

INTERNATIONAL CRANES AND SPECIALIZED TRANSPORT

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A KHL Group publication

Volume 27 ■ Number 9 ■ JUNE 2019

SC&RA jobs of the year

Wind power transport

Dockside lifting

SITE REPORT
Skyline

IC 50
CRANES



INTERVIEW:
Garrison
& Filipov



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VOLUME 27 ■ NUMBER 9 ■ JUNE 2019



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EDITOR'S VIEW



For more than 20 years the IC50 ranking of the world's largest crane-owning companies has been a big part of this magazine, of the June issue in particular. This one is no exception. Never has it been so close to a change at the top of the table. The gap between the fleet capability of the number one and two companies has been steadily narrowing in recent years. Between last year and 2019,

however, it has closed massively. It is now at the point where the 78,564 tonne-metre difference could easily be filled by just one, albeit very large, crane.

In line with other examples of changing times and uncertainty, I wouldn't be a bit surprised if there was a change at the top in the 2020 IC50. In the meantime, have a look at this year's table in our feature starting on page 15 and perhaps see where your company is placed.

Of course, it isn't just about the amount of kit there is, a very important aspect is how it is used. Celebrating the abilities of end user companies is a major task ably achieved by the annual SC&RA Job of the Year contest. We have extensive coverage of the what made the winning jobs, starting on page 24.

Talking about big changes, I am pleased to present our interview with John Garrison and Steve Filipov, Terex Corp and Terex Cranes bosses, respectively. The recent big news of Tadano buying Demag will have a significant impact on the crane industry. It will start taking effect after the deal closes, which at the time of writing in early June was still on track to be by the end of the month.

What appears on page 35 is a short extract from an hour's worth of conversation with the two leaders about what was behind the deal and what lies ahead for Terex without Demag. I hope to get a longer version published on www.khl.com in the coming months.

If your business involves tower cranes and you have yet to sign up for the International Tower Cranes (ITC) conference in Vienna, Austria, on 26 and 27 June, there may still be time so be quick to book your place. For more information about this popular event, and to book, see its website: www.khl-itc.com

ALEX DAHM

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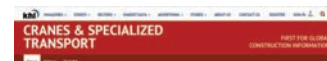
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ON THE COVER



German crane company BKL dismantling a tower crane in Ingolstadt, Germany. BKL is number 93 in this year's IC50 listing. See p.15 to see where your company ranks.

SUBSCRIPTIONS

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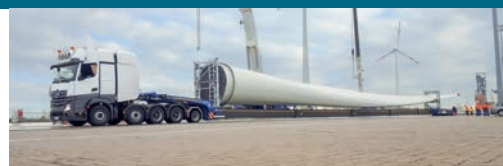
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HIGHLIGHTS

■ Japanese crane maker Tadano has opened an office in Bangkok, Thailand, to deal with Tadano's used equipment in ASEAN countries. Market research will also be conducted from the new office which opened on 10 May 2019.

■ UK company Ainscough Crane Hire has opened a new depot in Invergordon, Scotland. It is to better serve customers and help grow the wind energy offering. Ainscough already had a base in Invergordon now superseded by the new 27,852 sq ft facility. Ainscough said the facility is fully under cover, providing protection for the crane fleet and a better working environment.

■ Mammoet has opened a depot at the Port of Antwerp in Belgium. Customers will benefit from an increase in on-site resources, including a fleet of new cranes up to 500 tonnes, tower cranes and SPMT, followed by an expansion of the Antwerp workforce. It will reduce mobilisation time and associated costs leading to a more efficient and streamlined service.

■ Spanish contractor Eurogrúas has a new 800 tonne capacity Liebherr LR 1800-1.0 crawler crane. It has a luffing jib and derrick system and the V-frame adjustable ballast system. Javier Sato, Eurogrúas managing director, commented, "To suit the characteristics of our market, we were looking for a powerful, versatile, modular crane which is easy to transport and delivers high standards of safety."

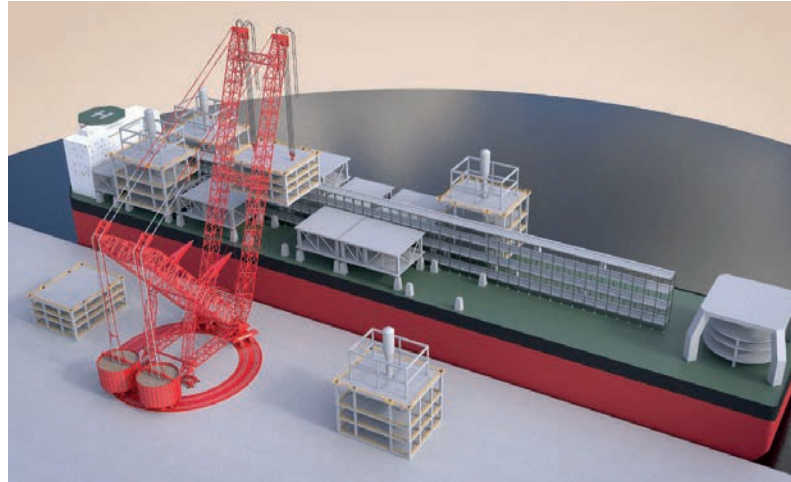
The new crane was delivered direct to a refinery in Portugal.

Mammoet announces 18,000 tonne crane

An 18,000 tonne capacity super heavy lift crane concept has been announced by Mammoet.

The Netherlands-based international heavy lift and transport specialist has combined elements from its existing MSG and PTC series super heavy lift cranes in the design of the new MSG1000. MSG stands for Mammoet Sliding Gantry.

Commenting on the new concept Jacques Stooft, Mammoet global director market development and innovation, said, "...we see from developments in, for example, modular construction, there is a growing need for cranes with significantly more lifting capacity than the market has seen thus far. While we have left the basic concept of the PTC intact, we have enhanced its capacity. Among



The design for Mammoet's 18,000 tonne capacity super heavy lift crane

other features, a double boom and strand jacks in combination with winches-based hoisting significantly increases its capacity up to 18,000 metric tonnes."

The MSG and PTC cranes combine capacity up to 5,000

tonnes with a reach of up to 256 metres on the main boom and jib. Mammoet operates ten PTCs worldwide. The company said it will discuss the concept with its customers to help determine how it can meet market needs.

Cosmo adds Demag pair

Two new Demag all terrain cranes just added to the Cosmo Cranes mobile crane fleet in Sydney, Australia, were put straight to work.

Cosmo Cranes commissioned a 300 tonne capacity AC 300-6 and a 130 tonne AC 130-5. Both have the latest Demag IC-1 Plus control system.

Josh & Jonathan Handley, Cosmo Cranes owners, said,

"Over the last 16 years we've built a reputation on being experts in our field by performing quality work safely. The machinery we use, as well as the distributors and manufacturers we choose to partner with help us get to where we are today."

The five axle 130 tonner has 60 metre boom and a maximum system length of 86.5 metres. On the larger AC 300-6 the carrier

is six axles, the main boom is 80 metres and maximum system length is 119.9 metres.

Cosmo Cranes was established in 2003 and offers, among other things, tower crane and plant equipment, crane sales and generator rental.

New Demag AC 300-6, pictured, and AC 130-5 all terrains have joined the Cosmo Cranes fleet in Australia



Derbyshire, UK-based crane rental company GH Johnson has taken delivery of its latest Kobelco crawler crane: a CKE1350G-2. The crane has a capacity of 150 tonnes at 4.4 metres. It has a 61 metre boom and a 30.5 m fixed fly jib. According to Mark Evans, Kobelco Cranes Europe sales manager, left of picture, it is the 11th unit of this model in GH Johnson's fleet.



CROSBY ACQUIRES GUNNEBO

Global lifting and rigging hardware supplier Crosby Group has acquired Gunnebo Industrier Holding AB from Segulah, a Nordic private equity firm.

All closing conditions have been satisfied, Crosby said. Financial terms were undisclosed. Commenting on the acquisition Bob Davies, Crosby chief executive officer, said, "Together we complement each other perfectly. Crosby and Gunnebo Industries will be able to deliver enhanced value for customers by providing a broader product portfolio, enhanced support and training, expanded geographic presence and greater ability to offer innovative solutions."

ALE launches 10,000 tonne lifter

A 10,000 tonne capacity super heavy lift lattice crane has been launched by ALE.

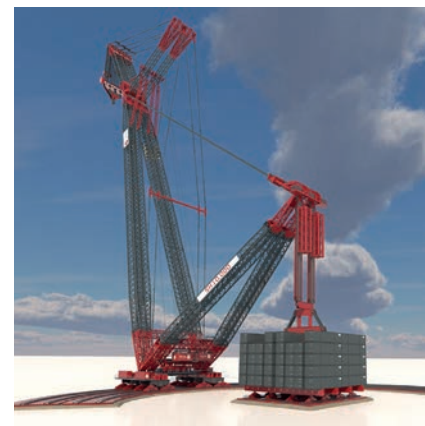
The UK-headquartered international heavy lift and transport specialist said the SK10,000 will be the world's largest land-based crane. It will be used to lift modules for the construction of FPSO, FLNG and other projects.

"The SK10,000 will allow modules to be installed directly onto a ship's hull, hugely advancing industry capabilities for both lift weights and impact on project efficiency," ALE said.

ALE's next largest crane, the 5,000 tonne capacity AL.SK350,

has made a series of similar lifts. The SK10,000 follows the same design. It can be erected on a segment of track as opposed to needing a full ring, ALE said. Maximum outreach is 200 metres while ground bearing pressure is designed to remain below 25 tonnes per square metre.

Commenting on the new crane, Ronald Hoefmans, ALE group technical director, said, "We not only solve our clients' existing challenges but also look to the future in enabling them to achieve industry firsts that later become the industry standard. The introduction of the SK10,000 means individual lifts of up to



ALE's 10,000 tonne capacity AL.SK10,000 super heavy lifter

10,000 tonnes are now possible, allowing customers to build larger modules more efficiently in fabrication yards and access a highly mobile and flexible solution to lift them."

Cube crane new from Unic

New from Unic Cranes Europe is the Cube Crane mini crane, developed by Japanese company Furukawa Unic (for whom Unic Cranes Europe is the European distributor).

The Cube Crane mini crane has a lifting capacity of 0.98 tonnes at 6.44 metres and a maximum lifting height of 21.17 m. A three-section derrick boom can be set at 85°, 90° and 95° angles. It also has a five-section foldaway boom making it suitable for space-restricted projects. Multi-position outrigger configurations are possible

so that it can work around permanent obstacles.

The derrick boom can be erected to a height of nine metres and the folding boom extends to a working radius of 13.99 metres. The Cube Crane can continually slew through 360 degrees and has an overall working reach of 27.98 metres. The derrick boom and folding boom can also be extended and retracted through a vertical void, if required.

To increase safety during use the crane has a safety load indicator system with an over

winding alarm and an intelligent voice warning system. It comes with remote control as standard. The mini crane is 1.5 metres wide and can move around corners due to its ability to reposition the boom whilst travelling to its install location.

Graeme Riley, Unic Cranes Europe chief executive officer, commented, "We see this crane being used widely by our existing customer base in a variety of restricted access environments, including narrow spaces in between buildings and inner urban environments."



Unic's new Cube mini crane



FOUR DEAD IN ISRAEL CRANE CRASH

An incident involving a tower crane in Yavne, Israel, on Sunday 19 May resulted in four deaths, according to local news reports.

Photos show the saddle jib crane being dismantled using a large wheeled mobile telescopic crane. The tower crane had finished work helping to construct a low rise building on a development in an industrial area. In one photo a worker is shown suspended in the air below deformed steelwork at the rear of the slewing platform where the missing counter jib had been mounted.

The Times of Israel reported that victims were on the crane when its counter jib, including the concrete counter weight slabs, fell to the ground.

To help prevent recurrence of such incidents ICST will report relevant news updates and lessons learned about this and other incidents as and when they become available.

UK-based mobile crane rental company Bray Cranes has bought a new Kato City Crane model: the CR-130Rf.

The crane has a capacity of 13 tonnes at 1.7 metres and a six-section boom that extends from 5.3 metres to 24 metres. The CR-130Rf is 7,465 mm long, 1,995 mm wide and 2,870 mm high and its gross vehicle weight is 13,745 kg.

The latest model has a faster road speed compared to the previous 13-tonne capacity Kato City Crane and new features include a searcher hook, a Stage IV engine, a redesigned operator's cabin, and an automatic levelling system.

The crane was bought through Kato's European distributor Rivertek Services. According to Rivertek, Bray was the first company in the UK to own a complete range of new Kato City Cranes in their fleet, back in 2016.



Tadano sales up 8.5%

Net sales were up 8.5 per cent at Japanese crane maker Tadano in the 12 months to 31 March. The increase was JPY14,748 million (US\$134 million), or 8.5 per cent, to a total of JPY188,451 million (\$1.719 billion).

Revenue and profit increased for the first time in three years, the manufacturer said. In line with the company's aims, sales outside Japan increased, by 20 %, from JPY76.1 billion to JPY91.3 billion (\$694 million to \$833 million). Sales in Japan remained unchanged. Crane sales in Japan increased while aerial platform sales declined.

At JPY117,566 million (\$1.072 billion) in the year to 31 March 2018, wheeled mobile crane sales, at 62.4 % of the group's total, were up JPY18,533 million (\$169 million), or 18.7 %, from the JPY99,022 million (\$903 million) the year before. Loader crane sales were up JPY989 million (\$9 million), or 5 %, to JPY20,667 million (\$188 million). They formed 11 % of the total. Aerial work platform sales



Tadano's new Kozai crane factory at the Port of Takamatsu in Japan

declined 25.8 % to JPY18,320 million (\$167 million), down from 14.2 % to 9.7 % of the total.

Sales were up significantly overall but operating income only increased by JPY300 million

(\$2.8 million) as a result of higher costs, the company said.

Looking ahead but excluding the impact of the Demag acquisition, announced in February and due to complete at the end of June 2019, the company forecasts an overall sales increase of 6.1 %, to JPY200,000 million (\$1.824 billion) and operating income increasing to 10.5 %, or JPY17,500 million (\$160 million).

Note: figures exchanged at JPY109.657 = US\$1.00.

MORE EFFERS FOR THE UK

On-road load handling equipment specialist Hiab has begun importing and servicing Effer cranes in the United Kingdom (UK).

Hiab acquired the Italian crane manufacturer last year and said it would now import several of Effer's cranes to the UK market, including the company's loader cranes and its special application truck cranes – particularly those with more than 100 tonne-metre load moment ratings.

Alastair Evans, Hiab sales product manager UK & Ireland, said, "Hiab has never had cranes over 100 tonne-metres before so the addition of Effer opens up our offering to customers that require an above 100 tonne-metre crane - plant operators, construction applications, heavy lifting specialist firms, and cabin applications, for example.

"It also means that customers who'd like to buy a bigger crane can choose Effer with the knowledge that there is the Hiab backup and service to support them," Evans continued.

Effer distributes its cranes to around 60 countries via a global network of 100 dealers. Prior to the acquisition, commercial vehicle bodybuilder Martin Williams of Hull was responsible for the manufacturer's distribution and services in the UK.

Ian Mitchell, Hiab managing director UK & Ireland, said, "Martin Williams in Hull will still be a key service and installation provider for Effer products, but there are now nine Hiab locations where Effer cranes can be serviced from as well."

two companies share a similar regional approach and culture. Mammoet's reputation for innovation and excellence is an

indication that, under its leadership, Meyer will be able to enhance its value proposition."

Mammoet Germany acquires Meyer

Heavy lifting and transport company Mammoet Germany has acquired German heavy lifting, installation and assembly specialist Meyer Anlagenbau.

The companies, which have collaborated for five years, said their joint success was built on a shared commitment to quality and safety. The deal will expand Mammoet's heavy installation expertise and reinforce its position in the German market.

Jens Krawczynski, managing director of Mammoet Germany, said, "With over forty years of experience in the south-west of Germany, Meyer brings a wealth

of local market knowledge and additional heavy installation expertise."

Eberhard Jung, former Meyer managing director, said, "Having worked together successfully for over five years, we know that Mammoet is the right company to expand our business. Our



Mammoet Germany and Meyer management team after signing the acquisition deal. Pictured are Jens Krawczynski, Mammoet Germany managing director, third from left, with former management of Meyer Anlagenbau, Volker Klohr, left, Eberhard Jung, second left, and Bernd Pötter, right

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Manitowoc sales up 8.3%

Net sales at Manitowoc in the first quarter of 2019 were US\$418.0 million, up 8.3 per cent on the \$386.1 million in the first quarter of 2018.

The USA-headquartered crane manufacturer attributed the increase to higher crane shipments in the Americas, Europe and Africa.

The adjusted figure for earnings before interest and taxes (EBITDA) was \$29.6 million, up 73 per cent from \$17.1 million in the same quarter of 2019.

Commenting on the results, Barry Pennypacker, Manitowoc president and chief executive officer, said, "Manitowoc once again delivered a strong start to the year, delivering our eighth straight quarter of year-

over-year adjusted EBITDA margin increase."

Explaining the adjustment to the figures, Pennypacker said, "In March, we successfully refinanced our capital structure to further strengthen our balance sheet. This action increases liquidity, reduces interest expense and allows us more flexibility to deploy our capital in order to increase shareholder value."

Pennypacker continued, "Market conditions remain very competitive. We continue to focus on providing innovative products and services for customers as evidenced by positive customer reception to our six new cranes introduced at the Bauma trade show in April. As a result of our first-quarter performance and our proven ability to execute on our strategy, we are raising our full-year guidance."

Looking ahead the company forecasts total annual revenue between \$1.900 and 1.975 billion and adjusted EBITDA between \$130 and \$150 million.



Manitowoc's new Grove GMK250XL-1 all terrain

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FABIO BELLI TO GIVE KEYNOTE AT WCTS

Fagioli CEO will give the end user keynote speech at the Summit in Amsterdam. Fabio

Belli, CEO at Italian heavy lift and transport company Fagioli, will give a keynote speech at the World Crane and Transport Summit (WCTS) in Amsterdam, Netherlands, on 13 and 14 November.

Belli, who has worked at Fagioli for 18 years and more than six years as its CEO, is a senior figure in the lifting and specialized transport sector worldwide. He leads a company with a reputation for innovation and which has carried out many high profile projects, including in recent years the refloating of the Costa Concordia vessel.

Fagioli operates worldwide and has more than 20 offices in Europe, Asia and the Americas.

The confirmation of Belli as the end user keynote speaker follows that of Erich Sennebogen, managing director at crane manufacturer Sennebogen. He will give the keynote speech from the manufacturing sector.

Belli and Sennebogen are part of a speaker line-up that includes:

- Ainscough Crane Hire (speaker to be confirmed)
- **BLANCA CLAEYSSENS**, general manager, ASA France
- **DR OLIVER FRIES**, vice president metals R&D, innovation and technology, WireCo WorldGroup
- **GERT HENDRICKX**, sales director projects, Sarens NV
- **KLAUS MEISSNER**, director competence centre engineering systems, product safety, Terex Cranes
- **DIEDERIK NELISSEN**, partner, McKinsey & Company
- **CHRIS SLEIGHT**, managing director, Off Highway Research
- **IFFET TÜRKEN**, chief networking officer & board director, Kässbohrer Group, and vice president - Transport Section, ESTA
- Representatives to be confirmed, joint presentation by Cleveland Bridge & Osprey.

To book your place at the summit, and to see more details of the programme, visit: www.khl-wcts.com



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	Crane Specifications					Dimensions			
	Max. Lifting Capacity	Boom Length	Jib Length	Max. Lifting Height Boom only / Boom + Jib	Max. Working Radius Boom only / Boom + Jib	Overall Length	Overall Carrier Length	Overall Width	Overall Height
GR-1200XL	120 US tons	39.4 ft - 183.7 ft	33.2 ft / 58.1 ft	184.0 ft / 241.4 ft	150.0 ft / 159.0 ft	Approx. 47'4"-7'8"	Approx. 28'4"-3'4"	Approx. 10'10"-1'2"	Approx. 12'5"-3'8"
GR-1100EX	110 metric tons	12.0 m - 56.0 m	10.1 m / 17.7 m	56.1 m / 73.6 m	44.0 m / 48.3 m	Approx. 14,450 mm	Approx. 8,655 mm	Approx. 3,315 mm	Approx. 3,795 mm

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The tide has turned for most of the companies in our IC Share Index between weeks 16 and 21. ICST reports

Changing fortunes

Between weeks 16 and 21, the IC Share Index shows negative change almost across the board, except for at Chinese state-owned company Zoomlion whose share price remained static.

With Zoomlion having opened what it claims is the world's largest tower crane factory in January 2019, it seems investor confidence remains high in this State-owned behemoth. Commenting on the opening of the new tower crane factory, Zhan Chunxin, Zoomlion chairman and CEO, said, "By leveraging our world-leading technology, along with the resources and support available to us we will be the undisputed

world leader in the construction hosting machinery sector."

Zoomlion is also attempting to expand its presence in Europe via potential acquisition deals. For example, at the end of 2018 it announced the acquisition of German top slewing tower crane manufacturer Wilbert. It is possible that these actions have helped protect the company from the decline displayed by the rest of the companies in the index.

Japanese crane manufacturer Tadano has seen its share price fall by more than ten percent compared to the previous period. Although this may not particularly stand out given the general overall decline displayed in this month's IC Share Index,

the result contrasts with the manufacturer's most recent financial announcement that said that revenue and profit had increased for the first time in three years. It also announced net sales were up 8.5 per cent in the 12 months to 31 March. The increase was JPY14,748 million (US\$134 million), or 8.5 per cent, to a total of JPY188,451 million (\$1.719 billion).

Not forgetting of course Tadano's acquisition of Demag. Perhaps after it closes, potentially by the end of June, and the dust settles, that will help inspire investor confidence and boost the share price.

Similarly, USA-headquartered crane manufacturer Manitowoc announced in May that net sales in the first quarter of 2019 were US\$418.0 million, up 8.3 per cent on \$386.1 million in the first quarter of 2018, yet its IC Share Index showed a 12% decline over the weeks 16 to 21 period monitored. Manitowoc attributed the increase to higher crane shipments in the Americas, Europe and Africa.

Barry Pennypacker, Manitowoc president and chief executive officer, said, "[We delivered] our eighth straight quarter of year-over-year adjusted EBITDA margin increase. As a result of our first-quarter performance and our proven ability to execute on our strategy, we are raising our full-year guidance." It will be interesting to see whether this confidence is shared by investors in next month's share index. ■

JUNE IC SHARE INDEX

STOCK	CURRENCY	PRICE AT START	PRICE AT END	PRICE CHANGE	% CHANGE	PRICE 12 MTHS AGO	12 MTH % CHANGE
IC Share Index*		71.64	63.12	-8.52	-11.89	62.05	1.72
Legacy IC Share Index**		287.76	252.15	-35.62	-12.38	383.24	-34.21
Dow Jones Industrial Average		26,450	25,490	-959	-3.63	24,739	3.04
FTSE 100		7,447	7,277	-169	-2.27	7,717	-5.69
Nikkei 225		22,090	21,117	-973	-4.40	22,437	-5.88
Hitachi Construction Machinery	YEN	2,878	2,546	-332	-11.54	4,065	-37.37
Konecranes	€	36.55	32.19	-4.36	-11.93	36.57	-11.98
Kobe Steel	YEN	874	701	-173	-19.79	1,142	-38.62
Liugong	CNY	8.21	6.59	-1.62	-19.73	10.23	-35.58
Manitowoc	US\$	17.70	15.05	-2.65	-14.97	26.69	-43.61
Palfinger	€	29.00	26.40	-2.60	-8.97	33.00	-20.00
Sany Heavy Industry	CNY	13.16	12.03	-1.13	-8.59	8.23	46.17
Tadano	YEN	1,170	1,048	-122	-10.43	1,593	-34.21
Terex	US\$	33.88	28.24	-5.65	-16.66	41.87	-32.57
XCMG	CNY	5.02	4.29	-0.73	-14.54	4.26	0.70
Yongmao Holding	SGD	0.30	0.34	0.05	15.25	0.50	-32.00
Zoomlion	CNY	5.33	5.33	0.00	0.00	4.25	25.41

*IC Share Index, 1 Jan 2011 = 100

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

EXCHANGE RATES - VALUE OF US\$

CURRENCY	VALUE AT START	VALUE AT END	VALUE CHANGE	% CHANGE	VALUE 12 MTHS AGO	12 MTH % CHANGE
CNY	6.704	6.904	0.2003	2.99	6.38	8.25
€	0.8881	0.8966	0.0086	0.96	0.8529	5.13
Yen	111.88	108.76	-3.12	-2.79	109.29	-0.49
UK£	0.7675	0.7946	0.0271	3.53	0.7475	6.30

Period: Week 16 to 21

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130-300 t

Material Handling
17-400 t

Duty Cycle Crane
13,5-300 t

Crawler Crane
50-300 t

Telescopic Crane
16-130 t

Mobile Harbour Crane
300 t



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IC50 CRANES

While development overall remains positive, things have slowed down again in many aspects of this year's IC50 ranking of the world's largest crane-owning companies

Continuing the trend of the last two years, this year's IC50 once again shows a smaller percentage growth.

Following a 6 per cent increase in 2017 and 5% in 2018, this year the rise has declined significantly further, to just 1%. Here we are talking about the IC Index (see 'Notes for the IC50') total of the top 100 of the 200 or so companies in the table. Areas also showing increases again this year are in the number of employees, up 2.38% and the number of wheeled cranes, up just 0.5%, or 131 units, to a total of 26,187. The increase last year was more than 4%.

So, in terms of all the entries this year, the total of 201 companies included eight either new or returning entries, while 22 were deleted. Two of them were removed following acquisition while the remainder were as a result of no longer trading or it being old data. The grand total IC Index value of all companies in 2019 was 28,051,368, up 0.57%



Osprey is a relatively new company and a new entry in the IC50. Based in the United Kingdom, it focuses on heavy contract lifting with its fleet of high capacity lattice and telescopic boom wheeled mobile cranes

Slowing down

on the 27,892,816 of 2018. This year was still higher even with 14 fewer companies.

The number of lattice boom cranes held by the top 100 companies has declined, by 0.69%, to 6,716 units. That goes up against a 2% rise in 2018. The second area showing a decline in the top 100 is in the number of depots, down for the second year running, this year by 2.7% or 40 depots, compared with a fall of less than half of one percent last year.

Numbers were up in the top ten fleets carrying the most wheeled mobile cranes. This year showed a 2% or 209 unit increase over 2018. After many years of increases in the number of lattice boom cranes, the total of the ten largest fleets this year was down - but only just - by three units.

In terms of capacity, however, this continues to increase in the lattice crane sector, as it has done overall for at least a decade. Comparing the total capacity of the lattice cranes in our Basket of Eight (see box story) sample, capacity is up this year by an impressive 9.6%, or 1,800 tonnes, largely due to a new giant crane from Sarens, a new ALE super heavy lifter and capacity enhancement at Mammoet.

Continuing with the Basket of Eight sample, an increase in the IC Index of 1.75% was recorded overall. All the other figures here, however, were in the negative. The number of wheeled cranes was down by 0.2%, depots down by 0.3%, the number of lattice cranes by 1.4% and there were 3.8% fewer employees than in 2018.

Looking at the top 20 companies, the



The distinctive colours of Australia's Boom Logistics stand out on the job site



BKL dismantling a tower crane in Ingolstadt, Germany. The Bavarian company has moved into the top 100 this year at 93rd place (from 108) following recent years of strong expansion

only positive was an increase in the number of depots, perhaps suggesting that these leading companies have invested further in getting closer to their customers. At 507 depots the number was up 2% from the 497 of 2018. An increase in this number has been consistent for many years. The number of employees, however, was down, by 4.5%, or 1,428 people, to 30,460 from 31,888 and reversing two years of rises. There were 4% fewer wheeled cranes and 1% fewer lattice cranes (just 41 units).

In terms of positions in the table, while Mammoet is number one (as it has been since the first IC50 more than 20 years ago), the gap to Sarens in second place has reduced massively in the last year alone. Mammoet's index is down this year, by 100,000 points, but the gap has been closed to a greater extent by expansion of Sarens' capability. It has added 375,581 tonne-metres of capability to its fleet since last year's table. A whopping 250,000 of which was added by just one crane, the SGC 250 super heavy lift crane shown in the iron in November 2018. It is one of three new giant cranes announced in October 2017.

The gap between the Mammoet and Sarens fleets in 2018 was a formidable 554,145 points and now it is down to 78,564. To give an idea of the difference, last year it was about the same as the size of Buckner's fleet, at 8th place in the table, to now being similar

RANK		COMPANY NAME	BASED	DEPOTS	EMPLOYEES	AREA OF OPERATION	SENIOR CONTACT
2019	2018						
1	1 ↻	Mammoet	Netherlands	90	4,600	Worldwide	Jan Kleijn
2	2 ↻	Sarens	Belgium	90	4,543	Worldwide	Wim Sarens
3	3 ↻	ALE	UK	44	2,600	Worldwide	John Trafford
4	4 ↻	Maxim Crane Works	USA	55	3,615	Worldwide	Bryan Carlisle
5	5 ↻	Lampson International	USA	8	300	Worldwide	Bill Lampson
6	6 ↻	Sanghvi Movers	India	28	1,438	National	Prajwal Kumar
7	8 ↻	Bigge Crane and Rigging	USA	18	1,000	National	Weston Settlemier
8	9 ↻	Buckner Heavy Lift Cranes	USA	4	250	Worldwide	Doug Williams
9	13 ↻	Deep South Crane & Rigging	USA	8	750	Worldwide	Mitch Landry
10	10 ↻	Weldex	Scotland	2	160	Worldwide	Iain McGilvray
11	7 ↻	All Erection & Crane Rental	USA	36	1,600	Continental	Michael Liptak
12	14 ↻	MIC	Japan	14	650	National	Eikichi Ohyama
13	11 ↻	Tat Hong	Singapore	35	1,700	Worldwide	Michael Ng
14	15 ↻	BMS	Denmark	23	850	Worldwide	Jens Enggaard
15	12 ↻	Al Faris	Dubai, UAE	10	3,055	Continental	Hilary Pinto
16	16 ↻	Al Jaber Heavy Lift	UAE	8	850	Worldwide	George Koshy
17	18 ↻	Tiong Woon Crane and Transport	Singapore	11	1,015	Worldwide	Michael Ang Guan Hwa
18	19 ↻	Hovago Cranes	Netherlands	2	20	Worldwide	Doron Livnat
19	17 ↻	Prangl	Austria	16	664	Continental	Christian Prangl
20	24 ↻	SoP&G	Russia	5	800	Continental	Ildar Akhmetov
21	23 ↻	Barnhart Crane and Rigging	USA	47	1,450	National	Alan Barnhart
22	20 ↻	Integrated Logistics	Kuwait	3	2,500	Continental	Saleh Al Huwaidi
23	25 ↻	TNT Crane & Rigging	USA	43	1,500	National	Mike Appling
24	38 ↻	Denzai Holdings Corporation	Japan	14	350	Worldwide	Kohki Uemura
25	26 ↻	Starlog Enterprises (formerly ABG Infralogistics)	India	24	500	National	RC Swamy
26	27 ↻	Wasel	Germany	15	475	Continental	Matthias Wasel
27	33 ↻	W.O. Grubb	USA	15	488	National	Michelle Grubb
28	29 ↻	Felbermayr Transport und Hebetchnik	Austria	46	1,700	Continental	Horst Felbermayr
29	31 ↻	Eurogrúas	Spain	25	994	Worldwide	Antonio Carrion Fernandez
30	32 ↻	Chu Kai Public Company	Thailand	6	600	National	Thongchai Praerangsri
31	34 ↻	PVE Cranes & Services	Netherlands	4	120	Worldwide	Joost Bömer
32	40 ↻	Aertssen Kranen	Belgium	7	406	Worldwide	Tom Deckers
33	37 ↻	Sarilar Heavy Lift & Transport	Turkey	3	460	Worldwide	Erkan Gürbüz
34	36 ↻	Uchimiya Transportation & Engineering	Japan	5	300	National	Seiji Tani
35	35 ↻	JF Lomma	USA	8	163	Worldwide	James Lomma
36	53 ↻	PT. Superkrane Mitra Utama	Indonesia	2	963	National	Leonardy Tan
37	39 ↻	Fagioli	Italy	10	595	Worldwide	Fabio Belli
38	44 ↻	Bragg Crane Service	USA	13	650	National	Mike Roy
39	41 ↻	Ainscough Crane Hire	UK	32	900	National	Derek Gow
40	42 ↻	Mediacol Leverage	France	60	1,600	National	Alexandre-Jacques Vernazza
41	43 ↻	Guay Inc.	Canada	20	500	National	Jean-Marc Baronet
42	49 ↻	Tokyo Juki	Japan	9	178	Worldwide	Taku Tsuruoka
43	45 ↻	Asiagroup Leasing	Singapore	3	500	Continental	Jeffrey Poh
44	51 ↻	Chunjo Construction	Korea	17	100	Worldwide	Chang Hwan Jang
45	48 ↻	Hareket Heavy Transport and Lifting	Turkey	6	420	Worldwide	Yusuf Engin Kuzucu
46	50 ↻	Sims Crane and Equipment	USA	14	480	Regional	Dean Sims
47	47 ↻	Chubu Kogyo (CKK)	Japan	14	215	Worldwide	Masayuki Shimada
48	28 ↻	NCSG Crane and Heavy Haul	Canada	11	400	National	Andy Fraser
49	58 ↻	Franz Bracht Kran-Vermietung	Germany	18	750	National	Dirk Bracht
50	65 ↻	Johnson Crane Hire	South Africa	15	550	Continental	Lalith Senarathne

JOB TITLE	WEB SITE	WHEELED		LARGEST CRANE	LARGEST CRANE CAPACITY	/C INDEX 2019	RANK 2019
		MOBILE CRANES	LATTICE CRANES				
Chief operating officer	www.mammoet.com	981	241	PTC 210 DS	5,000	2,850,000	1
Chief executive officer	www.sarens.com	1,093	440	SGC-250	5,000	2,771,436	2
Global manager, crane division	www.ale-heavylift.com	125	61	AL.SK10,000	10,000	2,295,623	3
Chief executive officer	www.maximcrane.com	2,715	505	Manitowoc 31000	2,300	2,270,239	4
President and CEO	www.lampsoncrane.com	69	389	Lampson LTL-3000	2,722	1,255,693	5
Assistant vice president	www.sanghvicranes.com	312	298	Terex Demag CC 3800-1	650	1,021,210	6
President and CEO	www.bigge.com	724	224	Liebherr LR 11000	1,000	593,139	7
Chief executive officer	www.bucknercompanies.com	12	141	Liebherr LR 11350-P	1,815	555,421	8
President	www.deepsouthcrane.com	242	26	VersaCrane TC 36000/2	2,700	488,085	9
Managing director	www.weldex.co.uk	0	130	Liebherr LR 11350	1,350	480,500	10
President	www.allcrane.com	1,903	341	Manitowoc 21000	907	474,699	11
President	www.micjp.com	251	178	Terex CC 8800-1 Boom Booster	1,600	472,270	12
Chief executive officer - Asean	www.tathong.com.sg	161	485	Manitowoc MLC650	700	468,287	13
Chief executive officer	www.bms.dk	358	44	Liebherr LR 11350	1,350	432,320	14
Founder & managing director	www.alfarisgroup.com	807	67	Liebherr LR 11000	1,000	429,827	15
Business development director	www.ajhl.com	177	87	Terex CC 8800-1 Twin	3,200	410,000	16
Chief operating officer	www.tiongwoon.com	220	172	Terex CC 8800-1 BB	1,600	384,486	17
President and founder	www.hovago.com	128	55	Terex CC 6800	1,250	345,300	18
Managing director	www.prangl.at	200	12	Terex AC 1000	1,000	342,790	19
Director	www.sopig.ru	37	44	Demag CC 8800-1	1,600	331,308	20
Chief executive officer	www.barnhartcrane.com	466	45	Demag CC 8800	1,250	329,144	21
Chief executive officer	www.integrated-me.com	588	93	Terex CC 8800-1 Boom Booster	1,600	321,981	22
Chief executive officer	www.tntcrane.com	621	49	Liebherr LTM 1750-9.1	750	293,139	23
Chief operating officer	http://denzai-j.com	225	102	Liebherr LR 11350 P-1800	1,815	224,891	24
Project manager	www.abgworld.com	151	72	Terex CC 6800	1,250	211,234	25
Chief executive officer	www.wasel-krane.de	203	18	Liebherr LR 1750	750	205,000	26
CEO	www.wogrub.com	284	76	Liebherr LR 1750/2	750	192,407	27
Senior partner	www.felbermayr.cc	411	33	Liebherr LR 11000	1,000	189,268	28
President	www.eurogruas.com	383	10	Liebherr LR 11350	1,350	180,301	29
Chief executive officer	www.chukai.co.th	495	105	Demag CC 6800	1,250	173,634	30
CEO	www.pvecranes.com	4	85	Terex CC 6800	1,250	172,378	31
Business unit manager	www.aertssen.be	123	61	Terex Superlift 3800	650	158,731	32
Chairman	www.sarilar.com.tr	141	54	Liebherr LR 11350	1,350	150,410	33
General manager	www.uchimiya.co.jp	98	57	Terex CC 6800	1,250	145,133	34
President	www.jflomainc.com	158	108	Manitowoc 18000 Max-er	750	140,565	35
Engineering maintenance	www.supercrane.com	142	98	Liebherr LR 1750	750	139,257	36
CEO	www.fagioli.com	25	17	Liebherr LR 11350	1,350	137,770	37
Executive vice president	www.braggcrane.com	337	34	Liebherr LR 1750/2	750	133,812	38
Sales and marketing director	www.ainscough.co.uk	400	4	Liebherr LTM 1800 special	1,000	132,000	39
President	www.mediaco.fr	640	10	Liebherr LG 1750	750	129,870	40
President	www.gruesguay.com	430	22	Liebherr LTM 11200-9.1	1,200	129,331	41
President	www.tokyojuki.com	44	66	Terex CC 6800	1,250	129,000	42
Business development manager	www.asiagroup.com	192	128	Terex AC 1000	1,000	127,730	43
CEO	www.chunjo.com	250	48	Manitowoc 31000	2,300	127,535	44
General manager	www.hareket.com	67	16	Demag CC 6800	1,250	116,476	45
President	www.sims Crane.com	257	31	Kobelco SL6000	550	112,497	46
President and rep. director	www.ckk-net.com	162	65	Demag CC 8800-1	1,600	110,798	47
President & CEO	www.ncsg.com	218	30	Liebherr LTM 11200.9-1	1,200	110,517	48
Managing director	www.bracht-autokrane.de	282	26	Liebherr LTM 1750	750	107,409	49
Managing director	www.jch.co.za	218	4	Liebherr LR 1750	750	101,950	50

»

RANK		COMPANY NAME	BASED	DEPOTS	EMPLOYEES	AREA OF OPERATION	SENIOR CONTACT
2019	2018						
51	59 ↻	Jousai Transport & Crane	Japan	27	393	National	Ichiro Kurikawa
52	55 ↻	Sistem Crane Rental & Heavy Haulage	Turkey	3	180	Worldwide	Kemal Akinli
53	61 ↻	Gruas Roxu	Spain	9	308	Worldwide	José Manuel García Suarárez
54	57 ↻	Vest Kran	Norway	12	100	Continental	Morten Martinessen
55	22 ↻	Schmidbauer	Germany	23	660	Worldwide	Werner Schmidbauer
56	30 ↻	Havator Group	Finland	32	450	Continental	Christoffer Landtman
57	52 ↻	Sterett Crane & Rigging	USA	8	120	National	Jonathan Spong
58	60 ↻	Kynningsrud Kran	Norway	14	310	Continental	Pål Kynningsrud
59	54 ↻	Locar Guindaste e Transportes Intermodais	Brazil	9	1,200	National	Julio Simões
60	81 ↻	Izmir Vinç	Turkey	1	145	Worldwide	Bulent Kusgoz
61	62 ↻	Scott-Macon Equipment	USA	9	200	Worldwide	Robert Dimmitt
62	63 ↻	Crane Norway Group	Norway	5	300	National	Erik Andersen
63	64 ↻	Imperial Crane Services	USA	5	250	Worldwide	BJ Bohne
64	78 ↻	Mountain Crane Services	USA	4	160	National	Paul Belcher
65	130 ↻	Vernazza Autogru	Italy	5	152	Worldwide	Diego Vernazza
66	66 ↻	Musselli (CST Consorzio Sollevamenti Trasporti)	Italy	30	487	Continental	Ferruccio Musselli
67	68 ↻	Marco Crane and Rigging	USA	6	210	National	Dan Mardian
68	67 ↻	Monadelphous Group	Australia	7	4,718	National	Garry Kearney
69	69 ↻	Antar Cranes Services	Singapore	6	200	Continental	Andrew Tan
70	75 ↻	Entrec Corporation	Canada	11	580	Continental	John Stevens
71	n/a	Berry Contracting	USA	6	3,500	National	Berry Peterson
72	71 ↻	Makro Engenharia	Brazil	8	1,210	National	David Rodrigues
73	72 ↻	Yonehara	Japan	30	972	National	Hiroki Yamada
74	77 ↻	Stevenson Crane Service	USA	4	198	Worldwide	Donna Stevenson
75	115 ↻	Dufour Transports Manutentions	Belgium	7	800	Continental	Olivier Dufour
76	76 ↻	Allegiance Crane & Equipment	USA	10	375	Worldwide	James Robertson
77	56 ↻	Beyel Brothers	USA	8	362	Local	Joseph Beyel
78	74 ↻	Mr Crane	USA	3	140	National	Andy Steinberg
79	79 ↻	Barkat Cranes & Equipments Pvt Ltd	India	4	395	National	Gaganpreet Singh G Bedi
80	70 ↻	H&E Equipment Services	USA	30	2,500	National	Cary Burr
81	82 ↻	Jassim Transport and Stevedoring	Kuwait	3	1,700	Continental	Adel Kohari
82	n/a	Alareedh (Mohammad Abdullah)	Saudi Arabia	n/s	n/s	Continental	Mohammad Al Rasheed
83	21 ↻	Sinopec Heavy Lifting and Transportation	China	7	550	Worldwide	Sun Xiaobo
84	102 ↻	CraneWorks, Inc	USA	9	115	Worldwide	Keith Ayers
85	159 ↻	Aydintas Crane & Heavy Transport	Turkey	3	140	Worldwide	Hamza Aydin
86	91 ↻	Wagenborg Nedliff	Netherlands	10	321	Worldwide	G Bastiaansen
87	80 ↻	Dozier Crane & Machinery	USA	3	45	Worldwide	Dozier Cook
88	83 ↻	McNally Crane Hire / WindHoist	Ireland	6	187	Worldwide	Hugh McNally
89	86 ↻	Ness Campbell Crane	USA	9	100	Regional	John Anderson
90	93 ↻	Hokazono	Japan	10	220	National	Naoki Hokazono
91	89 ↻	Northwest Crane Service	USA	8	140	National	Andy Hodges
92	98 ↻	Dielco Crane Service	USA	1	111	Local	David Dieleman
93	108 ↻	BKL Baukran Logistik	Germany	6	300	Continental	Joerg Hegestweiler
94	95 ↻	Circle 8 Crane Services	USA	6	253	Local	Bryan Ericson
95	107 ↻	Capital City Group	USA	6	225	Regional	Brian Gibson
96	103 ↻	ML Holdings Company Crane Group (Crane Service, Marks Crane and Rigging, United Crane and Rigging)	USA	14	667	National	Scott Wilson
97	92 ↻	Riga Mainz	Germany	5	158	Continental	Jos Vogelzang
98	90 ↻	Joyce Crane	USA	6	165	Regional	Joe Bob Joyce
99	101 ↻	Big B Crane	USA	2	132	Regional	Daniel Basden
100	97 ↻	Laramie Enterprises	USA	2	65	Worldwide	Jeff Laramie

JOB TITLE	WEB SITE	WHEELED		LARGEST CRANE	LARGEST CRANE CAPACITY	/C INDEX 2019	RANK 2019
		MOBILE CRANES	LATTICE CRANES				
President	www.jousai.co.jp	148	59	Liebherr LR 1750/2	750	94,963	51
General manager	www.sistemcrane.com	39	11	Liebherr LR 1750	750	94,853	52
Sole administrator	www.gruasroxu.com	170	5	Liebherr LTR 11200	1,200	94,010	53
	www.vestkran.no	51	15	Liebherr LG 1750	750	93,587	54
Chief executive officer	www.schmidbauer-gruppe.de	358	16	Liebherr LR 11350	1,350	93,351	55
Chief executive officer	www.havator.com	188	45	Liebherr LR 1750	750	91,103	56
President	www.sterettcrane.com	148	41	Terex CC 2800-1	600	86,610	57
CEO	www.nckynningsrud.com	195	12	Liebherr LG 1750	750	85,800	58
President	www.locar.com.br	187	23	Liebherr LR 1800	800	85,630	59
General manager	www.izmircrane.com	32	28	Liebherr LR 1750	750	84,550	60
Executive vice president	www.smequipment.com	453	60	Terex AC 200	200	81,510	61
General manager	www.cranenorway.com	111	16	Terex CC 3800-1	650	75,703	62
President and CEO	www.imperialcrane.com	220	18	Liebherr LTM 1500-8.1	500	73,000	63
Owner and CEO	www.mountaincrane.com	69	43	Liebherr LR 11000	1,000	72,717	64
CEO	www.vernazzaotogru.com	45	6	Terex Demag CC 6800	1,250	71,727	65
President	www.musselli.it	300	0	Demag AC 800	800	71,109	66
President	www.marcoocrane.com	193	26	Manitowoc Grove GMK7550	450	70,859	67
Heavy lift manager	www.monadelphous.com.au	109	20	Manitowoc 18000	750	69,140	68
General manager	www.jpnelson.com.sg/antar	4	210	Kobelco 7250S	250	65,369	69
President & CEO	www.entrec.com	198	21	Liebherr LR 1750	750	62,702	70
Vice president	www.bayltd.com	83	19	Liebherr LTM 11200-9.1	1,200	60,900	71
Chief executive officer	www.makroengenharia.com.br	312	13	Liebherr LTM 11200-9.1	1,200	60,084	72
Manager	www.yonehara.co.jp	395	50	Liebherr LTM 1450NX	450	59,094	73
President	www.stevensoncrane.com	161	26	Manitowoc 18000 Max-er	750	56,919	74
Administrator	www.dufour.be	206	56	Liebherr LG 1750	750	56,436	75
President and CEO	www.allegiancecrane.com	131	14	Terex AC 500	500	56,082	76
President	www.beyel.com	179	50	Manitowoc 21000	907	54,754	77
President and CEO	www.mrcrane.com	68	24	Manitowoc M2250 MaxEr	450	54,265	78
Chairman	www.barkatworld.com	33	7	Liebherr LR 1750	750	52,960	79
Senior vice president of cranes	www.he-equipment.com	265	0	Grove RT9150	136	52,500	80
Chief executive officer	www.jtckw.com	158	9	Demag AC 700-9	700	51,012	81
General manager	www.alareedh.com	568	7	Liebherr LTM 11200-9.1	1,200	50,849	82
President	slt.segroup.cn	23	12	XCMG XGC 88000	4,000	50,060	83
Chief executive officer	www.crane-works.com	470	1	Demag AC 220-5	220	48,666	84
Int. co-ordinator	www.aydintasvinc.com.tr	41	11	Terex AC 1000	1,000	48,323	85
Managing director	www.wagenborg.com	100	3	Liebherr LR 1400	400	47,298	86
Owner	www.doziercrane.com	82	47	Liebherr LTM 1400-7.1	400	47,204	87
Managing director	www.mcnallyscranehire.com	32	5	Liebherr LTM 11200-9.1	1,200	45,080	88
President	www.nesscampbell.com	95	5	Liebherr LTM 1500-8.1	500	43,734	89
President	www.hokazono.co.jp	97	25	Tadano AR-5500M	550	43,731	90
President	www.northwestcraneservice.com	35	7	Liebherr LR 11000	1,000	43,620	91
President	www.dielcocrane.com	63	14	Liebherr LR 1600/2	600	43,465	92
Chief executive officer	www.bkl.de	111	0	Liebherr LTM 1500-8.1	500	43,300	93
President	www.circle8services.com	87	0	Grove GMK7550	450	42,060	94
President and CEO	www.ccgroupp-inc.com	115	24	Grove GMK7550	450	41,313	95
President	www.mlcranegroup.com	283	27	Liebherr LTM 1500	500	39,508	96
Senior project manager	www.riga-mainz.com	68	2	Liebherr LR 1750	750	38,800	97
President	www.joycecrane.com	88	1	Liebherr LTM 1750-9.1	750	38,199	98
President	www.bigbcrane.com	37	44	Manitowoc MLC300	300	36,798	99
Vice president	www.laramiecrane.com	53	31	Demag AC 1200	450	36,450	100

»

to Crane Norway's fleet from 62nd place.

In the top ten, the first six companies remain unchanged. At seven, Bigge is up one place. It has kept a high profile in terms of multiple fleet additions and new equipment orders in recent years. Also up one place is Buckner at eight. Deep South Crane & Rigging has burst into the top ten to take 9th place, moving up four from 13th. Weldex retains its long-held position in the top ten while All

Erection moves from 7 to 11.

Among the top 50 companies, crane owners in Asia, especially from Japan, have done well this year, as have larger companies based in Europe. US companies have generally also fared well while it is rather more of a mixed picture elsewhere in the world. This mix is more apparent and more widespread in the second half of the table where a clear trend is hard to identify. ■

NOTES FOR THE IC50

Companies are ranked by their IC Index, calculated as the total maximum load moment rating, in tonne-metres, of all cranes in a fleet. All companies in the list, plus other prospective ones, have the opportunity to supply fleet information and other requested data for inclusion in the ranking. Where companies supply full data the figure used is calculated by them.

In some cases, where no data is submitted, or is incomplete, we have based a company's equipment fleet figure on an ICST estimate. In cases of insolvency, acquisition or lack of information, companies are withdrawn from the table.

While we make great effort to ensure the accuracy of information provided, it cannot be guaranteed and ICST accepts no liability for inaccuracies or omissions.

The IC50 Index will next be updated in the first quarter of 2020. If you think your company should be included please contact ICST for an application form. Note that tower cranes are not in the main IC50 table here because they appear separately in the special IC Tower Index published in the September issue of ICST. Similarly, specialized transport equipment is also featured in a separate ranking, the IC Transport50, in the August issue of the magazine. Calls for entries in these tables are also issued and widely publicised like the ones for the IC50.

THE BASKET OF EIGHT

In 2017 upset was caused to the long-running Basket of Ten sample of larger companies. It was as a result of one of them, Maxim, acquiring two of the others, AmQuip and Essex, making it now the Basket of Eight. This group was formed using the top ten companies in the 2009 IC50 and has been running ever since, tracking the changes each year.

In 2017 it was planned to create a new group of ten for 2018 but, because the fleets of the two acquired companies in the sample were retained by another in the group, we retained the eight and will see how it continues to pan out.

The Basket of Eight companies are as follows: Mammoet, Sarens, Lampson, Sanghvi Movers, All Erection, Tat Hong, Al Jaber and Maxim, which includes the assets of Essex and AmQuip, following their acquisition in September 2016 and April 2017, respectively.

The total IC Index value of the 2019 Basket of Eight, at 11,521,564, is up a massive 83 % on the 6,294,798 total of the first one in 2009. This year it was up 1.75 % on the 2018 total.



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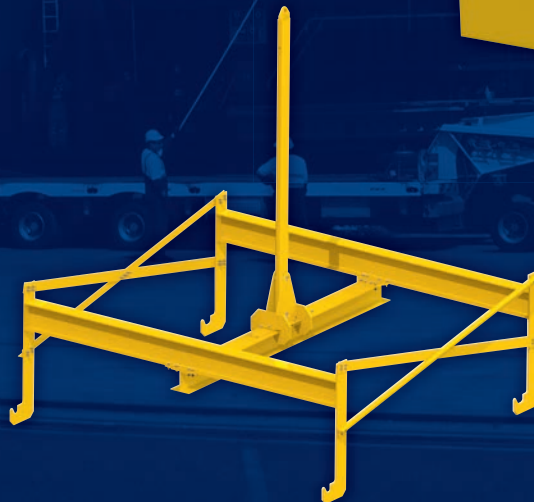
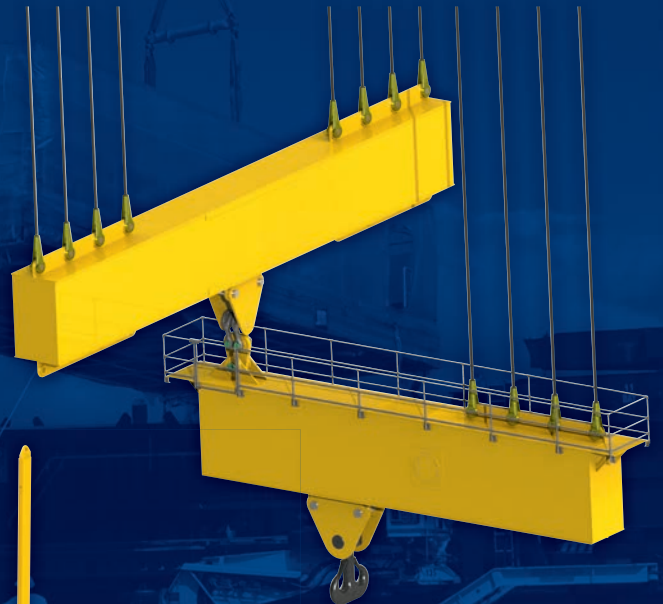
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The transport job took eight hours to complete

Collett's 170 tonne heavy transport

A Hyundai transformer weighing 170 tonnes was transported more than 80 kilometres from a port in Lincolnshire to an electrical substation in Cambridgeshire in the south east of the United Kingdom (UK) by road.

Heavy transport specialist Collett & Sons used a 550 tonne capacity Scheuerle girder bridge and self propelled modular transporter (SPMT) to move the piece of equipment, which measured 8.6 x 4.9 x 4.75 metres.

Fully loaded, the heavy transport vehicle had a total height of 4.8 metres and a total length of approximately 66 metres. The extreme size, which included a 42.5 metre rigid section, required the heavy lift team to take a longer 117 km route to the substation.

The heavy transport project took approximately 8 hours to complete and involved numerous government and private organisations, including the UK's National Grid and Highways England.

Prior to the operation, Collett undertook comprehensive preparation to allow the heavy load to complete its journey safely, including the removal of street furniture. The company also carried out additional circumnavigation and reversing manoeuvres at previously identified pinch points along the route.

A convoy of support vehicles, including a private escort company and local police, accompanied the transformer on its journey to the Cambridgeshire substation. Once there, the heavy lift team completed jacking and skidding operations to manoeuvre the 170 tonne transformer onto a waiting plinth for final installation.

The transformer will form part of the connection between two UK power substations. Installation of the large piece of electrical equipment is part of a project to replace equipment from the 1960s. According to Collett, the newly manufactured

transformer will increase capacity and improve the supply of electricity to homes and businesses in the area.

MAMMOET SETS UP MOZAMBIQUE BASE



Heavy lifting and transport specialist Mammoet has set up a permanent base of heavy lifting and transport equipment in Mozambique, Africa.

The equipment, plus an office, are located in Mocimboa da Praia, in the Cabo Delgado province of Mozambique. The office will be centrally managed by Mammoet's South African office and is geared up to deliver heavy lifting and transport services across the country.

Davide Andreani, general manager at Mammoet South and East Africa, said, "The outlook of Mozambique's economy is positive. Particularly as capital investments have been growing significantly in the past few years. Mammoet locates its global fleet close to our customers anywhere in the world they need us, to serve them swiftly and efficiently. It demonstrates our commitment to be part of, and to contribute to the Mozambique community, working with local people, training and offering professional development opportunities to help grow our business and the local economy."

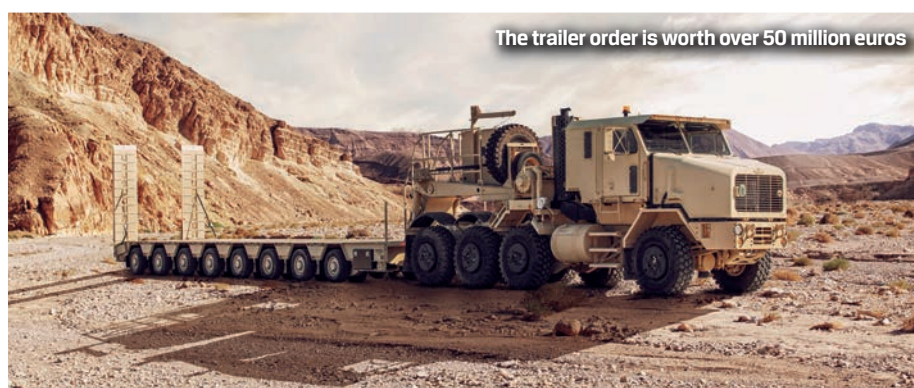
\$56 million US Army trailer order

The U.S. Army Tank-automotive and Armaments Command (TACOM), in conjunction with tactical vehicle manufacturer Oshkosh Defense, has ordered 170 PL2 pendular semi low loaders with eight-axle lines from Dutch trailer manufacturer Broshuis. According to Broshuis, the total order value is more than €50 million (US\$ 56 million). The contract includes provision for service and support.

Broshuis said it won the contract after an

initial tendering round and the delivery of three prototypes, which were extensively tested by TACOM for four months.

The order will be built in-house at Broshuis' production facilities in Kampen, Netherlands. Broshuis said that following heavy investment over the last few years it now has the capacity to handle this order, together with another current order for four heavy haul trailers for the Danish army.



The trailer order is worth over 50 million euros

Champions of road and rigging

The winners of the 2019 SC&RA Job of the Year awards were announced at the Specialized Carriers & Rigging Association Annual Conference in California, USA.

MIKE CHALMERS, TIM HILLEGONDS, D.ANN SHIFFLER, and HANNAH SUNDERMEYER report

RIGGING OVER US\$2 MILLION
BARNHART

Piecing it together

Barnhart Crane & Rigging assembled one of the world's largest presses

In February 2018 Barnhart Crane & Rigging completed a project whereby they received 37 press components from the Port of Long Beach, California, USA, ranging from 250,000 to 732,000 pounds (113 to 332 tonnes), transported them to the site and assembled the largest hydraulic forging press in North America.

"We were contracted to unload the equipment, move the pieces into the building, assemble the pieces into the larger components and then set the equipment to the foundation," said Barnhart branch manager Chris Howe.

To assemble the press, Barnhart needed to upend and lift eight pieces around 700,000 pounds (318 tonnes), perform two lifts at just under 3,000,000 pounds (1,361 tonnes) and make one lift at 4,400,000 pounds (1,996 tonnes). Of note: the facility had a maximum ground bearing of 10,000 PSF.

"After our initial engineering, we realised that several improvements would need to be made," Howe said. "The first challenge we had was ground bearing. To help spread the load, we started with a double layer of steel crane mats. We then designed and fabricated a custom load-spreading beam and tower sliding shoe, which would evenly spread the load over the entire base of the tower."

The first major lift was the lower cross head, which, once assembled, was approximately 42 feet (12.8 m) wide, 14 feet (4.3 m) tall and weighed 2,500,000 pounds (1,134 tonnes).

"Fitting the pieces was a challenge, since they had to be within twenty thousandths of an inch alignment in order to install the tie rods," Howe said.

Cylinders set

Piece by piece, Barnhart put together the various components. The lift tower was equipped with four strand jacks, and all the rigging was done using an adjustable rigging link system, which provided versatility and eliminated wire rope. Multiple pieces were shipped in the horizontal position and had to be assembled to make up the main hydraulic cylinder which, along with the piston, was eventually rotated 180 degrees so the piston could be installed downward. This lift was accomplished with the lift tower assisted by the gantry tailing the cylinder.

"Once the cylinders were in the correct orientation, we disconnected the tailing rigging and the lift tower and strand jacks took full control of the lift, slowly and safely lowering all four of the 650,000-pound (295 tonne) hydraulic cylinders into their final location on top of the lower crosshead," explained Howe.



Barnhart's press assembly project comprised 3,500 engineering hours and over a year of planning

Having the main cylinders set allowed Barnhart to make the largest lift – the foundation crosshead – which, once assembled, was 50 feet (15 m) wide, 26 feet (8 m) tall and 4,400,000 pounds (1,996 tonnes).

The Barnhart team designed, fabricated and load-tested over 40 custom pieces of equipment to meet the needs of the job. In total, 3,500 engineering hours were used to develop the execution plan for the project. ■

The scope of work included transporting the components



RIGGING US\$ 750,000 TO US\$ 2 MILLION
FAGIOLI

Legendary lift and skid job

Fagioli performed a precision stack and de-stack

In late 2017 and into 2018, Fagioli was called to execute the operation of stacking and de-stacking a 997-tonne gas turbine generator (GTG) module. After the necessary tests executed by the client, Fagioli de-stacked the module in 2018 to ship the two modules separately for their final destination.

For the execution of the project, Fagioli came up with the idea to lift the module and skid it whilst it was suspended from the tower-lift system. Key equipment utilised included towers, strand jacks, PPU for strand jacks, skid shoes, forklifts, manlifts, a Theodolite and a water-level indicator.

To start the load was taken and lifted – the trussed beams were connected to the upper GTG module. The skid shoes for skidding were positioned and once the inclinometer sensor was installed (and tested) on the module the operation commenced.

“The load was gradually lifted with strand jacks on the lifting towers – with steps of 20 percent of the expected final load, while checking tower verticality, module planarity and skid tracks settlement,” said Fagioli’s president Edoardo Ascione. “Once the strand jack system took the load of the entire module, the skid shoes started moving.”

Checks and rechecks

The load was checked in the skid shoes system according to the expected values until the stroke was 100 mm. Fagioli proceeded with lifting steps by means of strand jacks until the module was lifted 500 mm from the pin guide of the lower GTG module.

Before the first skidding of the upper GTG module began, the vertical stroke was set to around 100 mm. Fagioli operators kept the vertical loads of the main cylinders and horizontal loads of push-pull system under control via computerised systems. While proceeding with the skidding steps, the strand jack loads on each tower were adjusted according to the predefined values by means of strand jacks and skid shoes. The module



The Fagioli stacking and de-stacking operations were operationally executed in 24 hours for each single activity after a month of ground preparation and equipment assembly

was then ready for lowering.

The module was then lowered 500 mm from the top of the foundation. At each stroke, load tolerances were checked by computer, and Fagioli operators proceeded with the lowering operation until the module was at the designed elevation. Thus, the module was ready for the second skidding.

Fagioli executed the second skidding with the first stroke of pull-push piston, and proceeded with skidding until the module was in the final longitudinal position on its

foundations, and then unloaded.

When the upper GTG module was approximately 200 mm from its foundations, the alignment was verified, and the load was again gradually transferred in steps of 20 percent.

At each load step, Fagioli checked that there was no abnormal deflection on the module structures, on the tower system or no major settlement of the skid tracks.

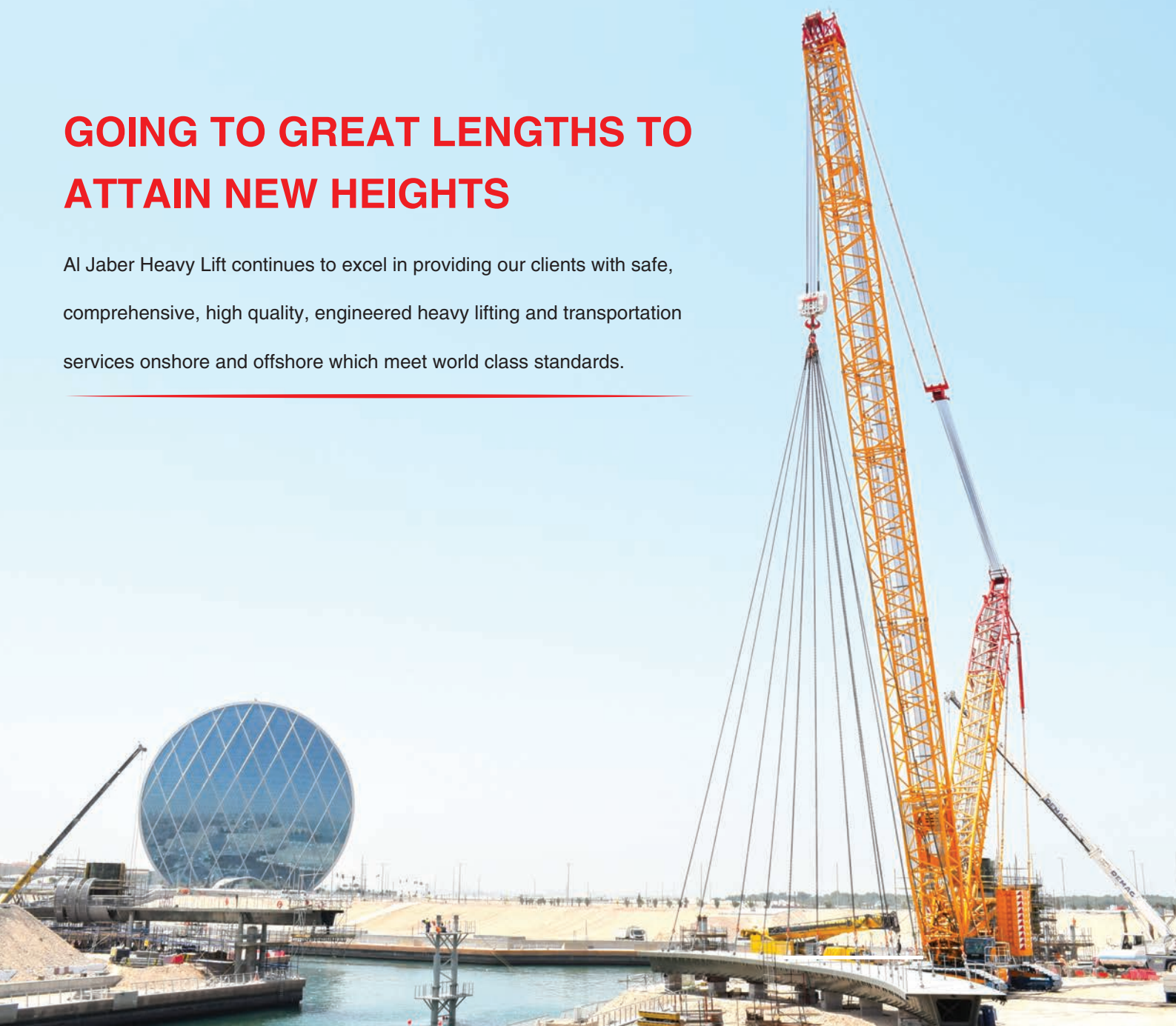
In total, 15 Fagioli personnel were involved, including five engineers. ■ »



The gas turbine module weighed 997 tonnes

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RIGGING US\$ 150,000 TO US\$ 750,000 BURKHALTER RIGGING

Hole in the wall

Burkhalter Rigging extended two railway bridges and a section of Highway 280 as part of a TexRail project

In autumn 2018, Burkhalter was contracted to widen a four-way point of transportation confluence near downtown Fort Worth, Texas, USA. Burkhalter dubbed the project 'hole in the wall'.

The firm quickly found that widening the formerly single-track-sized hole would require widening Highway 280's pile cap and pilings as well as widening the rail bridges that run below it. Four rail lines all converge at the hole in the wall, and the highway could only be closed for small periods of time. Burkhalter faced a tight space, and even tighter operative schedules.

Bridge sets a bridge

First, Burkhalter and its client, Archer Western-Herzog, built the new, wider UPRR and BNSF bridges just a few yards away from the site. Each new bridge was fully

preassembled on storage beams and stands before being loaded onto Goldhofer SPMT and moved, with the help of Hilman rollers, onto a temporary bridge consisting of Burkhalter runway girders set across the hole.

A temporary mid-span pier was developed by Burkhalter and engineers from Genesis Structures to increase the runway girders' weight capacity and mitigate a railway path skew of 54 degrees on the tracks above.

Once in place the new bridges were lifted from the SPMT by a J&R hydraulic gantry system. Once the SPMT cleared the area, the runway girders were reverse-launched and the new, wider BNSF Bridge, weighing 605,931 pounds (275 tonnes), was permanently set in place. The same process was repeated in phase three with the new and wider UPRR Bridge. The UPRR Bridge weighed 65,000 pounds (29 tonnes) more.



The extremely tight space meant minimal side clearances and small areas for expanding the bridges and lifting Highway 280 for its extension

Phase two of the project was the Highway 280 cap replacement. This involved using a fully automated Enerpac BPU-750 lifting system to lift the active highway bridge weighing 1,334,000 pounds (605 tonnes) approximately one inch during a night closure to facilitate the removal of the existing pile cap, install a longer pile cap to straddle the newly widened area below it and then set the Highway 280 bridge back down onto its supports. ■

RIGGING UNDER US\$ 150,000 EMMERT INTERNATIONAL

On the right track

Emmert jacks and slides two 168,000-pound (76 tonne) thermal heaters across a pre-treatment facility

In October 2018 Emmert International jacked and slid two thermal heaters – each 45 feet (13.71 m) long and weighing 168,010 pounds (76 tonnes) – across a pre-treatment facility in Freeport, Texas, USA.

It was determined that the use of a conventional crane to offload would not be

safe or efficient so Emmert opted to employ the use of its 500 tonne Hydra-Slide system.

Emmert constructed a 120 foot (36.5 m) self-propelled track system elevated four feet (1.2 m) above the ground on staging cans and supports that were placed every six feet (1.8 m) along the track to maintain system integrity. The Hydra-Slide system had to be

installed to weave the heater through a maze of ground obstacles, as well as overhead process equipment, scaffold structures and pipe racks. At certain points during the slide, the heaters came within inches of nearby pipe racks.

A precise lift

For Emmert, lifting the heaters onto the track proved just as demanding as moving them.

Each heater was 45 feet long, 16 feet tall and 18 feet wide (13.71 x 4.87 x 5.48 m). To hoist the heaters onto and off of the slide system, Emmert placed four 100 tonne jacks into jacking cribs on the bottom of each heat exchanger, before lifting them and transferring their weight to hardwood stacked beneath each jack point. The Hydra-Slide track was then cleared from the area by sliding it out from the north end of the staged heat exchanger. Once the track and support cans were removed, Emmert began lowering the heaters into place.

The job took 80 man-hours of planning and 280 man-hours of execution. No safety issues, injuries, damages or other incidents took place during the transport of the thermal heaters. ■ »



Emmert used a Hydra-Slide system to manoeuvre the thermal heaters

MOVING with specialized equipment
FAGIOLI

Tailor-made transport

Fagioli transported and loaded 42 jacket modules with a custom jacket system transport structure in Spain

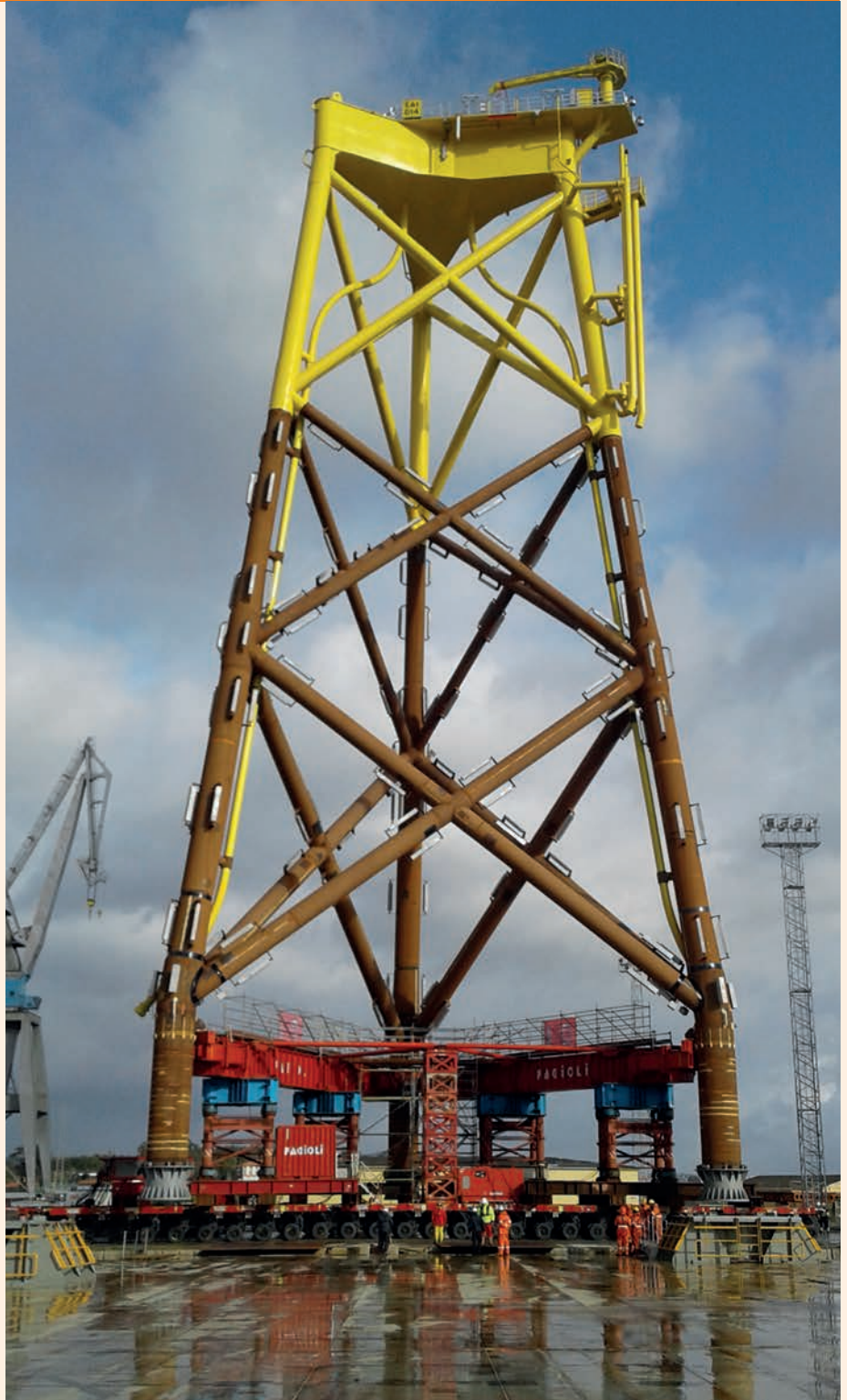
Fagioli was contracted for the weighing, transport and load out operations of 42 jacket modules, weighing up to 950 tonnes in Spain from the manufacturing area to load out quay. Of the five types of jacket, the larger models were 66 metres tall, 32.6 m long and 25.9 m wide.

“We had to take into consideration how to speed up the load out operations in a safe manner, considering the dimensions and weight of the modules and the 11 barge voyages that were planned for the sea transport,” said Edoardo Ascione, Fagioli Americas president and managing director. “In addition, we had to factor in how to avoid delays due to wind and bad weather conditions, and execute the load out activity onto a barge to take the load of four jackets positioned in a row.”

The team decided to use self propelled modular transporter divided in two rows for the transport of each single jacket. On top of this configuration, Fagioli fabricated a tailor-made frame. The structure was composed of two transport beams, eight capping beams, 16 guy journals, eight tower sections, four beams, two additional structures, two base frames, spreader mats and spreader beams. Jackets were then transported from the fabrication area to the temporary storage area, and then loaded onto the barges. During the jacket site transport, the load was imposed through the SMPTs spine beams, and applied as an equally distributed load.

Flexible handling

A key challenge was to create a frame structure which was able to lift the jackets and execute the loadout operations. Fagioli found the solution with a retractable edge main beams with moveable stoppers, positioned nine metres above ground.



Fagioli's jacket transport job in Spain involved five types of jacket structure, each with its own dimensions and weight. They had to be quickly and safely loaded out onto 11 barges waiting nearby

This allowed flexibility in handling the configurations of the jacket modules. The SPMT then took the load with the frame structure and lifted the jackets.

After executing the weighing operations using load cells, Fagioli moved the jackets to the storage area using the frame system. The jackets were then provided with an upper grillage for the sea transport. After this

operation a 128-metre barge was waiting for the load of four jackets.

The tailor-made structure reduced dimensions compared to those used in the past for kind of jacket. The reduction in width dimension allowed modules to be loaded and positioned onto the barge at the same time that the SMPT with frame structure were able to come back to take the modules. »

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TRUCKING OVER 500,000 POUNDS (226796 KG)
BARNHART



Uncharted territory

Barnhart transported three slug catcher vessels across the Continental Divide in the USA

Barnhart was tasked with hauling three huge slug catcher vessels from Pocatello, Idaho to natural gas facilities in Fort Lupton, Colorado and Hereford, Colorado. The job was awarded in April 2018 with a delivery date of “no later than Thanksgiving Day,” seven months later.

The first task for Barnhart’s Long Beach, California-based engineering team was to develop a trailer configuration. Due to Colorado regulations, axle weights had to be at or below 42,400 pounds (19 tonnes) per line.

Working with Goldhofer engineers, a system of Goldhofer THP/CA dual lane trailers with self-tracking bolsters was configured. Because the permanent saddles on the vessels did not allow for enough axle lines, Barnhart custom designed transport saddles, added more securement points to the bolsters, and fabricated four compression securement struts. The compression struts secured the permanent saddles on the vessel to the transport saddles on the bolsters to meet securement requirements.

The trailer configuration and securement plan were accepted in May. The next step was creating a viable route through Idaho, Wyoming and Colorado. De-rated bridges in Wyoming and highway construction in Colorado were obvious obstacles. A third-party bridge engineering firm evaluated every structure on the route. Barnhart

created three routes through Wyoming and chose the one with the least de-rated bridges, which numbered four. In Colorado, the best route was through a construction zone where a new roundabout was being constructed.

Transportation challenges

In September, the trailer system was built alongside the first vessel in the customer’s crane bay. Using two overhead cranes, the vessel was lifted, side shifted and placed onto the trailer and secured.

Pulling out of the plant in Pocatello, the first challenge was a 90 degree left hand turn. The team made it to the Wyoming state line in two nights. At this point they could travel during the day, but 4 to 8 percent mountain

It took about 3.5 months to complete engineering and get regulatory approvals – this meant 37 permits in total

grades, a snowstorm, and the four bridge crossings slowed travel.

The first bridge was bypassed with a roadway road detour. The second bridge required a crab manoeuvre by travelling the front trailer section in the eastbound lanes and the rear trailer travels in the westbound lanes. For the third bridge, eight wing dollies with custom-built mounting brackets were added to the THP/CA trailers. The fourth bridge was actually a culvert that Barnhart used its 60 foot (18 m) long bridge jumpers to cross.

The first leg of the Colorado route was performed at night to get through the construction zone. The second leg was in the daytime due to lack of utility support. A hard left turn in Fort Collins was executed in one shot for each vessel. Police and highway patrols in all three states escorted the load, in addition to utility trucks and Barnhart’s safety and bucket truck crews. ■



Bridges along the route posed a variety of challenges

TRUCKING 160,000 TO 500,000 POUNDS (73 TO 227 TONNES)
FAGIOLI

Narrow navigation

Fagioli moved two rotors via road to a power plant in the mountains of Italy

Fagioli was commissioned for the transport of two rotors weighing 170 tons (154 tonnes) each from Genova up to Premadio in Italy. The route went through mountainous roads and villages and was completed over nine nights in 2018.

The rotors were loaded and secured onto Fagioli's transport system that included 2 by 11 axle lines rigged with 180 tonne girder beams. The convoy length was close to 61 metres, and the trip would span 450 kilometres.

"Fagioli was in strict contact with all local authorities of three Italian regions in order to be as quick as possible to execute the installation of over bridge structures, and to find the right places to rest the long convoy avoiding traffic movement," said Edoardo Ascione, president and managing director, Fagioli Americas.

During the fourth and fifth nights, Fagioli executed the installation of two over bridge structures, at 17.7 m each, to pass two bridges with low capacity. Arriving in Lecco, it was necessary to use six axle lines of SPMT provided with 2 by 5 m towers to reinforce a ring road bridge. The trip became more challenging as the convoy passed through small towns, roundabouts and tackled 33 km of hills and bends.

The team also had to reconfigure reinforcement structures under a bridge in Morbegno, after the length of the structure didn't allow safe passage. Fagioli executed the transport with a 20 metre long over bridge structure. In Bormio, the convoy was reduced with the support of two mobile cranes which lifted the rotors and positioned them onto a 12 axle line modular trailer.

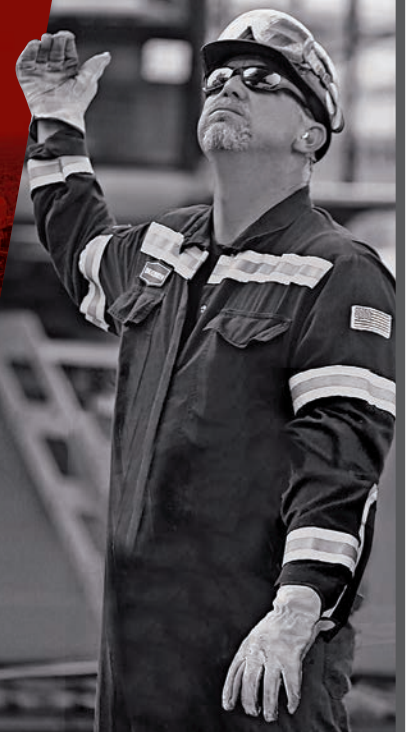
On the final night, Fagioli completed the last three kilometres of their journey. Once outside the power plant, it used a gantry lifting system to modify the configuration of the convoy for the third time to accommodate the steep slope. The convoy entered the 500 metre tunnel supported by the use of two trucks at the back.



Fagioli was called for the transport of two rotors from Genova up to Premadio, Italy



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TRUCKING UNDER 160,000 POUNDS
OMEGA MORGAN

Problem solving

A 39-mile (63 km) route posed a series of challenges for Omega Morgan

Omega Morgan transported three ozone contact tanks from a Newberg, Oregon, USA, fabricator to a water treatment facility in Hillsboro, Oregon. The project was secured on 11 May 2018 and finished less than two months later. The vessels were loaded onto Omega Morgan's perimeter deck trailers using overhead cranes.

One of the biggest challenges was determining and executing the route. "We had to find a route that could accommodate two loads at the same time with the least amount of utility work required so we could meet our customers deadline of less than 30 days from time of notice to proceed," said project manager Erik Zander. "We accomplished this by assigning two project managers along with one permit tech, one engineer and two superintendents in the initial planning."

Safety considerations

Two big safety considerations were utility work and traffic congestion during the two-night journey.

A huge number of wires needed to be lifted and removed. Typically, Omega Morgan hires a company that is certified to move



Omega Morgan's innovation centered on solving extreme route challenges, keeping the tight schedule and not modifying or damaging the ozone tanks

power to handle the high and low voltage conflicts. But the local power companies didn't want a subcontractor to handle the work, so Omega Morgan hired individual companies along the route to move their associated conflicts. This was challenging, it explained, because five to eight utility trucks had to travel with the convoy and manoeuvre around it on the narrow, two lane roads. With the short window for planning, identifying and securing the services of the utility companies was complex.

Including pilot cars, traffic control and the utility vehicles there more than 20 vehicles in the convoy at any given time. Finding safe locations to clear traffic and move around support vehicles was a constant concern.

In some places there wasn't space to set up the bucket trucks to lift the lines. They had to be placed in fields to make their lifts.

The key to expediting this move was

to keep the overall travel height as low as possible, Zander said.

"After our review of the tanks our engineering team realised if the vessel was rotated 6 degrees the overall ride height could be lowered by 4 inches," Zander said. "We utilised some low-pro four-inch carriers as well. Omega Morgan also built custom saddles that accommodated the nozzles on the vessel to save even more height."

With safety being a constant concern, the superintendent acted as the safety officer for the three hauls. There were daily crew safety meetings, constant over-route communication with the Department of Transport and utility companies.

Prior to arriving to the treatment facility Omega Morgan team had to transload the vessels using its Scheuerle Kamag K25 platform trailers to place them within reach of cranes for final placement.



There were more than 20 vehicles in the convoy at any given time



Potential traffic congestion was a safety consideration during the journey

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Terex moves on

JOHN GARRISON, Terex Corporation president & CEO, and STEVE FILIPOV, Terex Cranes president, talked to D.ANN SHIFFLER and ALEX DAHM about what lies ahead for Terex Corp following the sale of Demag cranes and the boom truck business

Our industry's biggest business news story in the first half of 2019 was the acquisition of Terex Corporation's Demag crane brand by Japanese crane manufacturer Tadano.

From a customer point of view and from a Terex standpoint what was the thinking behind this move and what will it mean for the future? John Garrison, Terex Corporation president and CEO, talked about the implications at the corporate level and Steve Filipov, Terex Cranes president, explained things from the crane angle.

WHAT IS TEREX WITHOUT DEMAG? WHAT WILL CHANGE? AND WHAT WILL BECOME OF THE REMAINS OF THE FORMER TEREX CRANES?

JOHN GARRISON: In 2016 we introduced our Focus, Simplify and Execute to Win strategy. Focus was about really focussing our business where we really believe had a real opportunity to provide exceptional customer value.

Simplify was how we'd come together via 80 acquisitions over time and never really integrated it. We were very complex to deal with externally so it's looking at how we can simplify doing business with us. We'll spend a lot of time and effort trying to simplify, by reducing legal entities, investing in IT and that sort of thing.

Then there's our Execute to Win strategy. It is a competitive marketplace so we picked three things required to drive improvements: commercial excellence; strategic sourcing; and life cycle solutions.

The strategy is going to be consistent going forward. With the sale of the Demag crane business the focus element is principally

John Garrison, Terex Corporation president and CEO, left, and Steve Filipov, Terex Cranes president



complete. We've got two very strong businesses: our tower cranes business and our rough terrain (RT) business. They enjoy good market positions and are profitable, remaining so in good times and bad. That gives us a solid platform to work off. It is an industry structure we think is conducive to being successful.

In the case of the Demag business with large crawler cranes, it is very project orientated and with all terrain cranes there were four major competitors fighting in a very challenging market. The combination of Demag and Tadano gives them an opportunity to really challenge competitors. Combining those two businesses, I believe, is going to be best for customers in the long term and it's going to be best for Demag team members and for the respective shareholders.

Steve's done a great job with Demag. We brought him in to correct it and fix it and he's done a great job improving the business but it's a business that fundamentally has consumed a lot of cash and there are significant operating losses. By recognising that perhaps the Demag business could have a better owner, we are now much stronger as a Terex enterprise going forward. We'll continue in the spaces that we're in. We'll continue to invest organically. I still think there's opportunity for that. If you look at our capital investment this year, we're investing US\$145 million in the business which is almost triple the historical average for Terex.

With Terex we're going to be smaller but we're going to be more focussed and we're going to be significantly more profitable, which

then provides significantly more capability for us going forward. I don't believe our strategy needs to change.

We're going to invest. One of our challenges in Demag was we went through periods when we didn't invest in the business.

There'll be an opportunity for us to look at inorganic growth, not in 2019 but in the future. As we demonstrate performance we'll be able to deploy capital via acquisitions. It hasn't changed right now but, as we look forward, it wouldn't be unreasonable for us to look in those two spaces for potential opportunities.

WHAT ABOUT THE CRANE BUSINESSES YOU WILL BE LEFT WITH AFTER THE DEMAG SALE?

JG: Exactly, that's the other side of it. Our tower cranes and rough terrain crane businesses have different competitive dynamics. They have been profitable through up and down cycles. We've got good product.

Tower cranes historically is pretty much operated as an independent business anyway. There wasn't a lot of synergy between tower cranes and the other parts of the business. There is some on the technology side but even there they went a different way with telematics; they didn't go with the IC-1.

On the RT side, Steve was doing a good job of bringing some of the Demag Inside technology into RTs so we'll have to modify that. It was a good leverage point that we'll have to modify for the RT strategy.

Both are strong businesses with good distribution, profitable and worth investing in. We've got a capital programme to expand the capacity of our tower business. They deserve to have the capital and it will be a good return.

We're not in the big all terrain sector, we're in niche markets where we've got strong competitive positions. Likewise with our Crespellano RT facility in Italy, they are good facilities, highly efficient and they do a good job.

WITH THE RT MARKET DOWN AT THE MOMENT HOW CAN YOU DEVELOP IT OR TURN THE SITUATION TO YOUR ADVANTAGE?

JG: Our RT business is significantly challenged in North America and, if we're honest with ourselves, we didn't invest in where the market was going. Steve recognised it and we came out with the RT90 and RT100. Bigger cranes is where the market had moved. We had stayed at the low end of the market and the market moved up.

We still will offer RTs into North America out of our Crespellano facility in Italy. We have good market share in Europe and in the Middle East. In the US, being the largest market, we didn't pay attention to market needs. We ended up with a situation where we didn't have the product or the amount of time, money and effort needed to get the product in a tough market and to recapture lost market share. We decided that wasn't going to be a good investment. Steve has been in the crane business a long time and when he says 'hmm, I'm not sure that's a good bet' I have to listen. **STEVE FILIPOV:** This is all about focus. Had we not been successful with the turnaround at Demag, the alternatives were far worse. As John [Garrison] says, as much as the sale of Demag was a hard decision emotionally, good business people have to take emotion out of business. The reality is Demag and Tadano was a case of one plus one equals three and so it made a lot of business sense.

For RTs it's a down market but there's a lot of opportunity for us. We have a full product portfolio. We're continuing to invest in more products in RTs, to continue to develop that business. Ten years ago it was a very good standalone business. It changed over time. Now what I'm focussed on with John is how to stand up the RT business to be a global RT business and how to stand up global tower cranes, to continue to invest, because it was probably double the size at the last peak and there's a lot of opportunity out there for us to get more market.

We've proven in the last two years, during the whole strategic change that we made in regaining industry leadership, that we're going to do two new tower cranes a year. We're doing that and we're going to continue with it for the next ten years.

JG: That's with a business that is half the size it was during the peak. It's still a very profitable business that has the ability to absorb the ebbs and the flows of the cyclicity



Marking the sale of Demag to Tadano on the Terex booth at the 2019 Bauma exhibition in April. Pictured left to right are: Tadashi Suzuki, Tadano director; Steve Filipov, Terex Cranes president; Koichi Tadano, Tadano president; John Garrison, Terex Corp president and CEO

and still remain profitable and returning well above its cost of capital. Therefore, we think it's worth continuing to invest, in both cases.

HOW WELL DOES THE FRANNA PICK AND CARRY CRANE BUSINESS FIT WITH THE MATERIALS PROCESSING BUSINESS?

JG: It fits better because there's overlap with customers down there where it is principally an Australian and a Southeast Asian product. A big element of the customers are in mining. There's not necessarily a natural fit for RTs and towers so we have those reporting separately to corporate. Those two are about \$250 million. All the remaining businesses we're keeping have their operating margin in that nine to 10% range. They are all good profitable businesses not at the peak of any cycle and we think we can grow them. They can remain profitable in tough cycles.

Part of what we like about these businesses is that they're more nimble and can adapt to market environments, as compared to Demag. With much longer lead times it's very difficult to be nimble. Whereas the towers and the RT business, they're nimble businesses that had the ability to respond upwards and downwards.

We're also actively engaged in increasing the support staff for North American cranes because, looking at our RTs, we've got 4,000-plus in the market, just in the last 10 years. That's a good service and support opportunity and a good service and support business. We're looking at how we can improve the structure of our service.

DID TADANO LOOK AT ACQUIRING THE BOOM TRUCK AND RT BUSINESSES OUTSIDE DEMAG?

JG: We had a process focused on the Demag business. One of the things we didn't want to

get into was any potential anti-competitive situation. Tadano has an RT business and truck cranes so we probably would have run into potential issues there. At least potentially from an approval point of view, so we were really just laser focussed on Demag.

HOW IS THE DEMAG SALE PROGRESSING?

JG: We have received German anti-trust approval and we got that fairly quickly. We are not anticipating any issues. Now it is just the execution of the strategy. We're trying to create value for everybody - customers, team members and shareholders.

It's all about really looking at your strategy in the dynamics of the marketplaces that you compete in and deciding what the best long-term opportunity to create value is. Sometimes the best thing is to drive consolidation. Industry structure will ultimately drive profitability and in all terrain cranes and crawler cranes consolidation is what the industry needed. The industrial logic is quite sound.

SF: I want to make it clear that the Demag teams have been successful. The two together can do a better job. It's going to be better. In this competitive market place the business as usual message is important because we want to keep the competition away from our customers or team members and from trying to get at our business.

JG: It's really important to convey to the customers so they know it is business as usual and oh, by the way, when it gets combined, it's going to be better than business as usual. Likewise, it will be business as usual in our tower cranes and RT businesses. We're going to grow those businesses. They are going to be good businesses going forward and we are very excited about it.

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The Blademax was launched at Bauma 2019. After the show this unit went to Sarilar Group in Turkey

Continued growth of the wind power industry gives a boost to specialized transport equipment manufacturers and transportation companies alike.

CHRISTIAN SHELTON reports



Ride like the wind

The latest generation wind turbines are bigger than any previously seen and forecasts suggest this trend will continue for as long as possible. As a result, the equipment being used to transport them is evolving and there are a number of new products on the market designed to transport these larger wind turbine elements.

New from Luxembourg-headquartered specialized transport equipment manufacturer Faymonville Group is the Blademax, which was launched at the Bauma 2019 trade show. Blademax is a rotor blade lifter with a capacity of 650 tonnes so that it can transport the latest generation of mega wind turbine blades.

The blade adapter can be mounted on a self propelled vehicle or between modular

axle lines. It picks up the rotor blades, raises them to 84 degrees and swivels and rotates them 360 degrees. A third vertical rotary axis can be integrated as an option, enabling a lateral swivel angle of 20 degrees. These attributes, Faymonville says, make it suitable for wind turbine blade transportation in a range of environments, including narrow streets, urban areas, wooded areas, and mountainous terrain.

The Blademax has a patented tilt kinematics system that Faymonville says means the position of the centre of gravity remains more stable when the blade is moved from the vertical to the horizontal position compared to conventional devices.

A patented stability control system monitors safety-relevant information and

alerts the operator if critical limits are approached. In addition, the Blademax works without the use of counterweights.

Catering for the transportation of bigger blades is also the focus of a new third generation wind turbine blade adapter from Tii Group (Scheuerle, Nicolas, Kamag, Tiiger). The system is suitable for blades longer than 80 m and it can tilt them to 70 degrees. The adapter can be mounted on heavy duty platform vehicles or self propelled vehicles and has an improved payload moment of 610 tonne-metres.

The pick-up and loading procedure of the turbine blade has been simplified, says Tii. The quick-release plate has been designed to be more accessible, enabling the adapter and blade to be rapidly bolted to the frame from the inside, it explains. It is also possible to attach the drawbar element directly to the wind turbine blade adapter.

The Tii Group has also launched what it describes as a 'weight-optimised' system for the transportation of turbine blades over 80 m. The system comprises a two-axle jeep dolly with a free-turning device and a four-axle trailing unit. A lifting device is used to pick the blades off the ground using a coupling solution consisting of a root adapter »



Tii Group's new weight-optimised turbine blade transportation system



Tii Group's new generation blade adapter

and a root frame. The free-turning device is mounted on the root frame and, at the rear, the rotor blade is supported on the trailing unit. According to Tii, this configuration makes the system highly manoeuvrable and provides a high level of load safety. In addition, blade support joints are articulated for careful handling of the delicate blades. A clamp can also be mounted on the rear of the transport system. The lifting height can be altered between -200 mm and +2,000 mm to aid transport over rough terrain and the system runs on air-suspended BPW axles.

For empty runs the two units can be coupled together to form a semitrailer combination with an overall length of

In total, ALE will transport almost 100 components



PATENT GRANTED FOR MEGA WINDMILL TRANSPORTER

Nooteboom Trailers' Mega Windmill Transporter



Netherlands-based manufacturer Nooteboom Trailers has been granted a European patent for the lift adaptor for its Mega Windmill Transporter.

The Mega Windmill Transporter is designed for the transport of tower sections and the nacelles of large wind turbines. The lift adaptor, called Liftad, is designed for the transport of large tower sections, up to just over 40 metres in length without using a loading floor.

The Liftad adjusts to fit a range of different towers and, depending on the diameter of the tower section, has a lifting capacity of 100 tonnes.

Nooteboom says it applied for the patent back in 2005 and it will now remain valid until 2023.

Enercon's new Ventum blade trailer from Goldhofer

16.5 m and a total weight of under 60 tonnes. This, Tii says, means that it does not require a special permit for use in Europe.

Germany-headquartered trailer and specialized vehicle manufacturer Goldhofer has also developed a wind blade transporter trailing dolly for its wind transport portfolio. Goldhofer describes its BladeS as 'a minimalistic system approach in which the cargo itself has a structural function within the configuration'.

At the back of the tractor is a free-turning device on which the lower end of the turbine blade is mounted. The blade's top end is placed on a trailing dolly and clamped between two holders. The turbine blade itself connects the tractor and the dolly. According to Goldhofer, the advantages of this are a lower overall weight, reduced fuel consumption and a smaller capital outlay compared with other blade hauling solutions. For blades over 70 m long, Goldhofer has the Ventum blade trailer.

The five-fold extendible flatbed semi-trailer has an extension length of 72 m, including the gooseneck. The gooseneck can be hydraulically lifted and lowered and the pendular axles have a stroke of +/-300 mm. A rail-mounted BladeX lifter for the tip of the blade can also be specified. The hydraulic gooseneck can be lowered so rotor blades with large hubs can negotiate tunnels and underpasses. Loading height is 1,250 mm. For extra ground clearance, two support legs facilitate the extension and retraction of telescopic tubes. This means the deck behind the gooseneck can be extended from 13.5 m for empty running to more than 68 m. Its adjustable steering lets the vehicle be driven at its 13.5 m basic length without a second person in the cab.

Wind energy company Enercon has bought six of the Ventum blade trailers. "Transporting long rotor blades and delivering them just in time is an undertaking



that Enercon can now handle on an intelligent and flexible basis," says Enercon managing director Hans-Dieter Kettwig.

Turbine transportation

On the job front, specialized transportation companies have also been busy. International heavy lift and transportation specialist ALE has completed the transportation of heavy wind components through what it describes as a challenging 1,000 km route across Thailand. It started the work in April 2018 and completed it in January 2019.

ALE was contracted to transport and install 13 wind turbines for the Rom Klao wind farm at Mukdahan in eastern Thailand. The largest components were 5.4 metres in diameter and the heaviest weighed 125 tonnes. The wind turbine generators have a hub height of 162 m, which ALE says makes them the tallest wind turbine generators in South East Asia.

To carry out the work, ALE used a range of specialist equipment including RA4 tower clamps, which enabled it to comply with local weight and height restrictions, and its K1650L tower crane, which can lift 135 tonnes and operate in wind speeds up to 15 m/s for lifts above 60 tonnes.

ALE has also been commissioned to provide the full turnkey scope for the transportation and installation of almost 100 components for 13 wind turbine generators at the Dhofar Wind Project in Oman.

The 50-megawatt (MW) Dhofar Wind Power Project is being jointly developed by Abu Dhabi Fund for Development (ADFD) and Masdar (Abu Dhabi Future Energy Company), with construction awarded to GE and Spain's TSK. ALE is transporting the components 590 km overland. Due to the size and scale of the convoy, with components measuring up to 65 m long and weighing up to 100 tonnes each, the items require a police escort.

Collett & Sons has delivered 531 components for the Dorenell Wind Farm in Scotland





In the UK, heavy transport specialist Collett & Sons has completed its largest renewables project to date: delivering elements for the Dorenell Wind Farm in Scotland. The project involved transporting 531 components for 59 Vestas V90 turbines. This included 44 m long turbine blades.

The components had to be transported between the Port of Inverness and Dorenell, a distance of 80 miles (130 km/h). Before the transportation commenced, each section of the journey was analysed and surveyed to ensure the loaded components could navigate safely and unimpeded. This included test drives, specialist swept path analysis reports and topographical surveys.

It resulted in a number of actions being effected, including removing street furniture, road widening, tree surgery, contraflow manoeuvres, implementing manual steering

requirements and structural stability restrictions.

Once all the relevant authorities were in agreement with Collett's plans, permits approved, and police escorts in position, the transportation of the components began. Collett used three clamp trailers, six blade trailers, two six-axle step frames and pilot cars during the job.

The journeys were made during off peak hours in order to minimise disruption. Two bridges needed to be crossed. For this, the loaded vehicle had to cross on its own and not exceed 30 mph (50 km/h) to protect the stability of the structure. The final components were delivered to the Port of Aberdeen instead of Inverness to avoid road works. The work was conducted over a six-month period and all components were delivered successfully.

Offshore transportation

Dutch dredging and heavylift company Royal



Boskalis installing offshore turbines

Boskalis Westminster has been awarded a contract for the Inch Cape offshore wind farm project in the North Sea, off the coast of Scotland, UK.

Boskalis will carry out the transportation and installation of up to 72 pre-piled jacket foundations and up to 84 inter-array cables, plus the transportation and

installation of an offshore substation for Inch Cape Offshore Limited (ICOL), a subsidiary of Red Rock Power. Work is subject to a successful bid by ICOL in the next UK Contracts for Difference auction, in mid-2019.

Excluding procurement, the contract value is forecast at more than €200 million (US\$ 229 million). Boskalis will use its crane vessel Bokalis 1 for the foundations and the offshore substation foundation, sub-structure and topside. It is a self-propelled crane vessel with a 3,000 tonne capacity revolving crane. The available deck space of 165 by 43 m is a unique feature, Boskalis said. ■



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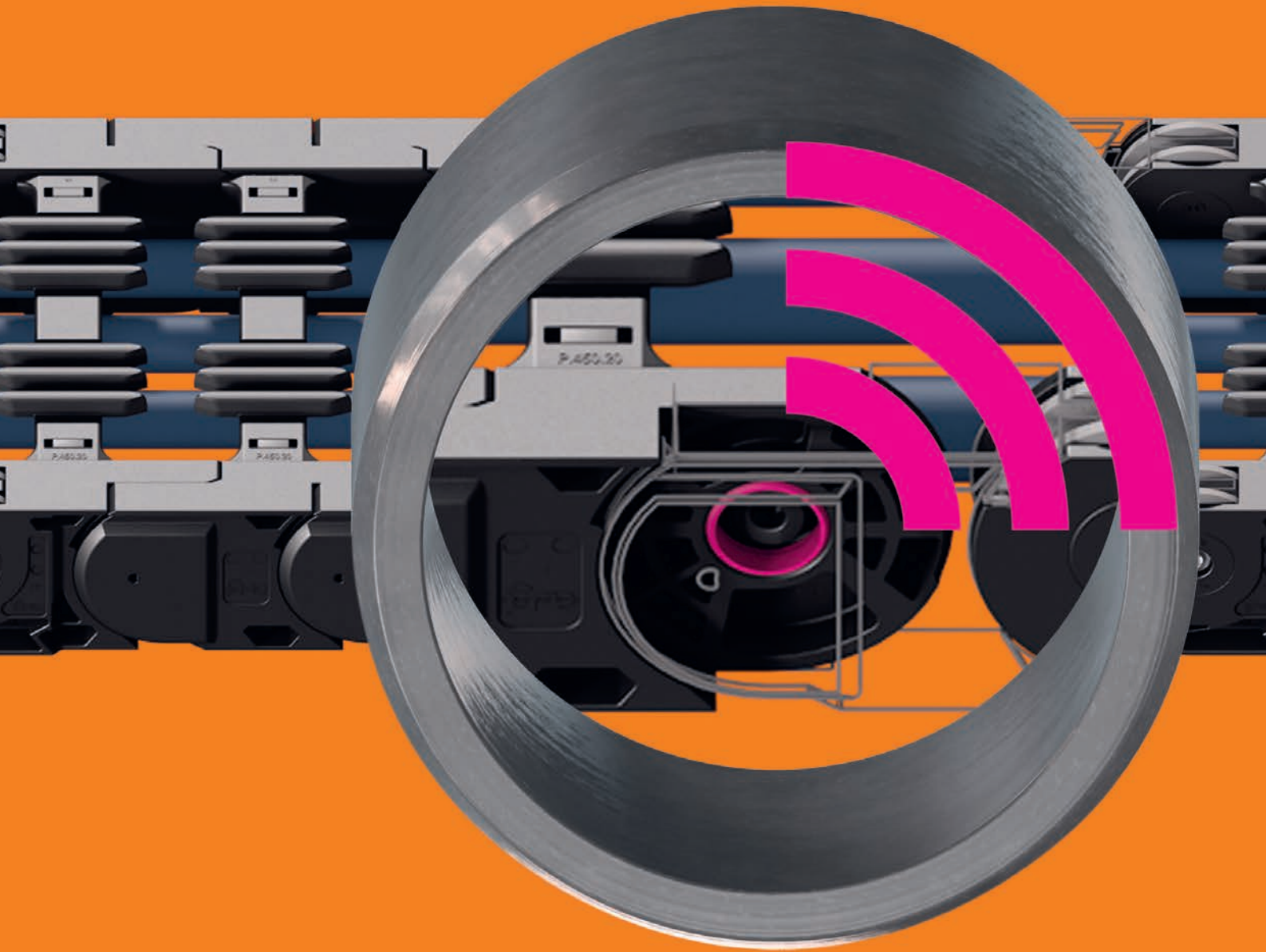
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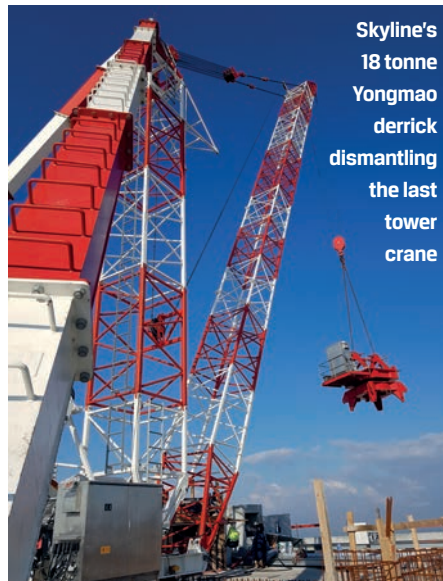
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A boom in high-rise construction in Israel drove award-winning innovation by tower crane specialist Skyline Cranes & Technologies for its work on the recently completed 40-storey, 192 metre, Hachsharat Ha'Yeshuv Tower. ICST reports

Rewarding innovation

"The urban trend of high-rise construction has had a significant effect on the tower crane industry, explains Aviv Carmel, partner and joint general manager at Skyline Cranes & Technologies in Israel. "It triggered a need to develop new, advanced technologies and working methods that will enable lifting heavier loads to higher altitudes, allowing quicker execution times, reducing costs considerably, while providing a safer environment."

Carmel continues, "We have generated significant advancement in the field of tower cranes, both in technical solutions and work methods. It is a combination of technologies that we implemented to take our cranes to a whole new level of so they can provide solutions to the attendant requirements of the high-rise construction trend."



Skyline's 18 tonne Yongmao derrick dismantling the last tower crane

JOB DETAILS

THE PROJECT: Hachsharat Ha'Yeshuv Tower, Israel
LOCATION: Bnei Brak Business Center
TOWER: 40 storeys, 192 metres
EXECUTING CONTRACTOR: Omer Engineering
ENTREPRENEUR: Sufirin Group, Pandom Company
TOWER CRANE CONTRACTOR: Skyline Cranes & Technologies

Implementing these technologies and working methods on the Hachsharat Ha'Yeshuv Tower construction project led to Skyline being awarded Outstanding Innovative Project Award by the Israeli Engineers Association.

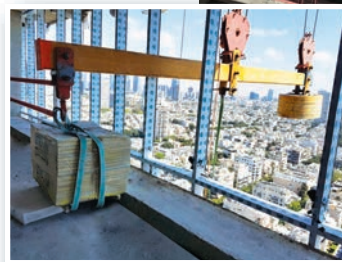
Built in the business district of Bnei Brak city, the project is an example of the way that combining Skyline's new tower crane technologies significantly shortened the timetable, improved working efficiency and reduced project cost, Carmel said.

Skyline chose to use a trio of luffing jib tower cranes to build the tower. The Yongmao STL 230 lifts 18 tonnes and hoist winch line speeds can reach 180 metres a minute. Two of the cranes were jacked up using Skyline's Spider climbing system. Carmel said Skyline is the only company in Israel using the climbing techniques and that these solutions will win against any competition for projects taller than 120 m that use internal jacking or out-tie back climbing with additional masts.

When the building reached 100 m, Skyline was asked to provide another lifting solution to further increase progress. It supplied its patented Independent Feeder Lifting Device (IFLD) to lift, insert and place loads as far as 4 m into the building floors. It is a long arm anchored to the building, operating independently from the project's tower cranes. It saves up to 70 % of the time required by external elevators, Carmel said. The IFLD is driven via wireless control with a



The feeder and climbing system together on the same face of the building



The Skyline Independent Feeder Lifting Device in operation

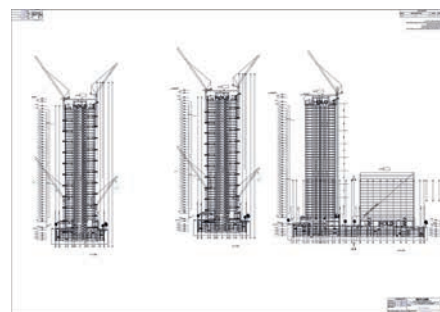
camera and screen developed and produced by Skyline.

Another Skyline innovation on this project was Sky Sign advertising screens. Advertising is often requested on tower cranes but large boards affect stability and safety. Sky Sign is designed to be a highly visible solution made of LED bars that allow the wind to pass through, creating a large, lightweight, modular, remote controlled screen mounted on the cranes.

To further increase safety during operation, Skyline also fitted DSC60 collision avoidance systems from AMCS.

At the end of the project an 18 tonne capacity Yongmao derrick was used to dismantle the last tower crane from the 190 m roof top, challenged by limited space cramped with mechanical equipment, a glass façade and a busy urban area below.

Combining all the innovations enabled quicker execution times, reduced costs considerably, while providing a safer environment, Carmel concluded.



Plan showing the crane placement

First rate

Shipping is one of the oldest forms of global transportation but the dockside lifting sector shows no sign of aging. **CHRISTIAN SHELTON** reports

The nature of the shipping sector brings a truly international feel to this dockside lifting feature, which is awash with equipment orders from around the world.

Finnish crane manufacturer Konecranes is enjoying a busy period, celebrating selling its 2,000th Gottwald mobile harbour crane and receiving orders from Sweden, Turkey and the United Arab Emirates, among others. The 2,000th crane was sold to Ership terminal in the Mediterranean port of Cartagena in south east Spain. It is a four-rope Konecranes Gottwald Model 6, model G HMK 6407 B, which will mainly be used for continuous-duty bulk handling, general cargo, and project cargo weighing up to 100 tonnes.

In Sweden, Uddevalla Hamnterminal port has placed an order for a Konecranes Gottwald Model 3 portal harbour crane. The crane is scheduled for delivery in autumn 2019. The crane is a G HSK 3432 variant two-rope crane mounted on rails in order to integrate with the port's existing infrastructure. It has a capacity of 100 tonnes, a radius of 46 metres and operates from an external power supply. Uddevalla is located in the south-west of Sweden, about 80 km

north of Gothenburg. Konecranes described it as a 'small but important port' and said that this will be the first Gottwald portal harbour crane in the country, opening up the market there.

The Turkish Konecranes order comes from port operator Atakaş Port Business. It is for a Gottwald Model 7 portal harbour crane. Starting mid-2019, the new Model 7 will be used at the port operator's Iskenderun site, on Turkey's south east coast, where it will handle bulk cargo and serve large container vessels. The crane is a rail-mounted, four-rope G HSK 7528 B model with a lifting capacity up to 125 tonnes, a 50 tonne grab curve for mechanical grab operation, and a 54 m outreach. The crane's portal has a clearance of 6 m and the track gauge measures 14 m.

To compensate for the different rail loadings due to the crane offset in relation to its portal, the bogies on the quay side are fitted with eight wheels each and on the land side with six, Konecranes said.

The Konecranes order from the United Arab Emirates comes from bulk terminal Saqr Port, part of the Ras Al Khaimah Ports Group. It's for three Gottwald Model 8

Konecranes sold its 2,000th Gottwald mobile harbour crane to Ership terminal in the port of Cartagena, south east Spain



mobile harbour cranes, two of which will be delivered in April 2019 and the third in July 2019. Specifically, the cranes are four-rope G HMK 8410 B models with a 63 tonnes capacity grab curve and a high operating speed. They will handle inbound and outbound bulk material including coal, limestone and clinker. They are diesel-electric cranes that can be linked to the terminal's main grid.

In Puerto Quetzal, Guatemala, global container terminal and port operator Yilport has ordered two new diesel-electric Gottwald Model 8 mobile harbour cranes for its port there. Delivery is scheduled for mid-2019. This will be followed by two more for its site in Puerto Bolivar, Ecuador, two months later. The cranes are two-rope G HMK 8410 models. They provide lifting capacities of up to 100 tonnes and an outreach of up to 61 m, enabling them to handle containers across 19 rows alongside large vessels.

RTG orders

In the USA, South Carolina Ports Authority (SCPA) has ordered three Konecranes rubber tyre gantry cranes (RTGs) equipped with hybrid power packs. The hybrid system will have a lithium-ion battery pack and management system that will monitor the charge level and the general health of the batteries. Konecranes will be able to monitor the status of this system via a Truconnect remote connection. The hybrid system comes with a Tier 4 Final engine that will charge the batteries when necessary and can be retrofitted, if required.

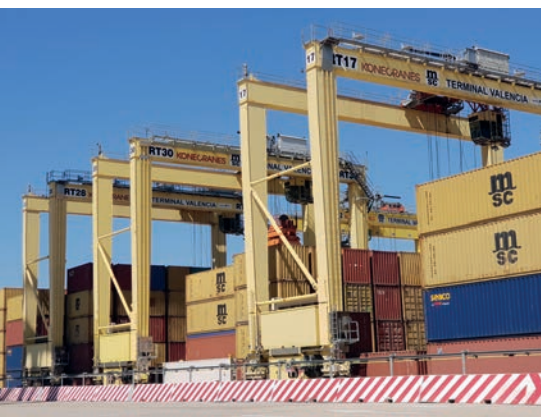
Terminal operator MSC Terminal VLC (MSCTV), based at the Port of Valencia on Spain's east coast, has implemented

SIMULATOR FOR SAFER HANDLING IN NEW ZEALAND PORT



Port Nelson in New Zealand has ordered a Liebherr training simulator loaded with a generic ship crane simulator and the LiSIM simulator version of Liebherr's LHM 550 mobile harbour crane. The mobile harbour crane simulator training programs installed are for basic operations, as well as bulk, breakbulk and container handling. Further Liebherr crane modules can be added to the simulator, if desired.

"The simulator will make for safer and more efficient handling in a variety of weather conditions," comments the port's container operations manager Jonny Cook. "We also expect it to reduce box damage during operations."



The Port of Valencia has retrofitted busbar to its Konecranes RTG cranes to fully electrify operation

the country's first busbar retrofit of its Konecranes RTG cranes to fully electric operation. It has also purchased new Konecranes RTGs that come fully busbar-ready. "The busbar retrofit provides us with a CO2 emissions reduction of approximately 20 %, as well as producing less noise, requiring less maintenance and operating at higher levels of productivity and reliability," says MSCTV terminal manager Sven Valentin.

Environmentally aware

Continuing the eco theme, in Miami, Florida, USA, South Florida Container Terminal (SFCT) has ordered six zero-emission rubber-tyred gantry cranes (RTGs) from cargo handling solutions specialist Kalmar.

According to Kalmar, the cranes will be equipped with a busbar energy system and operator assistance features, including auto steering and container stack profiling.

Delivery is scheduled for early 2020. Kalmar said this will be the first container

terminal in the USA that has 100 % zero-emission RTG cranes and that these will also be the first RTG cranes installed at the Port of Miami.

The Kalmar Zero Emission RTGs will be delivered as part of an ongoing densification and terminal redevelopment project at SFCT. Mark Baker, managing director of SFCT, said, "We are excited about the opportunity to increase our capacity through this terminal redevelopment project. We will not only offer better service to our customers, but we will do it eco-efficiently with all-electric RTGs."

Reviving markets

Crane manufacturer Liebherr says that it had a very successful 2018 in the dockside lifting sector, with 83 sales in 40 countries. It also launched its first purely electrically driven portal crane: the LPS 420 E.

The crane has two winches, each with a 190 kW electric motor, providing a maximum load capacity of 124 tonnes.

"We have succeeded in reviving countries and even entire regions that have shown almost no turnover development in recent years," says Andreas Müller, sales director for Liebherr mobile harbour cranes. "A record year in the UK and an impressive result in Africa are two examples."

This year appears to be continuing in a similar vein for the company. Liebherr Container Cranes has sold four ship to shore (STS) container cranes in the USA: two 69 m Megamax outreach cranes to Port Newark Container Terminal (PNCT), New Jersey, USA; and two super-post-Panamax STS cranes to Penn Terminals in Eddystone, Philadelphia, USA.

The cranes for PNCT are part of a terminal expansion plan. They have a span of 30.48 m and a backreach of 20 m. Lift height over rail is 50.3 m and the cranes have a safe working load of 66 t under a twinlift spreader. The semi-automated cranes are fitted with anti-sway and anti-collision systems and a straddle carrier positioning system. They also have remote access and diagnostics.

Penn Terminals' new STS cranes have semi-automated trolley and hoist functionality with manual operation only



Maputo Port Development Company (MPDC) has bought two LHM 550 Liebherr mobile cranes

being required when operating below a pre-configured safe height. Anti-sway, anti-collision, and remote diagnostic systems are also included. The cranes have a span of 18.29 m, an outreach of 48 m, a backreach of 15 m, and a safe working load capacity under a twinlift spreader of 66 tonnes.

In Maputo, Mozambique, east Africa, port operator Maputo Port Development Company (MPDC) has bought two new LHM 550 Liebherr mobile cranes. The two new cranes join two existing models and will be mainly used for bulk handling of high-density bulk material like ferrochrome.

"In addition to the two mobile harbour cranes, we have recently acquired 14 payloaders, 8 tractors, 8 forklifts and 2 rail excavators (for wagon unloading operations)," says MPDC chief operations officer, Marla Calado. "This investment is in line with the need to improve the berth usage and the rehabilitation and deepening works that are taking place at the moment."

And in Montevideo, Uruguay, terminal operator Montecon has ordered an LHM 800, which will join two existing LHM 800s. The LHM 800 is for handling large container vessels. In container handling configuration eye-level is above 40 m and the fulcrum point is above 36 m. Outreach is 64 m, meaning it can serve vessels up to 22 container rows wide. Hoisting and lowering speeds are up to 120 m per minute. This allows for up to 40 boxes per hour, Liebherr says.

Inland ports

Inland ports have been investing in new dockside lifting equipment, too. German port owner Bayernhafen bought a Liebherr LHM 420 mobile harbour crane from Liebherr-MCCtec Rostock for its Passau inland port location in Bavaria, Germany. »

South Florida Container Terminal (SFCT) in Miami, Florida, USA, has ordered six zero-emission RTGs from cargo handling solutions specialist Kalmar. Mark Baker (left), managing director of SFCT and Troy Thompson, vice president, sales, Kalmar Americas, signing the agreement

Liebherr said it is the first of its mobile harbour cranes to be sold that complies with the new Stage 5 exhaust gas emission standard.

Only minor technical adjustments were made to achieve the new emission standard, says Liebherr, with the atomisation of the adBlue urea now taking place through an improved air-assisted injection which it says improves the degree of atomisation. A new control unit was also installed.

Liebherr says that the LHM 420 is one of the best-selling models in its LHM product range, with more than 150 units being sold since 2011. The crane has a capacity of 124 tonnes and is intended for use in a wide range of applications, including bulk goods, general cargo, container handling and for handling complete wind turbines.

Another inland port to buy Liebherr port cranes is Varanasi, located on the banks of the River Ganges in northern India, 780 kilometres east of Delhi. Two LHM 180 mobile harbour cranes were sold to infrastructure development company Afcons, part of the Shapoorji Pallonji Group. Both cranes run a

PORT CRANE RELOCATED ACROSS NEIGHBOURING PROPERTIES



Canadian port operator Termont Montréal commissioned heavy lift and transportation specialist Mammoet to relocate a 700 tonne port crane from one of its terminals to another one 2.5 km away. Mammoet worked closely with the Termont Montréal for over a year to help negotiate with the company's neighbouring port operators to secure permission to transport the crane across their properties, saving time and money. The crane was moved using customised transport beams and 48 lines of

SPMT and the transportation itself was completed within eight hours.

In related news, Mammoet Belgium has opened a new facility in the Port of Antwerp. Mammoet said it was a strategic decision to place the facility on the harbour with its load-in and load-out facilities. From here Mammoet said it will provide localised support to the region's growing petrochemical and industrial sector.

390 kW Liebherr diesel engine and provide a maximum lifting capacity of 64 tonnes in four-rope configuration.

According to Liebherr, Varanasi is India's first multi-modal terminal. Three others are under construction at Sahibganj, Haldia and Gazipur, enabling commercial navigation of vessels with capacity of 1,500-2,000 DWT on the River Ganges.

In summary, reading between the lines, it can be seen that there is a trend towards the increasing use of electric or hybrid cranes and automation systems in developed markets. Across the seven seas, however, the sheer number of ports requiring cranes means the market for more established dockside lifting equipment remains buoyant, too.

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KEYNOTE: TOPIC TO BE CONFIRMED

Fabio Belli, CEO, Fagioli SpA

KEYNOTE: DRAWING PARALLELS BETWEEN CRANES AND REACTION FERRIES

Erich Sennebogen, managing director, Sennebogen Maschinenfabrik GmbH

TRENDS IN THE GLOBAL ENERGY SECTOR

Diederick Nelissen, partner, McKinsey & Company

NEW CHALLENGES FOR HEAVY LIFT AND TRANSPORT IN THE GLOBAL ENERGY MARKET

Gert Hendrickx, sales director Projects, Sarens NV

CASE STUDY IN MAKING SAFETY A TOP PRIORITY

Ainscough Crane Hire (speaker to be confirmed)

GLOBAL CRANE MARKETS: AN OVERVIEW

Chris Sleight, managing director, Off Highway Research

SPECIALIZED TRANSPORT IN EUROPE: PRIORITIES FOR ACTION

Iffet Türken, chief networking officer & board director, Kässbohrer Group, and vice president - Transport Section, ESTA

CHALLENGES WITH EXISTING STEEL WIRE ROPES ON LARGE CRANES AND FEASIBLE SOLUTIONS

Dr Oliver Fries, vice president European engineering and technical services, WireCo WorldGroup

LEARNING FROM THE AIR: APPLYING AIRLINE SAFETY PRACTICES IN LIFTING AND TRANSPORT

Blanca Claeysens, general manager, ASA France

ROUND-TABLE: NEW DEVELOPMENTS IN WIND TURBINE CONSTRUCTION

Klaus Meissner, director competence center engineering systems, product safety, Terex Cranes

• Other participants to be confirmed, see the website for more information

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It pays to know how NOT to run your business

Imagine a scenario where your company is on a roll. Profits are up, products are flying out the door and services are in demand. It seems you can do no wrong. And then you get cocky.

You start to assume things can't go wrong. Won't go wrong. This is a dangerous place to be – and a reckless way to run your business.

You don't have to plant the seeds of arrogance too deep to reap a successful crop. Which is why, just because "everything" might be going right for you (for now), it's imperative that you keep a level head as a leader – keep it all in perspective, especially the truth: that soon enough, things may not go right, and you're going to need to be strong enough, company-wide, to handle it.

Part of that strength comes from core values and business sense. On the subject of values, if you're the type of leader who



leads by example and inspires trust, faith, comradery (camaraderie) and loyalty throughout your organisation, then chances are, your company has the wherewithal to weather any challenge. If not, and you're prone to chasing money, following trends and endorsing unaccountability, then it's just a matter of time.

Which leads to the business sense. We all want to succeed, make good money, grow our businesses and build a legacy. The number one objective of any for-profit business is to make a profit. If making a profit supersedes every other objective, for example, product and jobsite safety, customer service, equipment maintenance, project planning, innovation, workforce quality and industry relationships, then you're in a race to the bottom. Leaders with this type of mindset often cut corners, cook the books, fudge safety reports, suppress checks and balances, intimidate whistle blowers and more.

Ultimately, the CEO sets the precedent for how the entire organisation will operate. If he or she mandates profit above all else that mandate will only worsen as it moves through the organisation.

Piece by piece

A true leader understands their company from the ground up. Be in touch with every person in your organisation. Talk to the people who might end up having concerns about certain directives. Prevent their message from getting "amended" before it gets to you.

Accountability is another integral piece to either eventual failure or success. Something to think about in our industry, especially. As a leader, if your company makes a mistake, own it and then move on.

Playing the three Ds of unaccountability – deny, distract, defer – rarely works out for anyone – just ask Boeing. Within the realm of specialized transport and mega lifts, the media is always just around the corner. The bigger the mistake, and the longer you implement the three Ds, the more they'll hound you. In the digital age, as we know, everything is archived. This will become your legacy – even if you do recover and find future success.

Public opinion is a slippery slope: if they can't trust you to admit when you're wrong, how will they believe you if or when you're not wrong? Again, the culture this type of behaviour creates is contagious and destructive. What if no one in the company takes ownership of problems, mistakes, and undesired results? How do you fix anything if no one will admit they're wrong?

Companies find success by design not default. And arrogance only ever breeds more arrogance. That is, until it doesn't. And at that point, your business is likely getting sold off, piece by piece. ■

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International attendees find increasing value at SC&RA events. MIKE CHALMERS reports from April's Annual Conference in California, USA

Worthwhile journey

Year after year, SC&RA's influence grows among both its membership and the industry overall. International participation at the 2019 Annual Conference in Carlsbad, California, USA, from 23 to 27 April, stands as a productive example of membership value, with 64 members in attendance representing 10 countries.

Reasons for making the trip to the USA



Giovanni Alders from the Netherlands is sales director at UK-headquartered international heavy lift and transport specialist ALE

to attend an SC&RA event can run the spectrum – from networking opportunities to committee engagement to client interaction to educational enhancement. Without a doubt, there's something for everyone at an SC&RA



Enrique Hernandez Pesquera is from crane and transport specialist contractor Auriga in Mexico, left of picture, and Rainer Auerbacher is from transport equipment manufacturer Goldhofer headquartered in Memmingen, Germany



event, and as members from around the world have learned, that value often extends well beyond borders – cultivating opportunity and growth throughout the global industry.

The 2019 Annual Conference saw plenty of familiar international faces, and quite a few new ones. All in attendance agreed: it was definitely worth the trip.

Gerald Hess, president at Ambercor Shipping in Toronto, Ontario, Canada, feels it's very important for his company to physically meet the people they do business with. "You should know who you call on; when you meet someone face to face, you usually have more success in closing a deal. It's an asset for us to belong to this organisation so our clients know us, and so that we know who our vendors are, or could be."

Hess also thinks the rest of the world understands the value of relationship with SC&RA. "I think this organisation is very well respected internationally. We exhibit at Breakbulk, and we proudly display the

“ The advantage for us to join this organisation is that clients and potential clients will recognise us as a fellow member, which will create an opportunity to do business – in our case, with equipment owners. We're also recognised as someone that has knowledge in this field – and that gives us another piece of credibility. ”

GERALD HESS, president at Ambercor Shipping, Toronto, Ontario, Canada





Business relationships as well as friendships are a common theme among SC&RA members



Gary Stang, SC&RA outgoing president and incoming chairman, addresses a gathering of international members in California



Ryan Long at Irving Equipment introduces himself to other international members



From Left to right, Ed Bernard, Precision Specialized; John Biagi, Goldhofer; Jason Pearce, Flite Line Equipment



Monique Comeau, left, from Nova Permits and Pilot Cars and Manon Huard from Rayco Wylie Systems, both in Canada

SC&RA logo. People know it."

Bartosz Swiderek, vice president of the Board at Pol-Inowex, an industrial plant and facilities relocater headquartered in Lublin, Poland, attended the Annual Conference at the request of a customer. "The majority of our customers like it this way," he explained. "We offer a complete solution and it's good to see them in person. It's also good to get here and use this time as an opportunity to meet new people – new potential customers."

Swiderek also pointed to the value of SC&RA meetings in establishing partnerships. "This is my first SC&RA event and I'm surprised how many people are here. While everyone seems to know each other, we've been told that it will soon be like this for us. We previously met some people from the UK as well as some guys from Mexico, and we're already looking to do some larger work together. We're here to find some partners to evolve our business – so that we can move from one part of the world and reassemble with local workers."

Saurabh Dubey, joint president at Sharma, a fabricating and erecting company based in Haryana, India, agreed with Swiderek about the relationship-building component consistent throughout the Association.

"It's important that when we come here, we meet people that respect quality. We don't know everything, so when you attend an event like this, we get to meet many people and learn many things. Every day is a learning experience – successful people can admit that, and that's what makes them successful."



Bernd Schwengsbier travels the world with transport equipment specialist Tii Group (Scheuerle, Nicolas, Kamag, Tiiger)



The International Members Reception is a popular fixture at every SC&RA Annual Conference



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News from the European Association of Abnormal Road Transport and Mobile Cranes (estaeurope.eu)

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Pressure increases on transport issues

ESTA is stepping up its efforts to highlight the problems faced by abnormal road transport operators across Europe.

The first of a series of meetings between ESTA and the IRU – the international road transport industry association which ESTA joined in 2018 – took place in Brussels, Belgium, on 15 May.

The following week David Collett, ESTA president, gave a presentation at the Breakbulk exhibition and conference in Bremen, Germany, highlighting how unnecessary red tape is damaging both ESTA's members and European industry.

Both meetings discussed the need to harmonise marking and lighting regulations for abnormal loads across Europe and ESTA's previous work on a best practice guide for abnormal transport operations.

They also debated ESTA's call for a network of heavy transport road corridors across Europe and whether such a policy could be co-ordinated with recent similar



calls from NATO on behalf of Europe's armed forces.

Those attending the IRU meeting were ESTA director Ton Klijn, ESTA Transport Section vice president Iffet Türken, Marc Billiet, who leads the IRU's work on road freight transport and environmental affairs in Europe, and IRU general delegate Matthias Maedge, who heads the work of the IRU's Brussels office.

Collett's presentation in Bremen made the point that common standards and harmonised regulations not only make the industry more efficient and cut costs, but also enhance safety. He called on the European

authorities to set up a pilot project between two major ports to trial the proposed policy for a heavy transport corridor.

Collett emphasised, however, that "perhaps what our industry needs more than anything else is for the permitting and transport authorities across Europe to talk to each other on a more regular basis."

ECOL PROJECT MOVES FORWARD

ESTA's European Crane Operators Licence (ECOL) project has taken a series of important steps forward.

The first official meeting of the ECOL new Committee of Experts has taken place, signalling the project's transition to its new and permanent management structure. The Committee of Experts will advise and assist the ECOL management board in its role of overseeing the day-to-day running of the ECOL system.

In a separate move, four leading crane manufacturers – Manitowoc, Tadano, Terex and Liebherr – have agreed to align their training operations with the ECOL scheme and its standards. They are going through the registration process.

■ For more information, see the ECOL website: www.ecol-esta.eu

MEETINGS IN MUNICH

The International Crane Stakeholders Assembly (ICSA) held its eighth meeting in Munich, Germany, in April during the Bauma construction equipment exhibition. The meeting discussed a draft position paper about cranes on barges, and crane standards EN13000, B30.5 and B30.30. It also debated a draft paper on the transport and logistics of delivering wind farm components.

DAVID COLLETT (right), managing director at the UK-based Collett Group, has been unanimously elected as ESTA president for a third and final term by the ruling General Assembly meeting in Munich, Germany, in April. At the same meeting, IFFET TÜRKEN (below), executive board member at Kässbohrer, was unanimously elected for



a second term as vice president of ESTA's Section Transport. Patricia Crespin from French industry association UFL, agreed to join the ESTA Board of Directors. Łukasz Chwalczyk, from Polish specialized transport organisation OSPTN, has also been elected a member of the ESTA Board. He has stepped down from his post as transport executive.



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Multiplex pioneers the Roborigger

Australian construction company Multiplex used a new automated lifting device called Roborigger, on the Museum for Western Australia project in Perth.

Roborigger is installed between the boom of the crane and the load and uses inertial forces to rotate and orientate crane loads, eliminating the need for workers to use taglines or to be in close proximity to the load.

Developer Tensa said the technology is the first of its kind

on a commercial construction site and that Multiplex is the first commercial construction contractor to use this wireless load bearing technology. Tensa has been developing Roborigger since 2016 and Multiplex has supported this as an industry partner since 2017, co-ordinating Roborigger trials on commercial sites and providing feedback.

Tensa collaborated with Curtin University researchers, who developed the bespoke algorithm for Roborigger control. Oil and gas company Woodside is also a development partner.

Roborigger uses inertial

forces from a rotating flywheel to rotate the loads. Radial fan blades provide resistance when the flywheel is running at speed enabling the Roborigger to provide continuous torque to maintain the heading of the load continuously regardless of the effect of the wind.

This, Tensa claimed, increases the operating window for lifting operations involving loads with high windage, allowing operations to safely continue when winds are 5 to 10 km/h stronger.

■ For more information see: www.tensaequipment.com.au

TRAILER REMOTE CONTROL



Belgium-based earthworks, demolition and transportation company Wonico has started using a trailer remote control system from Dutch manufacturer Broshuis designed to increase safety and convenience.

The remote control allows drivers to operate the trailer from a safe distance. They can remotely control the ramps; lift and lower the trailer (on SL and PL hydraulic suspension lines); operate the hydraulic gooseneck; raise and lower the lift bed in the loading floor; operate the winch; operate hydraulic support legs; and adjust the trailer and align it automatically.

According to driver Lars Kloek, "You only experience the enormous difference when you start using the remote control. I am now safely operating the ramps remotely. Previously I was almost half under the trailer. This is a result. In fact, every driver should have this."

■ For more information see: www.broshuis.com

Roborigger is a new device used to rotate and orientate crane loads without taglines



Enerpac lock-grip pullers

Enerpac has launched a range of lock-grip pullers for removing shaft-mounted parts.

The LGM-Series mechanical lock-grip pullers are designed for pulling small- to medium-sized wheels, sprockets, bearings and other similar shaft-mounted parts. According to Enerpac, the puller's self-centering closing system allows all jaws to move simultaneously, making it easy for a single operator to mount the puller and to perform the application.

The LGH-Series hydraulic lock-grip pullers have the pulling force applied by a standard 700 bar hydraulic cylinder. They can apply up to 64 tonnes of force and are suitable for removing larger shaft-mounted objects up to

660 mm in diameter.

Both types of puller have an adjustable handle to simplify positioning the jaws to speed up operation. A locking mechanism is designed to help prevent jaws from slipping off while pulling. A wide spreading width on the jaws

enables the lock-grip pullers to be used on thick objects, said Enerpac, while a spindle protector helps prevent damage to a spindle when pulling against a flat surface.

■ For more information see: www.enerpac.com



CM'S SECOND CCS SIMULATOR

Canadian simulator and software company CM Labs is developing the second in a series that incorporate the Crane Control System (CCS) from crane manufacturer Manitowoc Cranes.

The CCS operating platform has been integrated into CM Labs' Vortex simulators. CCS is a common human-machine interface across multiple Manitowoc crane product lines. Each CCS unit has the same control layout, with standardised symbols, made up of several common components, including crane controller, safety controller, input/output, joysticks, jog-dial and display.

The first CM simulators replicated the functionality and behaviour of the 35 tonne Grove RT540E rough terrain crane. Now they replicate a 165 tonne Manitowoc MLC165 lattice boom crawler. Both simulators are under the control of a real CCS user interface.

Vortex Crane Simulators with CCS can be purchased through Manitowoc's Crane Care network.

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





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Informal Networking Drinks Reception

THURSDAY 27 JUNE, 2019

KEYNOTE SPEECH – The changing environment for tower crane operations

Jörg Hegestweiler, MD, BKL Baukran Logistik

Construction activity trends and forecasts

Martin Seban, senior consultant – economics & country risk, EMEA, IHS Markit

Fibre ropes for tower cranes

Thomas Herse, head of tower crane technology, Liebherr Tower Crane Division

Construction and BIM: developments at Strabag

Theodor Sansakrit Strohal, head of BIM.5D, Strabag

Using drones to inspect industrial structures

Patrick Rickerby, technical director, Terra Drone Europe

Round-table: tower crane inspections

Steve Bradby, technical and engineering leader – Lifting Solutions, Select Plant Hire

Nigel Brewis, owner & MD, Safety Check Engineering

Peter Juhren, VP of operations, Morrow

A digital approach for successful jobsites and tower cranes optimization

Dr. -Ing. Mohamed Abouelezz, general manager, MENA & SE Asia, Wolffkran
co-presenter: **Derek Bourke**, digital construction manager, BAM International

Transforming tower cranes: from lifting machine to smart site tool

Jean-Charles Delplace, CEO, Smart Jobsite & CEO, SMIE co-presenter: **Steve Bradby**, technical and engineering leader, Select Plant Hire (Laing O'Rourke)

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What is it worth? Determining the residual value of tower cranes

Tomas Vacek, managing partner, JVS Cranes

16.30 – 18.00

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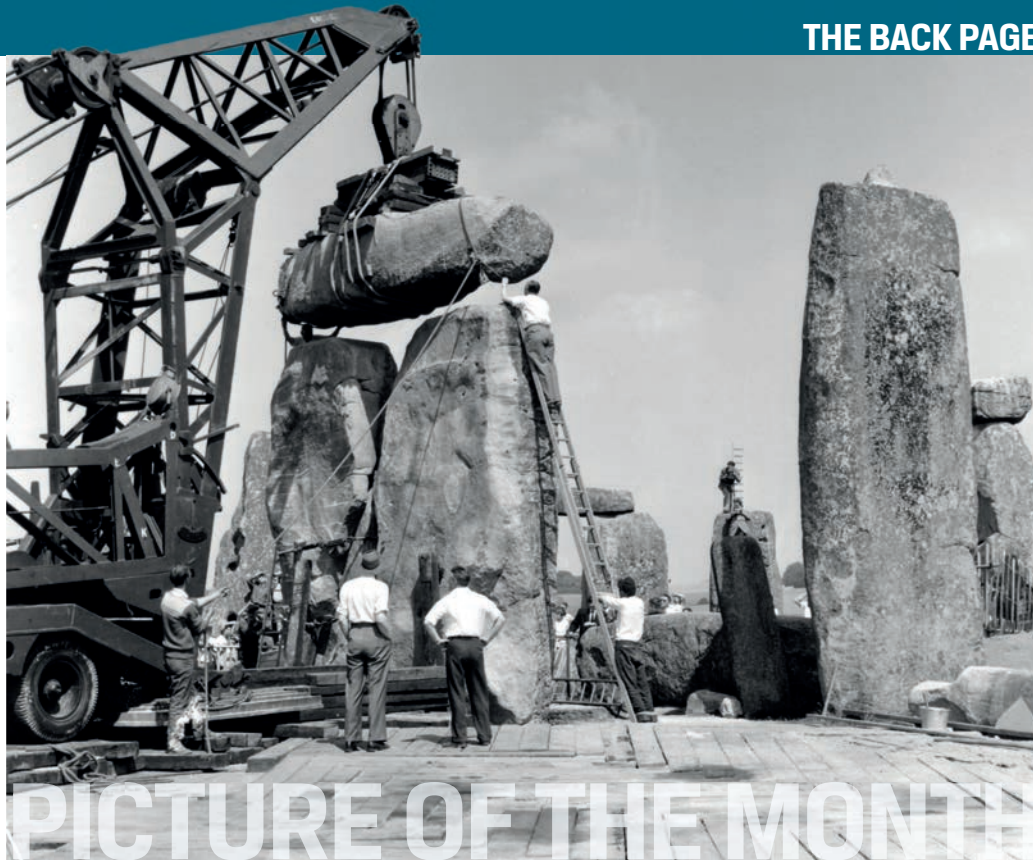
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PHOTO: ENGLISH HERITAGE

PICTURE OF THE MONTH

This photo caused online speculation that Stonehenge, the iconic prehistoric monument located in Wiltshire, England, is not an ancient monument but a fake built in the 1950s. It wasn't the conspiracy theory we were interested in, though; we just wanted to know about the crane.

It is a Brabazon borrowed from the Royal Air Force. It had a capacity of 60 tonnes and was approaching its limits lifting Stonehenge's large stones. The photo, in fact, shows the crane being used to help restore the monument. Note the heavy timbers laid down to prevent the heavy machinery damaging the fragile ground.

PEOPLE NEWS



Crane manufacturer Tadano in Germany has appointed **JENS**

ENNEN as executive vice president.

His move to the Japanese manufacturer was from crane manufacturer Manitowoc, also in Germany, where he joined in 1991. There he was responsible for international development; worldwide product line management for all terrain and truck cranes and was senior vice president for mobile cranes in Europe and Africa.

A goal at Tadano will be to further increase the reliability of Tadano cranes. Following completion of Tadano's acquisition of the Demag all terrain and crawler crane

brand from Terex Corporation, Ennen will be closely involved with model policy, production processes, innovations, and after sales.

Ennen has a degree in a degree in mechanical engineering from the University of Applied Sciences in Osnabrück, Germany. He has 25 years of experience in cranes and lifting technology.



Italy-based tower crane manufacturer Raimondi Cranes has appointed

ENG. DOMENICO CIANO as chief executive officer. Ciano succeeds Ahmed Alkhoshaibi, who was the previous CEO, since 2009.

Ciano joined Raimondi in

2014 as technical director. He was soon promoted to chief operations officer where, according to Raimondi, he was instrumental in developing research and development capabilities and for delivering Raimondi products globally.



Landstar System in the USA has appointed **ROBERT BRASHER** to succeed

Patrick O'Malley as vice president and chief commercial officer. O'Malley stepped down on 31 May and will be a special advisor to the CEO.

Brasher has been at Landstar for 19 years, most recently as executive vice president for the Western Field Division and now for sales.

■ 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. Entries for Picture of the month should include: the month and year taken, the place, type of crane, owner and project, plus any other relevant information.

MARKETPLACE

The Marketplace is divided into easy to read colour coded sections to help you quickly find what you need.



PRODUCTS, PARTS & ACCESSORIES

58

Operational aids, communication systems, components, controls, software, crane mats and outrigger pads, crane repair, hydraulics, jacks, attachments, personnel baskets, rigging hardware, rollers, slings and chains, tires, winches, wire rope, batteries, braking systems, and new, used and refurbished parts.

SAFETY, TRAINING & INDUSTRY SERVICES

Training, insurance, inspections, financing, consulting and safety equipment.

SPECIALIZED TRANSPORT

Transportation permits, freight forwarding, heavy haul, pilot car services, trailers, wheels and tyres.

CRANES AND EQUIPMENT FOR SALE OR RENT

59

Crane, rigging and lifting equipment for sale or rent, new or used.

CAREER OPPORTUNITIES

Employee recruitment and job postings.

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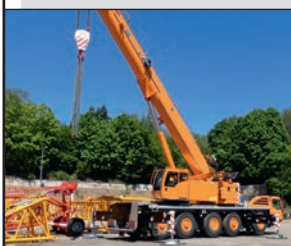
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USED CRANES



Brand	Demag
Model	AC 130-5
Capacity	130 t
Boom	59.8 m
Hours	1,546 h
Counterweight	42.2 t
Year	2017
Location	Germany



Brand	Demag
Model	AC 1000-9
Capacity	1,000 t
Boom	100 m + 126 m
Counterweight	48 t + 180 t
Hours	1,700 h
Kilometer	4,200 km
Year	2017
Location	Germany



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ALL TERRAIN-CRANES

Make / Type	y. o. m.	Drive	Boom / Fly Jib
30 t Faun ATF 30-2L	1999	4x4x4	28,50m
35 t Grove GMK 2035	2000	4x4x4	29,00m
35 t Liebherr LTM 1030-2.1	2010	4x4x4	30,00m + 15,00m
40 t Terex-Demag AC 40 City	2010	6x6x6	31,20m + 13,00m + 1,20 m
40 t Terex-Demag AC 40 City	2008	6x6x6	31,20m + 1,20m
45 t Faun ATF 45-3	2006	6x6x6	34,00m + 15,00m
50 t Terex-Demag AC 50-1	2004	6x6x6	40,00m + 17,60m
50 t Terex-Demag AC 50-1	2003	6x6x6	40,00m
55 t Terex-Demag AC 55 City	2006	6x6x6	40,00m + 13,80m
55 t Liebherr LTM 1055/1	2004	6x6x6	40,00m + 16,00m
55 t Liebherr LTM 1055-3.1	2005	6x6x6	40,00m + 2,00m
55 t Liebherr LTC 1055-3.1	2005	6x6x6	36,00m + 7,20m + 15,00 m
55 t Grove GMK 3055	2004	6x4x6	43,00m
60 t Terex AC 55 L	2008	6x6x6	44,00m + 15,00m
60 t Faun ATF 60-4	2005	8x6x8	40,00m + 16,00m
60 t Faun RTF 60-4	1991	8x6x8	39,00m + 9,80m
60 t Liebherr LTM 1060/2	2004	8x6x8	42,00m + 17,00m
60 t Liebherr LTM 1060/2	2005	8x6x8	42,00m + 17,00m
80 t Terex-Demag AC 80-2	2006	8x8x8	50,00m + 17,60m
80 t Terex-Demag AC 80-2	2007	8x8x8	50,00m + 17,60m
100 t Liebherr LTM 1100-4.1	2004	8x8x8	52,00m + 19,00m
100 t Liebherr LTM 1100/2	2002	10x6x10	52,00m + 19,00m
100 t Terex-Demag AC 100	2005	10x8x8	50,00m + 17,00m
130 t Grove GMK 5130-1	2007	10x8x10	60,00m + 18,00m
160 t Liebherr LTM 1160-5.1	2008	10x8x10	62,00m + 7,00m + 36,00m
160 t Tadano Faun ATF 160G-5	2006	10x8x8	60,00m + 13,20m
200 t Grove GMK 5200	2006	10x8x10	60,00m + 22,00m
200 t Liebherr LTM 1200-5.1	2013	10x6x10	72,00m + 22,00m
350 t Terex-Demag AC 350 SSL	2002	12x8x10	58,00m + 18,10m + 49,10m + 71,50m

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Capacity	Manufacturer	Type	Year	Drive/Steering	Boom/jib (m)	Delivery
450 t	Liebherr	LTM 1450 N	1992	16 x 8 x 14	50 / 61 / 84	direct
400 t	Liebherr	LTM 1400	1988	16 x 8 x 12	50 / 61 / 84	direct
350 t	Demag	AC 350 SSL	2002	12 x 8 x 10	56/18/49/71,5	direct
300 t	Liebherr	LTM 1300/1	2000	12 x 8 x 10	60/21/42/70	direct
200 t	Liebherr	LTM 1200-5.1	2013	10 x 6 x 10	72 / 22	direct
200 t	Grove	GMK 5200	2006	10 x 8 x 10	60 / 22+runn	direct
160 t	Liebherr	LTM 1160-5.1	2008	10 x 8 x 10	62+7 / 36	direct
160 t	Faun	ATF 160 G-5	2006	10 x 8 x 8	60 / 13,2+runn.	direct
160 t	Liebherr	LTM 1160/2	1996	10 x 8 x 10	60 / 22	direct
130 t	Grove	GMK 5130-1	2007	10 x 8 x 10	60 / 18	direct
120 t	Liebherr	LTM 1120	1990	10 x 8 x 8	42 / 17	direct
100 t	Terex-Demag	AC 100-4	2010	8 x 8 x 8	50 / 19	direct
100 t	Liebherr	LTM 1100-5.2	2007	10 x 8 x 10	52 / 33	direct
100 t	Terex-Demag	AC 100	2006	10 x 8 x 8	50	direct
100 t	Terex-Demag	AC 100	2005	10 x 6 x 8	50 / 17	direct
100 t	Grove	GMK 5100	2005	10 x 6 x 10	51 / 18	direct
100 t	Liebherr	LTM 1100-4.1	2005	8 x 8 x 8	52 / 19	direct
100 t	Liebherr	LTM 1100-4.1	2004	8 x 8 x 8	52 / 19	direct
100 t	Liebherr	LTM 1100/2	2002	10 x 8 x 10	52 / 19	direct
100 t	Demag	AC 100	2000	10 x 6 x 8	50,2 / 17	direct
100 t	Demag	AC 265	1989	8 x 8 x 8	37 / 17	direct
90 t	Liebherr	LTM 1090-4.1	2006	8 x 8 x 8	50 / 19	direct
80 t	Terex-Demag	AC 80-2	2007	8 x 8 x 8	50 / 17,6	direct
80 t	Terex-Demag	AC 80-2	2006	8 x 8 x 8	50 / 17,6+runn.	direct
80 t	Terex-Demag	AC 80-2	2004	8 x 8 x 8	50 / 17,6	direct
80 t	Grove	GMK 4080	2001	8 x 6 x 8	43 / 13	direct
70 t	Liebherr	LTM 1070-4.2	2011	8 x 6 x 8	50 / 16	direct
70 t	Liebherr	LTM 1070-4.1	2007	8 x 6 x 8	50 / 16	direct
70 t	Faun	ATF 70-4	2001	8 x 8 x 8	40,5 / 16	direct
60 t	Terex-Demag	AC 55 L	2008	6 x 6 x 6	44 / 15	direct
60 t	Faun	ATF 60-4 (2x)	2005	8 x 6 x 8	40 / 16	direct
60 t	Liebherr	LTM 1060/2	2005	8 x 6 x 8	42 / 17	direct
60 t	Liebherr	LTM 1060/2	2004	8 x 6 x 8	42 / 17	direct
60 t	Liebherr	LTM 1060/2	2003	8 x 6 x 8	42 / 17	direct
60 t	Liebherr	LTM 1060/2	2001	8 x 6 x 8	42 / 17	direct
60 t	Faun	RTF 60-4	1991	8 x 6 x 8	39 / 17	direct
55 t	Terex-Demag	AC 55 City	2006	6 x 6 x 6	40 / 13,8	direct
55 t	Terex-Demag	AC 55 City	2004	6 x 6 x 6	40 / 20,2	June
55 t	Liebherr	LTC 1055-3.1	2005	6 x 6 x 6	36 / 7,2 / 15	direct
55 t	Liebherr	LTM 1055-3.1	2005	6 x 6 x 6	40 / 2,5+runn.	June
55 t	Liebherr	LTM 1055/1	2004	6 x 6 x 6	40 / 16	June
55 t	Grove	GMK 3055	2004	6 x 4 x 6	43	direct
50 t	Terex-Demag	AC 50-1	2007	6 x 6 x 6	40 / 17,6	direct
50 t	Terex-Demag	AC 50-1	2004	6 x 6 x 6	40 / 17,6	direct
50 t	Terex-Demag	AC 50-1	2002	6 x 6 x 6	40	June
45 t	Faun	ATF 45-3	2006	6 x 6 x 8	34 / 15,2	direct
45 t	Liebherr	LTM 1045/1	2006	6 x 6 x 6	34 / 16	direct
45 t	Liebherr	LTM 1045/1	2004	6 x 6 x 6	34 / 16	direct
40 t	Terex-Demag	AC 40-1 City	2010	6 x 6 x 6	31,2 / 13+1,2	direct
40 t	Terex-Demag	AC 40-1 City	2008	6 x 6 x 6	31,2	direct

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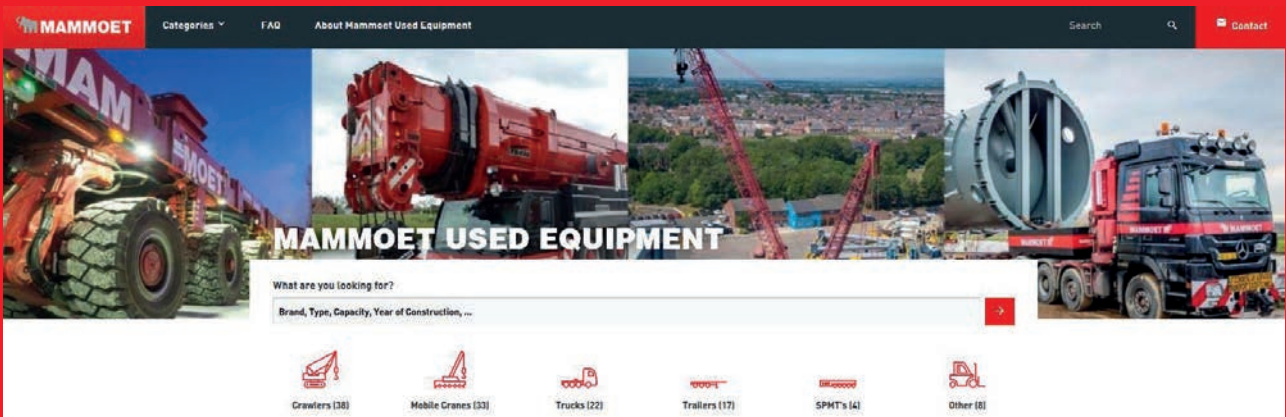


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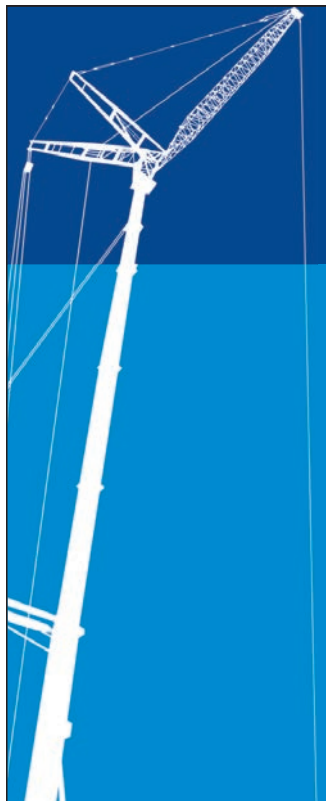
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1x	160 t	Demag AC 160-5	NEW!
1x	200 t	Liebherr LTM 1200-5.1	2016
1x	200 t	Liebherr LTM 1200-5.1	NEW!
1x	220 t	Grove GMK 5220	2014
1x	220 t	Demag AC 220-5	NEW!
1x	250 t	Demag AC 250-5	NEW!
1x	300 t	Grove GMK 6300L	2015
1x	300 t	Demag AC 300-6	NEW!
1x	500 t	Liebherr LTM 1500-8.1	2010

LATTICE BOOM MOBILE CRANES

1x	750 t	Liebherr LG 1750	NEW!
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1x	250 t	Kobelco CKE 2500-2	2008
1x	400 t	Demag CC 2400 SL	2009
1x	500 t	Liebherr LR 1500	NEW!
1x	650 t	Demag CC 3800 SL + boom booster	NEW!
1x	650 t	Demag CC 3800 SL	2015
1x	750 t	Liebherr LR 1750	2010

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1x	40 t	Grove RT 540E CE	2011
1x	55 t	Tadano GR 550XL-2	2013
1x	75 t	Tadano GR 750XL-3	2015
1x	80 t	Terex RT780	2016
2x	100 t	Tadano GR 1000XL-3	2015/2017
1x	120 t	Tadano GR 1200XL-3	2018
1x	160 t	Tadano GR 1600XL-3	2017

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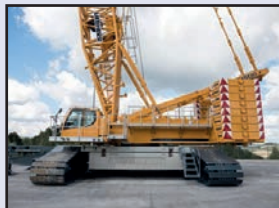
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