid certain bridges and work cooperatively with the Royal Oman Police to deploy extra police escorts to minimise disruption to road traffic and members of the public."

Investments in equipment

ALE says that, over the last year, it has invested in multiple trailers and transport equipment with the latest technologies. For example, it took delivery of 240 of Scheuerle's new generation self propelled modular transporter (SPMT) axle lines. With 60 tonnes capacity per line, ALE says these are the world's highest capacity SPMT.

It also purchased two new fleets of widening trailers. One fleet was for ALE's South African branches. These trailers can be mechanically widened 3 m to get the maximum stability and footprint for travelling long distances safely with severe road cambers, says ALE. Its other fleet of widening trailers was for the UK and can be widened to 4.3 m while loaded. ALE says these are proving to be a favourable solution for bridge owners and local authorities as the wider distribution of axle weight and gross load over the structure will result in less stress on the bridge and bearings.

ALE also bought two six-axle units of Goldhofer ADDrive SPT, complete with power packs, which will be used in Kazakhstan to primarily service the Caspian region. "We decided to go for the ADDrive system because of the combination of cutting-edge technology and high-grade materials for the components," comments Ronald Hoefmans, »

EASTERN PROMISE

Chinese manufacturer XCMG says one of its most popular products is its high-end Hanvan heavy-duty truck range, which was launched in 2015. Much of the appeal of the Hanvan truck, XCMG claims, lies in its low fuel consumption and low maintenance costs. The company says it invested a lot of time in the Hanvan's R&D stages to ensure it possessed these attributes, knowing they would appeal to its home market. "In China, one of the most important considerations for truck drivers is how expensive it will be to run," says Patrick Ling, branding manager at XCMG's marketing department.

In addition, XCMG claims the truck's diesel emissions are low. The truck also has a combination of high-strength alloy steel sheets and aluminium alloy in its construction, ensuring it meets ECE-R29 commercial vehicle cab safety regulations.

XCMG's Hanvan truck offers low fuel and maintenance costs, the company says



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ALE group technical director. "Their unique ability to tow a SPT at high speed will be extremely beneficial to our work in the Caspian region and potentially other ALE regional branches."

Another UK specialist transport company, Collett Transport, has also been busy in the wind and power sectors. Earlier in 2017 it moved a 180 tonne transformer for an onshore substation serving the Galloper Offshore Wind Farm, off the coast of Suffolk, UK. Another large project Collett conducted in the UK was to transport a 28-metre-long, 140 tonne de-aerator vessel 112 miles (180 km) from the factory where it was built to the Port of Immingham.

To meet increasing demand for specialized transport jobs, Collett has also been investing in equipment. It has added two new Faymonville trailers to its fleet: one two-axle

Megamax and one three-axle Multimax. Collett reports that the two-axle Megamax semi-trailer has a low transport deck, making it suitable for transporting tall loads or skid loading industrial parts or machines directly from the floor. Furthermore, Collett says that the hydraulic stub axles of the short wheel base trailer allow the steering angle to be altered up to 45°. This enables access to tight areas and hard to get to sites. In its closed state the trailer bed is 6.65 m but it can be extended to 12.20 m to accommodate lengthy cargo while maintaining optimum manoeuvrability. This trailer has a light tare weight, says Collett, which offers a carrying capacity of 40 tonnes.

According to Collett, its three-axle Faymonville Multimax has a technical carrying capacity of up to 52 tonnes. Other features include hydraulic axles and knuckle steering, making it suitable for a wide range of transport requirements. The trailer is a stepframe type of steel construction, being 13.5 m long when in its closed state but it can be extended to a length of 27 m. As such, Collett says it is suitable for particularly lengthy cargo.

Goldhofer's THP/DC dual-lane modular trailer can be widened from 4,260 mm to 6,100 mm

MAMMOET'S DYNAMIC STABILITY METHOD

Mammoet has developed what it calls "a revolutionary method for calculating the dynamic stability of hydraulic trailers". Mammoet has named the method Dynamic Stability and it is designed to provide clients with a detailed assessment of the safety level of their transport project before it begins.

Mammoet says the assessment deals with more relevant parameters than customary in the industry until now, including acceleration and deceleration of the trailer, the forces exerted by the wind, the slope and camber of the road, and the surface on which the load is transported. "This means we thoroughly engineer what a trailer can and cannot do in each specific situation," explains senior engineer Jurjen de Vries. "We can now provide clients, operators and other stakeholders with detailed information on the strength and stability margins for each individual transport project in a single, easy to understand graph."

Mammoet says it will be using Dynamic Stability for all hydraulic transport projects from now on.



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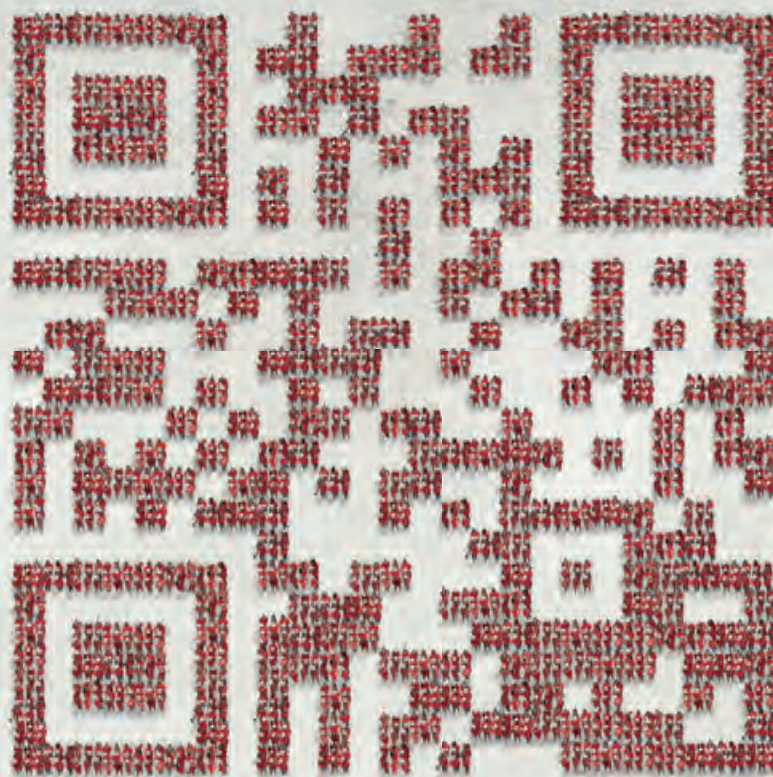
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Safe and secure

Raising awareness of how to secure loads safely is key as regulations around the world are expected tighten.

CHRISTIAN SHELTON reports

"The subject of load securing is becoming an increasingly critical issue for the heavy haul industry.

In Europe, for example, compliance with safety standards is being monitored more strictly than ever before," states Thomas Dietz, service customer trainings, at German modular trailer and transporter manufacturer Golhofer. "It is reasonable to assume that, in the years to come, the same development will be observed on other continents."

In Australia there is an increasing need for awareness of safe load securement relating to the transportation of crane equipment, says the Crane Industry Council of Australia (CICA). According to CICA, due to the strict laws about axle loading and tread contact widths applied to Australia's crane fleets, it is seeing many crane operators carrying equipment to jobs on trailers rather than leaving it on the cranes. In some cases, CICA says, crane operators are floating entire cranes on trailers. Due to the obvious risk of damaging the equipment or plant and to the safety of the road going public, CICA advises crane operators to be extra cautious about how these items are restrained while in transit.

In an attempt to help increase awareness of safe load securement, in its recent *Crane Safety Bulletin* CICA advocated operators adopt a load restraint plan. This comprises: conducting a risk assessment of the load; checking the condition of the lashing equipment before use; ensuring the capacities of the lashings are correct; considering the effects of friction and the angles of use; using suitable friction mats where possible to increase friction; using the relevant standards for gear selection; checking restraint gear after use; and only using lashings with their capacity clearly labelled.

In the USA, industry body Specialized Carriers & Rigging Association (SC&RA) has released a video called *Specialized Transportation Load Securement* designed to raise awareness of correct load and



Rud utilised a 'loop-around' principle to safely secure a transport trolley and counter weight

cargo securement. It provide drivers with the most current DoT regulations, policies, and strategies for properly securing cargo during specialized hauling. The 19-minute video instructs drivers on the regulatory guidelines needed to ensure loads are secure and cargo is protected. Topics highlighted in the video include: explanations of FMCSA regulations and how they apply to specific loads; demonstrations of load-securement techniques for commodity-specific loads; information on tie-downs and calculations to determine the number of tie-downs needed; and animations for aggregate working load limits and performance criteria calculations. The video cost US\$199 (\$150 for SC&RA members) and can be ordered from the SC&RA website (www.scranet.org).

Training

Goldhofer is also helping to raise awareness of safety in load securement via its training programme. The company offers its customers' drivers and mechanics what it describes as "a full and varied employee training programme". In this way, Goldhofer says, they are completely familiarised with its products and their operation. "In the field of safety, our in-house training staff are supported by external road safety

specialists, who offer especially intensive sessions on the subject of load securing with heavy cargos," Dietz explains. "At present we are also working on a new training programme for accident prevention because safety precautions are obviously of supreme importance for employees."

Regulations

Regulations are a key driver of safety standards and Goldhofer is keen to point out that, as a German company, its products comply with the VDI 2700ff *Securing of loads on road vehicles* directive. "This contains especially strict provisions far in excess of the specifications in most other national codes," Dietz asserts. "As a global vendor of heavy haul and oversized cargo transportation solutions, though, we naturally adapt our products to the requirements of regional markets in consultation with our customers."

Customer co-operation

Goldhofer says its service engineers co-operate with customers on a team basis worldwide and are always happy to provide support for all issues such as load distribution calculations, cargo securing systems, vehicle configuration, and accessories.

"All our transport solutions are

»

engineered to the highest level of load safety," continues Dietz. "All standard configurations come with an adequate number of lashing points on the outer frame. Additional threaded anchor points are also provided ex-works where customers can fit further lashing rings as required. "Customer feedback based on practical experience shows that – depending on the type of cargo – too many permanent lashing rings can impede the loading and unloading process. The outer frames of the vehicles are also fitted with stake pockets as a further load securing aid. Additional stake pockets or stake pocket strips can be provided to customer specifications at a number of pre-defined positions on the cargo deck."

For heavy cargos, Goldhofer offers a range of extra-strong load-securing devices, which it says can be mounted onto the loading deck. They are normally placed on the front section of the cargo deck so as to absorb forces acting in the driving direction. This, Goldhofer says, is an economical solution for securing extremely heavy loads quickly and safely in accordance with the legal requirements.

Lashing chain solution

German chain systems specialist RUD Ketten (RUD) also works closely with its customers. For example, it helped railway crane manufacturer Kirow plan a difficult-to-secure heavy transport rail job in Mongolia by providing an innovative securement solution using its lashing chains.

RUD says its experience with lashing chains is extensive and, since 2007, it has been granted permission to use the highest quality D1 stamp for its high-tensile steel chains. The company says that the robust nature of lashing chains and the fact they can be easily adjusted, link by link, makes them particularly suitable for heavy load securement.

In this particular job, Kirow was tasked with transporting a transport trolley with a 60

tonne counter weight. The counter weight was standing on rolling bearings and was at risk of tipping over in the direction of travel. The transport trolley was firmly attached to the transport vehicle, but the counter weight had to be secured on the transport trolley. Due to the rolling bearings, a coefficient of friction of just $\mu = 0.05$ had to be assumed, says RUD. This meant that the securing forces required were too high for conventional lashing equipment. In addition, there was the problem of static indeterminacy posed by the direct lashing of heavy loads. This means that even if more than two pieces of lashing equipment per direction are used to secure a load, just two of the pieces of lashing equipment used actually absorb either the entire force or the majority of the force, RUD explains. Theoretically, it says, more than two strands can bear the load if all of the strands have the same lengths, lashing angles and lashing equipment (strain); however, in the real world it is not feasible to secure a load in this way.

There is, however, a way around this problem, RUD says: the lashing chains can be looped around and therefore guided from the load to the vehicle carrying it in a double-strand. The result is four load-bearing strands in the one direction. However, an equilibrium of forces must be performed in the double-strands due to this loop-around, RUD says. The equilibrium of forces in this job was achieved using special RUD chains and guide rollers. Since this 'double lashing' technique needs additional angles and other constraints that are specific to the individual case to be taken into account, as well as the usual lashing angles α and β , this type of load securing system cannot simply be calculated in the conventional way, RUD says; it was specially designed for this transport process.

RUD believes the potential of the 'loop-

around' principle is huge. For example, the company says that if this principle is implemented with its 16 mm ICE lashing chains (quality grade 12), users can reach new levels in heavy load securing systems. A lashing chain of 25,000 daN used in this way would enable the secure direct lashing of up to 594 tonnes (with $\mu = 0.6$), it claims. This means that 56 % more load mass could be secured than with conventional quality grade 8 lashing chains, RUD asserts.

Using this method, protection from tipping and slipping have to be assessed separately, RUD adds. The guide roller chains secure the load from slipping, while the lashing chains attached in the upper loading area secure it from tipping.

RUD says the Mongolian transport process planning job was carried out in conjunction with Kirow and the ropemaker Voigt, and that everything complied with the German VDI 2700-13 regulations.

So, in line with Dietz's prediction that load securement will become an increasingly critical issue for the heavy haul industry, here we see clear examples from around the world of the increasing attention safe load securement is already receiving. And, if Dietz's forecast is correct, increasing enforcement and subsequent compliance with standards is no bad thing. Goldhofer, for example, sees it as an opportunity. "For Goldhofer this means that load securing will continue to play a strong role at the level of both product development and customer training so as to create optimum conditions for our customers to be successful on competitive markets," Dietz concludes.

With equipment manufacturers raising their game with regards to the products they make, and the way these products are used, combined with a growing awareness of the importance of safe load securement amongst end users, heavy haul across the world is becoming safer than ever before.



The outer frames of Goldhofer's trailers are fitted with stake pockets as a load securement aid



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The cement mill tube combination was 55 metres long and 6.75 metres high

Cementing an achievement

Specialized transport and lifting contractor Knoll International Transporte from Austria was commissioned to transport a new cement mill tube to a cement works in Germany. STEFAN JUNG reports

Knoll Transporte's job was to transport an oversize and overweight load in the form of a new cement mill tube from the manufacturer in Austria to a works just over the border in Germany.

The CEMTEC cement and mining

An 05.00 hours start for the journey from Austria to Germany



technology company in Enns, Austria, made the mill tube and it was delivered by Knoll to the Rohrdorfer Zementwerken in Germany. When installed at the cement works the job of the mill tube is to crush the coarse cement and prepare it for further processing. Knoll

is already known for carrying out many spectacular operations in high alpine areas but this transport presented new challenges for the whole team.

Modular choice

The drum had impressive dimensions of 17.40 metres long, 5.25 m wide, and a height of 5.45 m. It weighed 167 tonnes. Load dimensions and stability meant that it was only possible to operate using modular axle lines. Knoll decided to find an interesting combination consisting of equipment from German manufacturers Scheuerle and Goldhofer. There were 13 axle lines of THP SL from Goldhofer and 8 axle lines of K25 from Scheuerle.

»

Negotiating one of many obstacles with matting and timber





Two new MAN 41.640 8x4/4 heavy haul tractors were used to pull and push. In this configuration, the total combination was 55 m long, 5.25 m wide and 6.75 m high, with a total weight of 322 tonnes. The preliminary stage for this transport was 14 months, during which time many discussions had to be conducted with road traffic and approval authorities as well as the police, the German railway and energy supply companies.

The height of just under 7 m meant a motorway journey was not possible. In calendar week 21, after all documents and approvals were available, “the final day” arrived. The largest transport to date in Knoll’s 85 year history began.

Ready to go

At the manufacturer the component was loaded, from where it went 7 km into the Ennshafen harbour to the roll-on roll-off ramp, where a pontoon already stood ready. The loading on the pontoon proceeded without problems, followed by the pontoon on the Enns and Danube in the direction of Passau to the RO-RO ramp there. That night an inspection in the port of Passau meant a quiet night for the transport crew. On 25 May 2017 the transport crew waited at around 05:00 hours for the departure.

After consultation with the police, drivers and companions, the approximatel 250 km long trip to Rohrdorf began. For comparison: The direct route from Passau to Rohrdorf is around 160 km and can be comfortably driven. This transport, on the other hand, could only

be driven along federal and circular roads because of its height and the weight. In some cases, roadways were also used to bypass overhead power lines.

Along the route there were several bottlenecks where the towing vehicles had to be relocated. This is usually done quickly with a pulled unit but the two 640 MAN tractors had a particularly strong fight with slopes of up to 14 percent. For these two other towing vehicles reinforced the convoy. An MAN 41.660 8x6/6 from the company JMS Risi from Switzerland, as well as a 3 axle Volvo with 500 hp from the company Saller were employed. They could quickly offer help in the event of problems.

Christian Lakota’s well-established transport assistance team was also on hand with “advice and action” and supported with a

quick “vanguard” in the field of signboarding, the laying of boards and wood in the bottlenecks. Since everyone involved had done a good job in the run-up, the transports rolled smoothly towards their goal and every day they were able to make the promised deadline. After five sunny days, the transport arrived safely and without a scratch at a place near Rohrdorf.

In the evening of 29 May the A8 road was completely blocked so the transport could cross the highway and reach the works site without problems. The drum was unloaded the following day. To do this the trailer had to be rebuilt from 21 to 11 axles, before the drum could be deposited at its destination. After the successful handover a “load” had obviously been removed from the shoulders of all participants.

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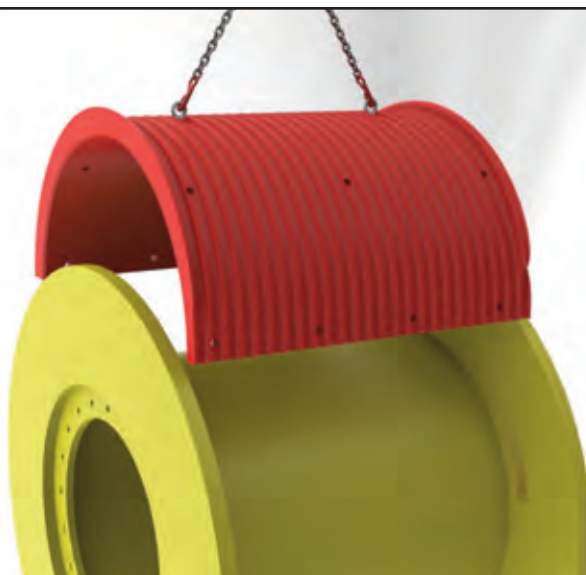
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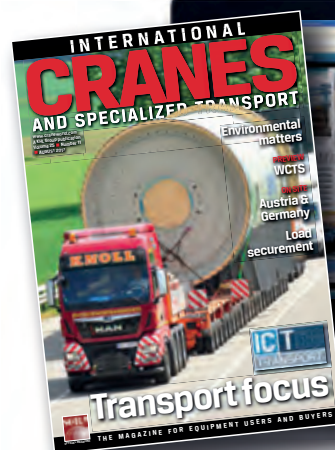
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**WORLD CRANE
AND TRANSPORT
SUMMIT 2017**
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Sarens to confront 'macho' behaviour

Industry veteran Hendrik Sarens is among the top level speakers at the 2017 World Crane and Transport Summit in Amsterdam on 7 and 8 November 2017. *ICST* reports

Hendrik Sarens will use his keynote address at the World Crane and Transport Summit (WCTS) in November to confront the "common secret" of the machismo culture often found in the crane and specialized transport industry and its influence on safety.

"We have to face the fact that machismo is a common industry secret", said Sarens, a long-time director of the family-run business, "We need to combat that kind of behaviour and eliminate it from the equation to avoid near misses."

Sarens is an owner and director at



Keynote speaker
Hendrik Sarens

international crane and engineered transport giant Sarens, with 45 years' experience. He will also ask how the industry can keep up with technological innovation to avoid "becoming irrelevant", and will consider the impact of changing oil and gas prices and "how we have to adjust strategies around them."

Sarens' focus on safety will help set the scene for a strong safety programme at the conference, with other speakers on safety-related topics, including Mike Appling (CEO, TNT Crane), Keith Anderson (chief rigging engineer, Bechtel), Richard Krabbendam (heavy lift consultant) and Marco

EVENT DETAILS

WHAT: World Crane and Transport Summit

WHERE: Amsterdam, Netherlands

WHEN: 7 and 8 November 2017

VENUE: Grand Hotel Krasnapolsky, Amsterdam

ORGANISERS: KHL Group, *International Cranes and Specialized Transport*, *American Cranes & Transport*

www.khl-wcts.com

van Daal (owner, The Works International). See the full programme below.

The conference is supported by SC&RA, ESTA and other crane and specialized transport associations and industry groups around the world.

Silver sponsors at the time of writing were Goldhofer, Kobelco, Liebherr, Tii Sales and Tadano. Supporting sponsors are Blokam, Casar, Modulift, Straightpoint and Tecsis. ■

PROGRAMME

Tuesday 7 November

KEYNOTE Hendrik Sarens, director, Sarens

SESSION 1: SAFETY

- BEHAVIOURAL APPROACH TO CREATING A SAFETY CULTURE **Mike Appling**
- ANATOMY OF AN ACCIDENT: CRANES AND SPECIALIZED TRANSPORT **Marco van Daal**
- PLAN FOR SUCCESS IN LIFTING AND ENGINEERED TRANSPORT **Keith Anderson**
- THE JULIANA BRIDGE CRANE ACCIDENT: LESSONS LEARNED **Gertjan van de Werken**
- ROUND-TABLE: MANAGING MULTI-CRANE LIFTS **Keith Anderson, Richard Krabbendam, Klaus Meissner, Gertjan van de Werken.**

SESSION 2: WORKFORCE OF THE FUTURE

- RECRUITING TOMORROW'S WORKFORCE: THE LIFT & MOVE USA PROGRAMME **Brett Melvin**

■ ENCOURAGING WOMEN TO WORK IN THE CRANE AND SPECIALIZED TRANSPORT INDUSTRY

Jennifer Gabel

SESSION 3: TECHNOLOGY & SITE APPLICATIONS

- REUNION ISLAND BARGE GANTRY CRANE **Jeroen Naalden**
- CLOSING THE KNOWLEDGE GAPS FOR SYNTHETIC FIBRE CRANE ROPES **Jim Plaia**
- UPDATE FROM ESTA ON ECOL OPERATOR TRAINING SCHEME **Ton Klijn**

Wednesday 8 November

SESSION 4: OEM PERSPECTIVES

- **KEYNOTE** Speaker and topic to be confirmed
- CHINA'S CRANE MARKET: READJUSTING AND RECOVERING Speaker to be confirmed, XCMG

■ ROUND TABLE: OEM Q&A SESSION **Christoph Kleiner, Barry Pennypacker, Bill Stramer,**

Other participants to be confirmed

SESSION 5: SPECIALIZED TRANSPORT

- TRANSPORT AND ASSEMBLY OF 44,000 TONNE OFFSHORE PLATFORM IN CANADA **Andrea Gazzola**
- CHALLENGES FOR EUROPE'S SPECIALIZED TRANSPORT INDUSTRY *Speaker to be confirmed*
- SPEEDING UP BIG PROJECTS WITH SELF PROPELLED MODULAR TRANSPORTER (SPMT) **Bernd Schwengsbier**

The full programme and further details on the two day, 7 and 8 November 2017, event are at: www.khl-wcts.com

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Lifting with two cranes

In this, the 50th article in this series, MARCO VAN DAAL explains what to do when you need to deviate from the theoretical plan when engineering a lift

A while ago (May 2014) I wrote an article for *ICST* covering the unloading of dollies using two cranes. This article assumed that the portion of the load was as per the calculations, no deviations. This should always be the starting point when preparing and engineering a lift, any lift. But as usual, things don't always develop according to a theoretical plan. This article covers the standard preparation and the deviation from the theoretical situation.

A two crane lift is an activity carried out on many construction sites with small as well as large weights and with small as well as large dimensions. Situations under which two cranes are used for a lifting operation are as follows:

- A single crane with large enough capacity is not available
- The dimensions of the load do not allow for a single crane lift (think about a long bullet tank)
- The load needs to be moved from horizontal to a vertical position (tailing or upending operation).

There are probably more reasons for using multiple cranes for a lift but above are the main three. When performing a single crane lift, the crane is allowed to lift up to 100 percent of its charted capacity, obviously with caution and only if all parameters are accounted for.

According to many expert individuals in our industry, a multiple crane lift is, by

definition, a critical lift and should be treated as such. Due to the nature of multiple crane lifts it is not uncommon that during the performance of such a lift the load per crane varies. This is because both cranes do not hoist at the same speed. This is a reality we have to live with. Even with identical cranes it is already difficult to achieve this. With cranes of different capacity and/or different brands it is even more challenging.

Depending on the location of the centre of gravity (CoG) in the horizontal direction, each of the cranes carries a certain load. Depending on the location of the CoG in a vertical direction one of the cranes will experience an increase in load when the hoist speeds is unequal. See later calculation example.

Knowing that this phenomenon takes place it would be common sense to derate the capacity chart of each of the cranes by a certain percentage when performing a dual crane lift. This recommendation is shared by many experts and it is (luckily) a practice that is often implemented. The obvious question is now; by how much do the charts have to be derated. This question is not so easy to answer as the CoG (the vertical component) largely determines how fast the load for one of the cranes increases when not hoisting at the same speed.

In addition, there are other practical aspects that make one lift more critical than another lift.

- Do the cranes have to travel with the load?
- Are the cranes positioned side by side where the hook block, boom and load are easy to see and control from one viewpoint. If the cranes are at opposing sides or at 90 degrees from each other this becomes an entirely different story.
- Is it a straight up or down lift or do the cranes have to slew and/or boom up and down?

Unfortunately there are no hard rules or regulations in terms of reduction percentages. The American Society of Mechanical Engineers (ASME P30.1 lift planning document) does not offer any percentages, neither does the ASME B30.5 document (Mobile and Locomotive Cranes).

OSHA does not place limits on multi crane lifts. So we as an industry are pretty much left to our own devices here.

A number of heavy lift and transport companies as well as some EPC contractors and petrochemical companies have defined their own limitations. They all boil down to the same goal to perform a safe lift with multiple cranes. Seldom, however, are these limitations uniform and, as there are no guidelines from a governing body, it is hard to argue which one is right and which one is wrong. Moreover, there can be multiple wrongs and multiple rights.

In general we could summarise that for a dual crane lift the capacity chart would have to be derated by 15 %, therefore, each crane should not lift at its initial pick more than 85 % of its capacity. Provided that the cranes do not have to travel with the load.

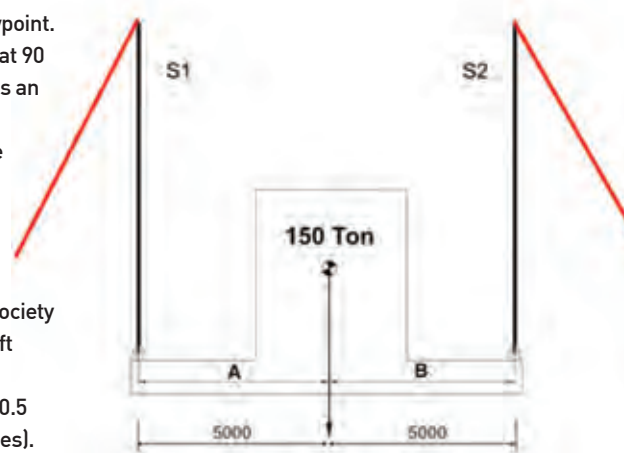
If travelling with the load is in the planning of the lift then the capacity chart would have to be derated by 30 % due to the dynamic impact and the potential swinging of the load.

Again, these are only generic and general numbers and come close to many of the derating practices that have been implemented by various companies in our industry.

By example

Let's have a look at a few calculation examples. Review Figure 1. In this diagram we have a load of 150 tons of which each of the lifting points are 5,000 from the CoG. For this exercise the units of the distance are irrelevant. Common sense tells us that each crane takes half of the total load, being 75 tons per crane. This can also be calculated using the moment equation. The moment equation is based on the horizontal distance »

FIGURE 1

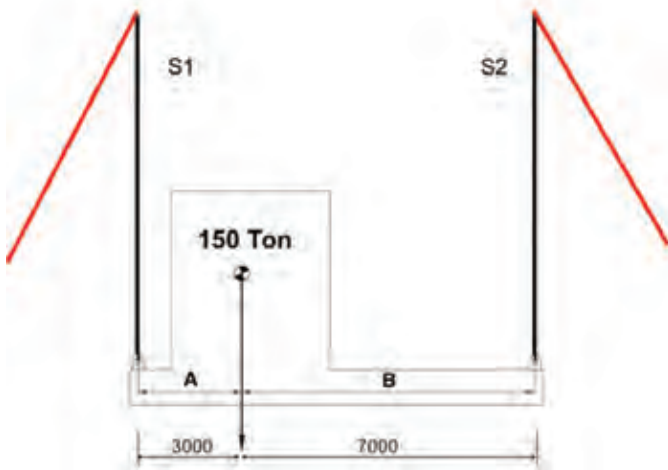


ABOUT THE AUTHOR



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 2



of each lifting point to the CoG. The moment equation can be written in such a way that it is valid for every dual crane lift to determine the load in each of the cranes.

$$S1 = B / (A+B) * \text{Load} \text{ and}$$

$$S2 = A / (A+B) * \text{Load}$$

In words, so it is easy to remember: The load in crane S1 equals the distance from the CoG to crane S2 (so the distance opposite Crane S1) which is distance B divided by the total distance between the two cranes (or rather between the two lifting point) which is (A + B) multiplied by the weight of the load that is lifted. In short:

The load in a crane is the opposite distance divided by the total distance multiplied by the load.

In numbers:

$$S1 = B / (A + B) * \text{Load} = 5000 / (5000 + 5000) * 150 = 0.5 * 150 = 75 \text{ ton}$$

$$S2 = A / (A + B) * \text{Load} = 5000 / (5000 + 5000) * 150 = 0.5 * 150 = 75 \text{ ton}$$

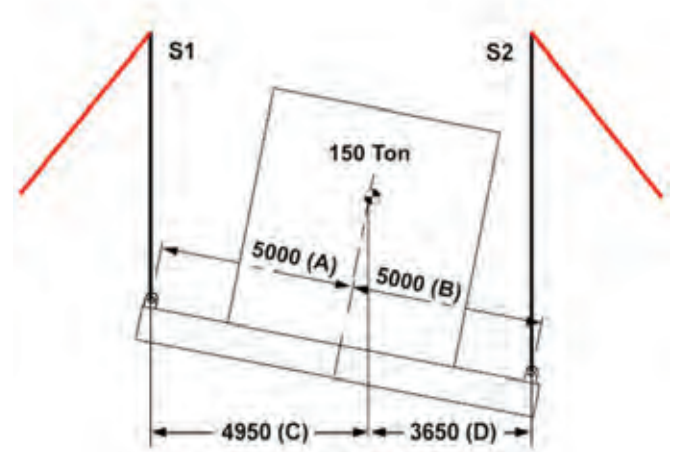
If these lifts would be single crane lifts, the safe working load of each of the cranes would have to be a minimum of 75 tons. Since this is a dual crane lift the capacity charts have to be derated. If we assume for now that the cranes do not have to walk with the load and that a 15 % derating is sufficient, both cranes would have to be of at least $75 / 0.85 = 88.2$ tons capacity. In practice this would be a 90 ton crane.

The above two formulae can be used for every dual crane lift scenario. Review Figure 2.

The same load of 150 tons is lifted but the CoG is now shifted towards one side.

$$S1 = B / (A + B) * \text{Load} = 7000 / (3000 + 7000) * 150 = 0.7 * 150 = 105 \text{ ton}$$

FIGURE 3



$$S2 = A / (A + B) * \text{Load} = 3000 / (5000 + 5000) * 150 = 0.3 * 150 = 45 \text{ ton}$$

Due to this being a dual crane lift crane S1 would have to be of at least $105 / 0.85 = 123.5$ ton capacity and crane S2 of at least $45 / 0.85 = 52.9$ ton capacity.

Last example...

Reviewing Figure 3, this is the same lift as in Figure 1. The difference is now that the lift is in progress and crane S1 is hoisting faster than crane S2, the load has tilted. The horizontal distances from CoG to each of the lifting points is no longer 5000 (distance A) as it was before.

For crane S1 it is now only 4950 (distance C). For crane S2 it is now only 3650 (distance D).

We can draw two conclusions from this new lift scenario. First, the total distance between the lifting points has been reduced from 10000 (5000+5000) to 8600 (4950+3650). This means that if no correction has been made with the cranes the load is now either side loading the boom (when the cranes are side by side) or increasing the radius of

the lift (when the cranes are opposite each other). This is an additional reason why such scenarios should be avoided and why cranes performing such lifts should be derated.

Second, as the distances from the CoG to the lifting points have changed, each crane is now lifting a different weight from before. We can use the same formulae:

$$S1 = D / (C + D) * \text{Load} = 3650 / (4950 + 3650) * 150 = 0.424 * 150 = 63.6 \text{ ton}$$

$$S2 = C / (C + D) * \text{Load} = 4950 / (4950 + 3650) * 150 = 0.576 * 150 = 86.4 \text{ ton}$$

These loads are considerably different from the initial loads of 75 tons per crane and would have overloaded crane S2. A disaster waiting to happen.

If the crane would, however, have been derated by 15 % and 90 ton cranes were used for this lift instead of 75 ton cranes. The lift would have been carried out without a problem. The operator of crane S2 would see an increase in his load on this lift computer and call for the lift to be stopped and the load to be corrected. Alternatively an inclinometer with remote readout could be attached to the load to keep the load within a certain tilt range.

Figure 4 shows a dual crane lift in progress. A slight inequality in the lift speed will cause the load to tilt and both cranes will see different weight from their initial load, one will see a higher load, one will see a lower load.

FIGURE 4



CORRECTION

In last month's *The Knowledge* a correction needs to be made to the figures in one of the example calculations as follows:

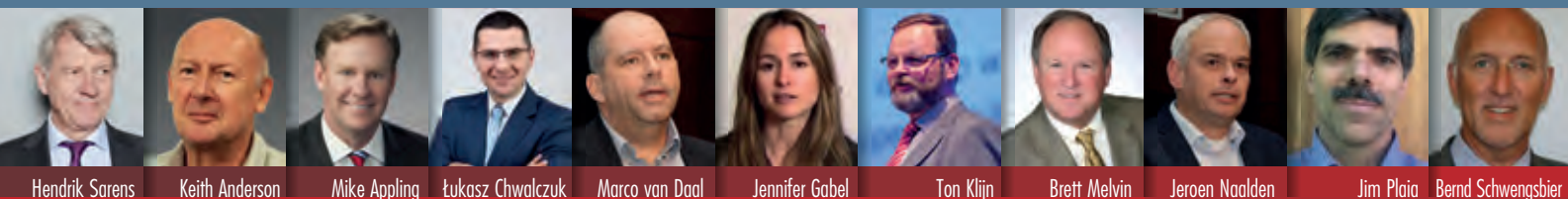
$$WLL = \frac{F_t}{2} = \frac{125,664 \text{ N}}{2} = 62,832 \text{ N (14,124 pounds)}$$



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CONFIRMED SPEAKERS

KEYNOTE – **Hendrik Sarens**, director, Sarens

Keith Anderson, chief rigging engineer, Bechtel Equipment Operations

Mike Appling, CEO, TNT Crane & Rigging

Łukasz Chwalczuk, ESTA transport section executive, president of the Polish Heavy Transport Association

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ROUND-TABLE: OEM Q&A SESSION

- **Christoph Kleiner**, managing director sales, Liebherr-Werk Ehingen
- **Barry Pennypacker**, CEO, Manitowoc
- **Bill Stramer**, VP marketing, sales, customer support, Link-Belt

ROUND-TABLE: MANAGING MULTI-CRANE LIFTS

- **Keith Anderson**, chief rigging engineer, Bechtel Equipment Operations
- **Richard Krabbendam**, heavy lift specialist
- **Klaus Meissner**, director product integrity, Terex Cranes
- **Gertjan van de Werken**, director, Peinemann Kranen

SCHEDULE

Monday 6 November

Informal evening reception

Tuesday 7 November

Full day conference

9.30 am – 5.20 pm

Evening Networking buffet dinner

Wednesday 8 November

Half-day conference

9.00 am – 1.00 pm

Networking lunch

1.00 pm – 2.30 pm

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Keeping Europe moving

Faced with a skilled worker shortage and infrastructure projects in Asia and the Mid-East that seem to merely flirt with conventional limitations, countries across Europe might feel like they're falling behind – that is if Europe didn't have plenty of substantial infrastructure projects already in motion, or on the way.

From massive city centres to gigafactories to urban renewal and floating tunnels, Europe isn't waiting around to see what happens next.

Big plans

Birmingham in the United Kingdom is a leading European business destination at the centre of a nearly US\$ 100 billion regional economy. The city has access to a working population of 4.3 million people, offers a high quality of life and provides a wealth of opportunities for companies looking to expand or invest.

And it is home to the Big City Plan – an endeavour that will use nearly \$13 billion in the next ten years to transform this popular city centre. Completion will mean thousands of additional homes, tens of thousands of jobs and a greener, more economically stable city that is 25 percent bigger. By 2031 it is forecast that Birmingham will be renowned as an enterprising, innovative city that has undergone transformational change and strengthened its position on the international stage.



Sweden also knows a thing or two about innovation. It plans to build an enormous \$4.2 billion gigafactory that will be fully operational at maximum output by 2023. The builder is a company called Northvolt – a Sweden-based startup that wants to use the country's green energy credentials, vibrant venture capital scene and access to key raw materials to create what would be the single biggest plant for lithium-ion batteries in Europe.

Electric pressure

Strict new fuel-efficiency regulations from the EU will put pressure on car makers to keep pace with the migration beyond combustion engines. With Europe making more than 18 million vehicles a year (20 percent of the global market), any big increase in electric vehicle (EV) penetration will create a big incentive for large-scale battery production close to home.

The Turkey Urban Renewal Project is a 20-year plan to demolish around seven million buildings and put in their place earthquake-resistant structures. The project got underway in 2012 and has an estimated price tag of \$400 billion.

The enterprise was prompted by two earthquakes in the eastern province of Van, which killed 650 people. Around 110 municipalities across Turkey have submitted detailed studies to the government and requested aid under the redevelopment project. The majority of buildings in Turkey are unsuitable for earthquake prone areas, and do not meet current safety standards.

Going underground

While Turkey builds above ground, Norway has committed \$25 billion to the construction of a fully submerged, floating tunnel beneath the Sognefjord, a body of water more than 4,000 feet (1,200 metres) deep and 3,000 feet (900 m) wide. It would link two contrasting regions and be the first of its kind in the world.

At present, the only way to travel across the bodies of water involves taking a series of ferries – an inconvenient and time-consuming process. The submerged floating bridges would consist of large tubes suspended under 100 feet (30 m) of water, and each one will be wide enough for two lanes of traffic.

As the Norwegians perfect underwater travel, London's Crossrail Project – a massive upgrade to the existing Underground system – will continue being the largest construction project ever undertaken in Europe. The Project involves 10 new train lines and connects 30 existing stations via 73 miles (120 km) of track and 26 miles (42 km) of tunnels running through parts of London and the home counties of Berkshire, Buckinghamshire and Essex. Currently on time and under budget, limited service will begin this year, while full service will arrive in 2020.

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Members of the SCRA are best placed to explain the value they get from being part of the Association, writes MIKE CHALMERS

Maximising membership value

No matter where SC&RA's many members around the world work and live, they can be sure that the Association is always working towards their benefit and the ultimate benefit of the industry. A membership with SC&RA comes with a range of advantages – often best articulated by the members themselves.

Carlos Torres, Riggers Group CEO and general director in Mexico, sees the SC&RA Membership Directory as a key way

to maximise his membership. "Different rigging companies around the world can reach Riggers Group for their rigging and installation projects within Mexico through the Directory," he said. "In turn, we can also select rigging and trucking companies for our projects in different countries."

As a resource for hundreds of companies around the world, the Directory creates partnerships and opportunities across international borders. Torres believes that this helped Riggers become what it is today. "When we first started back in 2006 with a few bucks [twenty thousand dollars], several rigging companies from the US and Canada hired me in Mexico for unloading and installing machinery. Our company would grow quickly from there – to a size that is well known and respected in less than four years. The Directory is also a valuable sales tool, as well as a strategic piece to our turn-key international relocation services."

Another way to maximise one's membership

is to attend the annual meetings. Especially for international members, membership discounts can really add up when travelling to meetings. "Every dollar counts when travelling," said Roland Fischer, Tii Sales North America area sales manager. "And in the end, the events are a great opportunity to meet a lot of key and knowledgeable people from our industry; it's always worth attending. You gather so much information in just a few days, which helps you in your daily work, and keeps you connected to the industry."

Fischer also sees great opportunity at the meetings for first-timers. "The first-timers' receptions are a great opportunity to get started, and the committee members – of which I am responsible for the international ones – take good care to make their start easier," he assured. "First-time attendance will certainly bring benefit across a broad timeline."

From first-time attendance to membership longevity, Iris Müllejans, Rolf Riedl

managing partner and director, is a firm believer in the power of marketing one's SC&RA membership, no matter how long a company has been involved. "We are a global player but, finally, all business

Roland Fischer, Tii Sales North America area sales manager



Carlos Torres, Riggers Group CEO and general director in Mexico





Iris Mülleijans, Rolf Riedl managing partner and director, in Germany

is local,” she noted. “The SC&RA network gives us a necessary expertise through our partnership. As an SC&RA member, we offer both benefits to our customers – international and local professionalism in the various markets we work. It allows us to speak the right language and understand local mentalities – and shape our marketing in these areas to gain a competitive advantage.”

Mülleijans also emphasises the importance of promoting a successful relationship with the Association. “We believe that marketing SC&RA awards or announcements underlines our competence and integrity as a global player. We present our membership certificate in our office – it’s visible for all employees and visitors, and serves as both motivation and credibility.”

SC&R Foundation

The SC&R Foundation is a 501 (C)3 nonprofit organisation that exists to support SC&RA member companies and address the industry labour shortage. The Foundation (www.scr-foundation.org) funds industry-specific research projects and is known for its grant and scholarship programme, which awards US\$ 45,000 to \$60,000 annually.

The steady growth and impact of the Foundation is a testament to the determination both of the Foundation Board and SC&RA members to keep the industry moving forward by consistently seeking to provide opportunities for current and future workers.

Pivotal partnerships

Plenty of opportunities have emerged at the Foundation this year. In 2017 the Austin Esary Foundation began a memorial in remembrance of son and brother Austin

Esary who took his own life less than a week before his 17th birthday. He struggled in school and felt his future was bleak, even though he excelled at mechanics and welding. The purpose of the foundation in his memory is to give hope to other students who need encouragement and opportunity in non-traditional career paths. The Esary Memorial Grant will be awarded to an individual who has attended a Lift & Move USA event.

Similarly, also in the USA, the International Union of Operating Engineers (IUOE) had a desire to provide opportunities for individuals and enhance the future of the industry when they established a \$3,000 scholarship through the SC&R Foundation earlier in 2017.

Giving back

Jenifer Gabel owns and operates JK Crane in the USA and JK Crane is also certified as a Women’s Business Enterprise (WBE) by the Women’s Business Enterprise National Council. Gabel is extremely proud of this designation, and echoed the WBE mission by presenting a Pink Truck and JK Crane grant to SC&RA earlier this year. In her presentation speech, Gabel pointed to Dana Babbin, founder of Pink Truck – a clothing company offering girls who love trucks and excavators graphic tee shirts in colours not found in shops. Gabel met Babbin and explained how actively SC&RA and the Foundation work towards generating interest in the industry to a broader, more diverse audience, and she loved it. They came up with the idea of doing a Pink Truck grant – intended as an award to a young woman who already has plenty of barriers in this industry.

In addition, Bennett International, an

SC&RA member company based in Georgia, USA, brought the Taylor Family Foundation to the SC&R Foundation this year. This endeavour was established in 2012 as a means for Bennett to give back to the communities it serves. The Taylor Family Foundation gives several scholarships a year to help students with education. Since its inception, the charity has given grants to US non-profit organisations totalling \$1,000,000.

Worthy recognition

The SC&R Foundation also wants to recognise its Scholarship and Grant winners for 2017. Scholarship winners include: Jacob Bussiere, Cote Crane & Rigging (George Bragg Memorial Recipient); Braxton Chong, Hawaiian Crane & Rigging (Christopher Lorenz Memorial Recipient); Chloe Lonergan, Empire Crane Company; Brandon Robinson, Link-Belt Construction Equipment; Lacey Rucker, WireCo WorldGroup (Terex USA Continuing Education Recipient); Kylie Starliper, Keen Transport; Brian Winburn, Link-Belt Construction Equipment (NBIS Continuing Education Recipient).

Grant Winners include: Jakob Green, Farmers Exchange (Anderson Trucking Service Continuing Education Recipient); Fay Pietrobone, IB Dickinson & Sons (McTyre Family Continuing Education Recipient); Jeremiah Rindler, Lift Systems (Heartland Communications/Crane Hotline Continuing Education Recipient); Jeffrey Sims, Sunnyside Construction (Robert Cookingham Memorial Recipient).

The Foundation has \$20,000 remaining to award for Grants. Details are here: www.scr-foundation.org/scholarships_grant

Coming in the third quarter of 2017 interns will be eligible to receive a scholarship from the Foundation. To qualify, applicants must be interning for an SC&RA member company. ■



LIFT & MOVE USA GETS A BOOST

The SC&R Foundation joined SC&RA, KHL Group and the National Commission for the Certification of Crane Operators (NCCCO) with support for Lift & Move USA (www.liftandmoveusa.com) events by committing \$20,000 for 2017. New SC&R Foundation president Jim Sever sees the commitment as a continuation of the Foundation’s established value system, and sees the relationship as hand-in-glove.

“Having this all encapsulated within the Lift & Move process is a great vehicle to present not only what the Foundation is offering – grants, scholarships, internships – but also what SC&RA itself represents to the member companies.”

Added excitement for Foundation Board members was focused on partnerships with Industrial Training International (ITI) and the NCCCO. These partnerships will enable the Foundation to award ITI courses and NCCCO certificate courses to worthy grant applicants based on the course preferences they indicate on their applications.



#LIFTMOVEUSA



Lift & MoveUSA

Support

Support the careers event for the US crane, rigging and specialized transport industry and help secure the workforce of the future.



“The labor shortage is one of the most pressing issues for our members and it’s not going away... We urge industry to support this positive initiative.”

Joel Dandrea
Executive Vice President, SC&RA

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FUTURE EVENTS

Lift & Move USA will be held several times a year throughout the US, hosted by SC&RA members.

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www.liftandmoveusa.com

More skids for LGH

Lifting equipment rental specialist Lifting Gear Hire (LGH) in the USA is expanding its fleet of Hydra-Slide skidding equipment. The move follows a period of sustained utilisation of its three 500 ton capacity HT500 heavy track skid systems and power units, according to Hydra-Slide.

The HT500 is used for moving, loading and unloading heavy loads, including transformers,

generators and other machines where a rigid, load carrying track is needed.

Patrick Clark, LGH national rental support manager, attributed the success of LGH's partnership with Hydra-Slide to Hydra-Slide's ability to tailor its equipment to the needs of customers. As a result, he said, LGH is now looking to expand the offering as the industry's thought leaders and decision makers broaden their minds to alternative solutions following successful application of the HT500.

Clark said he sees potential for heavy industrial and lighter commercial projects to use Hydra-Slide's "Up 'N' Go" jacking skid shoes and engineered



Two condensers were installed by sliding them under a steam turbine tabletop using Hydra-Slide equipment rented from Lifting Gear Hire

turntables. The skid shoes work with the HT500 and are designed to fit the same track. The 250 US ton capacity jacking cylinders can be connected hydraulically

with an unlimited number of other shoes, upping capacity to multiples of 1,000 tonnes.

■ For more information see: www.hydra-slide.com

AUTOMOTIVE DEAL FOR DEMAG



Demag, part of lifting solutions provider Konecranes, has signed a contract with Daimler AG for maintenance at four automotive plants in Germany.

The agreement covers regular inspections and maintenance at car plants in Sindelfingen and Bremen, and at powertrain assembly plants in Stuttgart-Untertürkheim and Hamburg. There are more than 10,000 cranes and hoists with capacities from 80 kg to 63 tonnes used for lifting applications on production lines and in final assembly. The safety inspections will also cover more than 23,000 load handling attachments and lifting accessories.

The contract also includes maintenance of car lifting platforms on production lines. In addition, Demag Service has agreed to provide first-level support for passenger and load lifts as an option at the four plants when the lift service provider is not available.

■ For more information see: www.demagcranes.com

New Liebherr crawler crane painting system

Mobile and crawler crane manufacturer Liebherr-Werk Ehingen, in Germany, has implemented a new system for its large crawler crane components. It invested in the new system following an increase in the number of crawler cranes it is producing and an increase in the size of components.

Environmental protection and occupational safety were important criteria in its design. Thomas Nüssle, division

manager, explained, "Due to current regulations, there are fewer substances harmful to health present in the paints. Yet these paints are more difficult to work with. We've therefore invested a great deal in the technical system for paint application."

To prevent deposits from accumulating in the tanks and lines, the paint is conveyed at low pressure in a ring line in the new system. The pressure is not increased until the painting cabin,



where additional high-pressure pumps are used. As a result, Liebherr said, a good paint quality can be realised with a constant pressure of about 160 bar.

■ For more information see: www.liebherr.com

IGUS MARKS 1,000TH CRANE MILESTONE

Power chain and industrial polymer specialist Igus is celebrating having equipped its 1,000th ship-to-shore crane with a plastic energy chain system. It says this demonstrates the increasing use of lightweight, long-lasting plastic components for crane applications.

Igus claims that through the use of its rolling energy chains the service life of components can be increased and the drive power required to run them can be reduced. "By using a roller, the co-efficient of friction on long travels drops dramatically when the upper run of the chain runs on the lower run; thereby, up to 57 percent of the required drive energy can be saved while moving the energy chain system," commented Theo Diehl, head of industry management cranes at Igus.

■ For more information see: www.igus.de



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LIFT & MOVE USA

14 September 2017

Buchanan Hauling
Fort Wayne, Indiana, USA
www.liftandmoveusa.com

EUROPLATFORM

14 September 2017

Warsaw, Poland
www.europlatform.info
(Organised with IPAF)

SC&RA CRANE & RIGGING WORKSHOP

20 – 23 September 2017

Kansas City, USA
www.scranet.org

ICUEE 2017

3 – 5 October 2017

Kentucky, USA
www.icuee.com

GIS 2017 (The lifting,
industrial and port handling
and heavy transport show)

5 – 7 October 2017

Piacenza, Italy
www.gisexpo.it

CRANE INDUSTRY COUNCIL OF AUSTRALIA ANNUAL CONFERENCE

19 – 21 October

Adelaide, Australia
www.cica.com.au

AWRF FALL CONFERENCE
(Associated Wire Rope Fabricators)

22 – 25 October 2017

Minnesota, USA
www.awrf.org

APEX ASIA 2017 /
CEMAT ASIA 2017

31 October – 3 November 2017

Shanghai, China
www.apexasiashow.com
www.cemat-asia.com

AEM ANNUAL CONFERENCE

2 and 3 November 2017

Palm Beach, Florida, USA
www.aem.org

WORLD DEMOLITION SUMMIT

2 November 2017

London, UK
www.khl.com/wds
(organised with the EDA/NDA)

WORLD CRANE AND
TRANSPORT SUMMIT

7 and 8 November 2017

Amsterdam, Netherlands
www.khl-group.com/events/
wcts

LIFT & MOVE USA

15 November 2017

Baton Rouge, Louisiana, USA
www.liftandmoveUSA.com



Søren Jansen photographed this 50 year old Demag MC180 lattice boom crane on rubber tyres, still fighting fit, working at the Augustenborg Marina in Denmark. It is one of the last diesel-mechanical cranes from the then Demag Baumaschinen in Düsseldorf, Germany, Jansen writes. "For me it was a nice crane to see because it was such cranes that I started selling, as a young engineer – many, many years ago." Jansen retired as ESTA director at the end of June.

PEOPLE NEWS

■ At Empire Crane Company's New Jersey, USA, branch **KARL PITRE** has been



promoted to branch manager at the Bridgewater location. Pitre will oversee the service centre and sales of parts, in addition to supporting the sales team.

He joined Empire in 2012 and when the Bridgewater branch was opened Pitre was service manager. Commenting on his new role Pitre said, "I will be travelling a couple times a week to put machines in service. I will also get more involved with our sales department to ensure that our parts and service teams are supporting our new and existing customers. The New Jersey location has grown steadily in

the 2.5 to 3 years that we have been in business and we foresee great growth to come with our current equipment lineup and recent additions to our staff."

■ Dealer CraneWorks in the USA has appointed **RANDY HARRIS** as the



company's large crane sales specialist. Harris joined the crane industry almost 20 years ago. He will work in Central Texas to serve the oil and gas companies on the US Gulf Coast and in the Permian Basin.

Commenting on the appointment, Keith Ayers, CraneWorks CEO, said, "It's not often that you find someone like Randy whose skill set is so

perfect for the job. Customer interest in large cranes is up so much that we knew we'd need a dedicated specialist soon for this market. With Randy's deep knowledge, it was an easy decision to bring him on board."

■ At hydraulic crane and equipment manufacturer IMT in the USA **DEREK SMUCK** has joined as a sales



associate and **JEFF NELSON** as a sales engineer. Smuck will work to promote and administrate direct, national, and fleet accounts. Nelson's primary role will be to support the sale of lube trucks.



■ 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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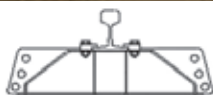
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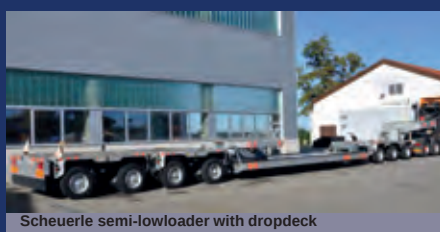
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400 t	Liebherr	LTM 1400	1988	16 x 8 x 12	50 / 61 / 84	direct ex Dubai
250 t	Liebherr	LTM 1250/1	2004	12 x 8 x 10	72 / 42 / 63	direct
200 t	Liebherr	LTM 1200-5.1	2009	10 x 8 x 10	72 / 22	direct
160 t	Faun	ATF 160 G-5	2005	10 x 8 x 8	60 / 13,2	direct
160 t	Liebherr	LTM 1160/2	1999	10 x 8 x 10	60 / 22	direct
140 t	Demag	AC 140	2006	10 x 6 x 8	60 / 2,5	September
120 t	Terex-Demag	AC 120-1	2009	10 x 6 x 8	60 / 17	direct
120 t	Grove	AT 9120 E	1995	10 x 8 x 8	48 / 17	direct
100 t	Grove	GMK 5100	2005	10 x 6 x 10	51 / 18	direct
100 t	Grove	GMK 5100	2002	10 x 8 x 10	51 / 18	direct
100 t	Liebherr	LTM 1100/2	2001	10 x 8 x 8	52 / 19	direct
100 t	Grove	GMK 5100	2001	10 x 8 x 10	51 / 26	direct
90 t	Liebherr	LTM 1090/2	2002	8 x 8 x 8	52 / 19+runner	direct
80 t	Terex-Demag	AC 80-2	2004	8 x 8 x 8	50 / 17	direct
80 t	Terex-Demag	AC 80-2	2004	8 x 8 x 8	50 / 17	September
80 t	Terex-Demag	AC 80-2	2004	8 x 8 x 8	50	September
80 t	Terex-Demag	AC 80-2	2003	8 x 6 x 6	50 / 17+1.5	direct
80 t	Liebherr	LTM 1080/1	1999	8 x 8 x 8	48 / 19	direct
60 t	Faun	ATF 60-3	2004	6 x 6 x 6	40,2 / 16	direct
60 t	Liebherr	LTM 1060/2 (2x)	2000	8 x 4 x 8	42 / 17	direct
55 t	Liebherr	LTM 1055-3.1	2006	6 x 6 x 6	40 / 16	direct
55 t	Grove	GMK 3055	2006	6 x 6 x 6	43	direct
55 t	Liebherr	LTC 1055-3.1	2005	6 x 6 x 6	36 / 15	direct
55 t	Liebherr	LTM 1055	2003	6 x 6 x 6	40 / 16	September
50 t	Demag	AC 50	2007	6 x 6 x 6	40 / 17,6	direct
50 t	Grove	GMK 3050	1999	6 x 6 x 6	38,1 / 15	direct
45 t	Faun	ATF 45-3	2006	6 x 6 x 6	34 / 15,2	direct
40 t	Demag	AC 40-1 City	1999	6 x 6 x 6	31,2 / 13	direct
35 t	Liebherr	LTM 1030-2.1	2006	4 x 4 x 4	30 / 15	direct
35 t	Liebherr	LTM 1030-2.1	2005	4 x 4 x 4	30 / 15	direct
35 t	Grove	GMK 2035	2004	4 x 4 x 4	29	direct
30 t	Faun	ATF 30-2 L	2001	4 x 4 x 4	28,5 / 12,2	direct

ROUGH TERRAIN CRANES

Capacity	Manufacturer	Type	Year	Drive/Steering	Boom/lift (m)	Delivery
80 t	Grove	RT 890 E	2008	4 x 4 x 4	43,2 / -	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 / 7	August

LATTICE BOOM TRUCK CRANES

Capacity	Manufacturer	Type	Year	Drive/Steering	Boom/lift (m)	Delivery
180 t	Demag	TC 650	1982	10 x 6 x 6	48 / 24	direct
130 t	Liebherr	LG 1130	1976	12 x 8 x 8	63 / 35	direct
125 t	Luna	GC 125	1986	10 x 6 x 6	63	direct

TRUCK CRANES

Capacity	Manufacturer	Type	Year	Drive/Steering	Boom/lift (m)	Delivery
200 t	Gottwald	AMK 200/83	1980	16 x 6 x 12	53 / 38	direct

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Demag AC 100
YOM 2001
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- Liebherr LTM 1090/2
- Liebherr LTM 1160/2
- Tadano Faun ATF 50-3
- Tadano Faun ATF 110-5
- Demag AC 100
- Link Belt HC 238
- Krupp KMK 4055
- Krupp GMT 70 AT
- Krupp KMK 4070
- Krupp KMK 4080
- Grove GMK 6250
- Tadano TR 300 EX
- Hoist MS 455 N
- Sennebogen 5500



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ALL TERRAIN CRANES

1x	170 t	Grove GMK 5170-1	2016
1x	250 t	Liebherr LTM 1250-5.1	NEW!
1x	300 t	Liebherr LTM 1300-6.2	2014

CRAWLER CRANES

1x	250 t	Kobelco CKE 2500-2	2008
1x	250 t	Kobelco CKE 2500-2	2010
2x	400 t	Demag CC 2400 SL	2009/2014
1x	500 t	Liebherr LR 1500	NEW!
1x	650 t	Demag CC 3800 SL	NEW!
1x	650 t	Demag CC 3800 SL	2013

ROUGH TERRAIN CRANES

1x	40 t	Grove RT 540E CE	2011
2x	55 t	Tadano GR 550XL-2	2013
1x	80 t	Grove RT880E	2013
1x	80 t	Terex RT 780	2016
3x	90 t	Grove RT 890E	2012/2013
1x	100 t	Tadano GR 1000XL-2	2013

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ALL TERRAIN-CRANES

Make / Type	y. o. m.	Drive	Boom / Fly Jib
20 t Gottwald AMK 31-21	1984	4x4x4	20,50m
30 t Faun ATF 30-2 L	2001	4x4x4	28,50m + 12,20m
35 t Liebherr LTM 1030-2.1	2005	4x4x4	30,00m + 15,00m
35 t Liebherr LTM 1030-2.1	2006	4x4x4	30,00m + 15,00m
35 t Grove GMK 2035	2004	4x4x4	29,00m
45 t Faun ATF 45-3	2006	6x6x6	34,00m + 15,20m
50 t Grove GMK 3050	1999	6x6x6	38,10m + 15,00m
50 t Terex-Demag AC 50-1	2007	6x6x6	40,00m + 17,60m
55 t Grove GMK 3055	2006	6x6x6	43,00m
55 t Liebherr LTM 1055-3.1	2006	6x6x6	40,00m + 16,00m + Runner
60 t Faun ATF 60-3	2004	6x6x6	40,20m + 16,00m
80 t Faun ATF 80-4	2005	8x6x8	48,50m + 16,00m + Runner
80 t Terex-Demag AC 80-2	2004	8x8x8	50,00m + 17,60m
80 t Terex-Demag AC 80-2	2003	8x6x6	50,00m + 17,60m + Runner
80 t Liebherr LTM 1080/1	1999	8x8x8	48,00m + 19,00m
90 t Liebherr LTM 1090/2	2002	8x8x8	52,00m + 19,00m
100 t Grove GMK 5100	2001	10x8x10	51,00m + 26,00m
100 t Grove GMK 5100	2002	10x8x10	51,00m + 18,00m
100 t Liebherr LTM 1100/2	2001	10x8x8	52,00m + 19,00m
120 t Grove AT 9120 E	1995	10x8x8	48,00m + 17,70m
140 t Terex-Demag AC 120-1	2009	10x6x8	60,00m + 17,60m
160 t Tadano Faun ATF 160G-5	2009	10x8x8	60,00m + 37,00m
160 t Tadano Faun ATF 160G-5	2005	10x8x8	60,00m + 13,20m
200 t Liebherr LTM 1200-5.1	2009	10x8x10	72,00m + 22,00m
250 t Liebherr LTM 1250/1	2004	12x8x10	72,00m + 42,00m + 63,00m
400 t Liebherr LTM 1400-7.1	2007	14x8x12	60,00m + 56,00m + 84,00m

RT-TELESCOPIC-MOBILE CRANES

25 t Kato KR 250	1998	4x4x4	26,70m + 7,00m
80 t Grove RT 890 E	2008	4x4x4	43,00m

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300 t



Terex Demag AC 300 SL, 1999

130 t



Grove GMK 5130-2, 2008

100 t



Demag AC 100, 2007

100 t



Liebherr LTM 1100-5.2, 2008

70 t



Demag AC 70, 2005

60 t



Faun HK 60, 2007

55 t



Liebherr LTM 1055-3.1, 2006

30 t



Terex Demag AC 30, 2006

ALL CRANES



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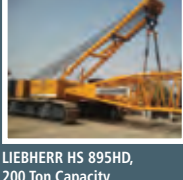
DEMAG CC2800-1,
600 Ton Capacity



HITACHI SCX 1500-2,
135 Ton Capacity



DEMAG AC200-1,
200 Ton Capacity



LIEBHERR HS 895HD,
200 Ton Capacity



ZOOMLION QUY70,
70 Ton Capacity

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Faun
ATF65G-4 2010

Liebherr
 LTM1090 1990
 LTM1100-5.2 2014
 LTM1130-5.1 2013
 LTM1200-5.1 2007
 LTM1200-5.1 2011
 LTM1250-6.1 2006 coming
 LTM1350-6.1 2010
 LTM1500-8.1 2014
 LTM1750-9.1 2013
 LTM11200-9.1 2010
 MK80 2005
 LTM1095-5.1 2006
 LTM1220-5.1 2005
 LTM1160-5.1 2007
 LTM1250 2004

Grove
 GMK6300L 2014
 GMK3050 2005
 GMK3055 2011
 GMK4080 2009
 GMK4080-1 2011
 GMK4100L 2013
 GMK5130 2014

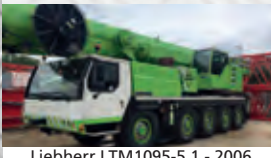
GMK5220 2013
 GMK5250 2015
 GMK6400 2013

Demag
 AC100 2007
 AC160 2007
 AC500-2 2006

PARTS FOR SALE
Liebherr Parts
 LTM1090-1100-4.1 Winch 2
 LT1120 Jib
 LTM1130-5.1 Jib extension
 LTM1160-5.1 Jib extension and
 winch 2
 LTM1200-5.1 Jib 22 meter
 LTM1160-2 jib inserts
 LTM1160-2 Boom

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Liebherr LTM1095-5.1 - 2006

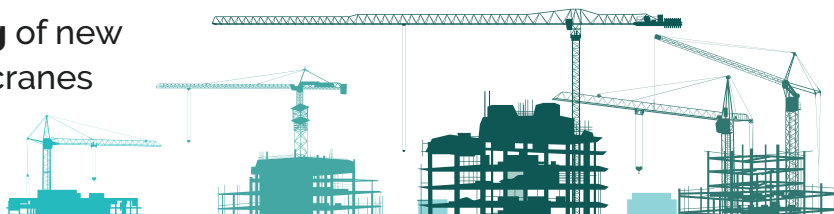


LTM1200-5.1 2007 - 2007

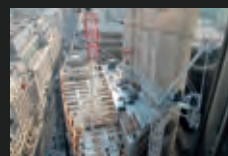
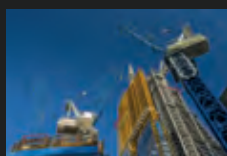
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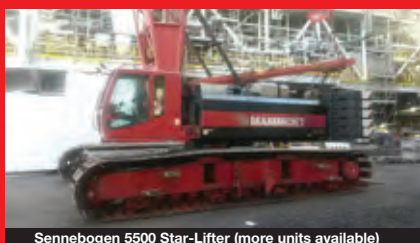
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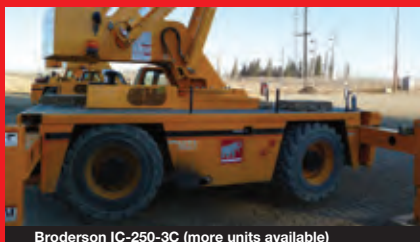
Liebherr LTM 1750-9.1 'Alberta style'



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Liebherr LR 1400-2 (more units available)



Broderson IC-250-3C (more units available)



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6-line Goldhofer SPMT (more units available)



Scheuerle Inter 6 liner (more units available)



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



Terex Demag CC2800 (more units available)



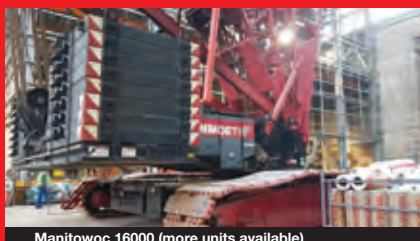
Terex Bendini A 350 (more units available)



Mercedes-Benz Actros 4165 SLT



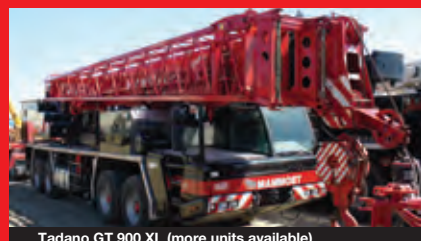
MAN TGX 33.540 (more units available)



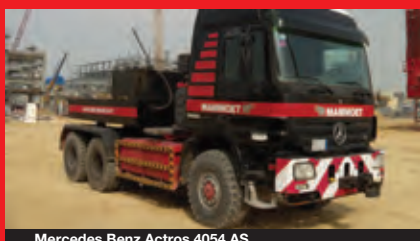
Manitowoc 16000 (more units available)



Linkbelt HTC 86100 (more units available)



Tadano GT 900 XL (more units available)



Mercedes Benz Actros 4054 AS



RT cranes 30-60 tons

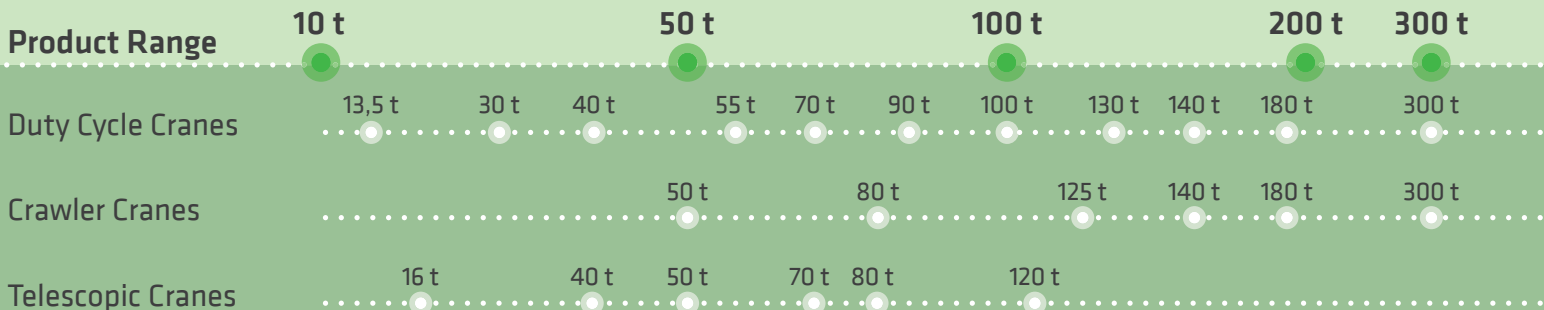


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