

INTERNATIONAL

SEPTEMBER 2013
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cranes

AND SPECIALIZED TRANSPORT

Wire rope

Top Lift preview

TOWER CRANES:

IC Tower Index

IHI towers

On site with
Comansa

ITC preview

THE KNOWLEDGE:

Marco van Daal

Super heavy



Official magazine

THE MAGAZINE FOR EQUIPMENT USERS AND BUYERS

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our two annual tower crane special issues.

It is unusual to get an opportunity to learn about the crane market in Japan so I am particularly pleased to present the in-depth tower crane-related insight with a focus on the large high capacity luffing jib models from manufacturer IHI that appears on page 21. It is contributed by world-renowned tower crane expert Heinz-Gert Kessel.

Continuing with the tower crane theme is the preview of our third International Tower Cranes conference. The news update on page 29 outlines the high quality content and value of attending this unique specialized event dedicated to the tower crane industry. There is still time to arrange your visit to Berlin.

Even the rope feature this month includes a focus on tower cranes in terms of the particular demands in cranes on high rise applications where proper multi-layer spooling at high hoisting speed over long falls of rope is a key factor. While the ropes for such applications are still all made from drawn steel wire, I reckon that you should soon look out for alternatives in the form of largely synthetic fibre ropes using carbon, polyester, aramid, and other fibres, maybe also as part of composite constructions with some steel content. The feature starts on page 45.

Finally, I would like to draw your attention to the annual TopLift contest. The shortlist and voting form, are on pages 16 to 18. Please take the time to return a vote for your favourite lift of the year – by the end of October please. The winner will appear in the December issue of *IC*.

ALEX DAHM

Editor

Correspondence is welcome and should be sent to:
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New to this month's issue is the *IC Tower Crane Index* of the world's largest tower crane-owning companies. It is the first time that this long-established ranking has appeared in the September issue.

In previous years the *IC Tower Index* has been in June alongside the main *IC50 Index* of mobile crane owners. I hope this move further strengthens the ranking and this, the second of

KHL CRANES

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

EVENTS:

WORLD CRANE AND TRANSPORT SUMMIT 2013

INTERNATIONAL TOWER CRANES 2013
www.khl.com/ttc Berlin, Germany, 4-5 November
CONFERENCE & RECEPTION

INTERNATIONAL CRANES & TRANSPORT TURKEY CONFERENCE

ESTA AWARDS OF EXCELLENCE 2014
Amsterdam, The Netherlands 24 April

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ON THE COVER



Huisman from the Netherlands is developing a range of super heavy lift cranes for onshore application. See the full story starting on page 11.

SUBSCRIPTIONS

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MEMBER OF



HIGHLIGHTS

■ Kalmar has announced that it is to relocate the production of rubber-tyred gantry cranes (RTGs) from Cargotec Industries (China), (CICL) Shanghai multi-assembly unit (MAU) to Rainbow-Cargotec Industries (RCI). The decision is part of the joint venture between Cargotec and Jiangsu Rainbow Heavy Industries. The RTG production relocation is planned to be completed by the end of September 2013, a company spokesperson said.

■ Manufacturer of crane scales, tension and compression load cells, Straightpoint, has appointed NTE Projects, a sister company of the Hadi Hammam Group, as its distributor for the Saudi Arabian market. Director of Straightpoint, David Ayling said, "NTE Projects have the relevant expertise, experience, intellectual capital and contacts to promote Straightpoint products effectively. We look forward to working with them in a partnership."

■ USA-based Delta Rigging & Tools has completed the acquisition of Holloway Wire Rope, supplier of wire rope, below-the-hook lifting devices and rigging. The acquisition marks Delta Rigging's expansion into the Oklahoma oil and gas fields, along with broadening its reach into the Midwest markets.

HTC Plant buys Kier cranes

UK tower crane specialist HTC Plant Limited has acquired the crane assets of Kier Plant for an undisclosed sum.

The acquired fleet includes 39 tower cranes, four crawler cranes and four rough terrain cranes. The tower cranes are a mix of Liebherr and Potain with an average age of six years, Duncan Salt, HTC director and general manager, told *IC*. Utilisation at the time of acquisition was around 60 % and all of them will be out on rental by the end of 2013, Salt said.

The crawler fleet is two 70 tonne capacity Sumitomos, an 80 tonne Kobelco and a 120 tonne Sumitomo. All are lattice boom models and the average age is three years. The 35 and



HTC Plant Wolff tower cranes on The Place project in London

55 tonne capacity rough terrain cranes are from Kato and average three years old.

The majority of staff will transfer to HTC under the UK's *Transfer of Undertakings (Protection of Employment) Regulations* (TUPE). Operation

will continue out of the Setchey depot but the business will be fully integrated into the HTC business, Salt said.

The reason given for the 5 August 2013 sale was that Kier wants to focus its attention on its core business.

CAA publishes guidance on crane use

The UK Civil Aviation Authority (CAA) has published guidance on the use of tower cranes in accordance with aviation safety.

The document, *Operating Tower Cranes in the Vicinity of Aerodromes, Notification and En-route Obstacle Lighting* draws on existing rules and regulations regarding aviation safety and includes suggestions

on recommended best practice for crane operators.

It states how operators are required to fit lights to cranes more than 150 metres tall and, when close to aerodromes, smaller cranes may also be required to have a light fitted.

The guidance also states that operators are required to notify aerodromes if they are erecting cranes in their vicinity and that the wider aviation community should be notified when a crane with a height of 91 m or more is installed, a spokesperson added.

Mark Swan, CAA group director of safety and airspace, said, "The vast majority of crane operators are aware of their obligations and work well with the aviation industry to ensure that safety is maintained. However, we wanted to make sure that there is an easy one-stop shop for anyone looking to check what they need to do to help to maintain the UK's excellent

aviation safety record, so we have worked with the building industry to produce this guidance."

■ The document is on the CAA's website: www.caa.co.uk/docs/33/CAP%201096.pdf



PALFINGER SEES MARGINAL RISE DESPITE WEAK EUROPE

Revenue increased slightly in the first half of 2013 for Palfinger, although European markets remained weak.

Revenue stood at a record €475.1 million for the half year, 2.2% more than in the first half of 2012. Earnings before interest and tax (EBIT) amounted to €39.1 million, a 5.2% increase on the €37.2 million recorded during the same period last year.

"We are very pleased with the results recorded in the first six months," commented Herbert Ortner, Palfinger CEO.

The company also sold the first cranes in its Chinese joint venture with Sany during the six months.

"The next steps towards growth will most likely be taken primarily in Brazil and Russia and also in the Marine business area. The establishment of the joint venture in China is also expected to bear first fruit in the course of 2013," said a company spokesperson.

SPARROWS PROFIT INCREASE

Offshore lifting and mechanical handling services company Sparrows UK, has announced increases in profit and turnover for 2012.

EBITDA profit was £20.8 million (US\$3.2 million) with turnover of £188 million (\$294 million). This is compared to profits of £17.5 million (\$27.4 million) in 2011 and a turnover of £172 million (\$269 million). The UK accounts for 53 % of total turnover.

Doug Sedge, Sparrows chief executive officer, said, "In 2012 we won new contracts, we secured a new investor and carried out a major restructure of the business. These achievements have paved the way for an even more successful year in 2013."

An 80 tonne Tadano Faun ATF80-4 was recently used to help erect a dome in a church in Amman, Jordan. Many of the churches in Amman were built during the days of the Roman Empire. The church pictured is the newly constructed Catholic church in Marka. Tasks for the Tadano Faun ATF80-4 included replacing the dome of the church and the cross on top of the tower. Because of power lines at the site, the crane was configured with its full boom of 48 metres.



Record revenue boosts Manitex

Crane manufacturer Manitex International posted record net sales of US\$ 62.6 million and record net income of US\$ 2.7 million for the second quarter of 2013.

The USA-based firm posted a 19.2 % increase in net revenue, up from \$ 52.5 million in the second quarter 2012, and up 5 % on Q1, 2013 figures, where revenue was \$59.6 million. Net income was up 15 % to \$2.7 million, compared with \$2.3 million for the same period in 2012.

The quarter also saw Manitex complete the acquisition of Sabre Manufacturing, an Indiana-based manufacturer of specialized trailer tanks for liquid and solid storage, and containment solutions. The

purchase price was \$14 million.

David Langevin, chairman and CEO, commented, "The record sales and profits we recorded in the second quarter results demonstrates continued execution of our niche product strategy.

"The primary driver of our growth remains our crane business. And as we recently reported, we believe that our new 70 ton crane product will have a significant impact for us in the future. Along with the potential benefit from the acquisition of Sabre, we should turn in good results for the year and put us on sound footing going into 2014."

Langevin forecasts another record year for revenue, EBITDA and earnings per share.

First Palfinger Sany Cranes go to Russia

Rustechcenter, a dealer of Sany drilling rigs, has taken delivery of the first Palfinger Sany mobile cranes to be distributed in Russia.

The mobile cranes were delivered to Rustechcenter in July. The models included the 25 tonne capacity QY25C truck crane and the 50 tonne capacity QY50C. The event was attended by representatives from Palfinger Sany Cranes LLC, Rustechcenter, Siemens Finance and M-Leasing.

So far two of the 25 tonne

capacity QY25C truck cranes have been delivered to rental company Stank Company, in Krasnodar, Russia. A third QY25C has been delivered to construction contractor Balmat Company, in Saratov, Russia, a company spokesperson added.

FROM LEFT TO RIGHT: Nikolay Sukhanov and Dmitry Sanchenko (Palfinger Sany); Natalia Ten and Vladimir Melnichuk (Siemens Finance); Murad Khadzimurevov (Rustechcenter), Yury Gorpnich (Palfinger Sany); Valeriy Ermolaev, Ukrainets Viktor Mikhailovich and Roman Kornev (Rustechcenter)



HIGHLIGHT

■ Subsea solutions company Huisman has opened an office in Bergen, Norway. The new office, Huisman Norge, is a 100 per cent subsidiary of Huisman, a company spokesperson said. This is the first Huisman office in Scandinavia. The new office is headed by Geir Bjørkeli. Speaking on the office Bjørkeli said, "Bergen is the perfect location to serve the Norwegian market, as it is one of the most complex maritime clusters in the world and has a strong position in the global maritime market."

■ Southern Peru Copper Corporation, Peru, has purchased a Zoomlion RT55 though dealer Energoteq. The crane was sold by Global Cranes & Machinery, an international distributor of Zoomlion cranes. The Zoomlion RT55 has a lifting capacity of 55 tonnes. Five models of the rough terrain are available, with lifting capacities ranging from 35 to 100 tonnes.

■ A Unic URW-706 mini crane from GGR Group has installed glass panels at the £60 million (US\$90 million) First Direct Arena in Leeds, UK. The 20 glass panels weigh 200 kg each and make up a honeycomb design. A vacuum lifting attachment was used to install the panels. It took four days to carry out the job.

New Hiab loader crane generation

Hiab, part of Cargotec, has launched a new generation of loader cranes as part of its 70th Anniversary celebrations.

The X Series has four new models, the X-CLX 178, the X-DUO 178, the X-HIDUO 188 and the X-HIPRO 192.

The cranes have a faster boom extension system, which is said to be almost twice as

fast as its predecessor, the Hiab XS 166.

They also have increased lifting capacity, improved precision handling, safer and easy to use stabiliser legs and a new joystick control. The cranes were developed with input from customers and end users.

Hiab's President Axel



Leijonhufvud said, "With the launch of the X-series we will be writing a new chapter in the history of Hiab and I'm fully convinced that we will be setting a new standard for

future loader cranes."

The new loader cranes will replace the existing Hiab XS 166. They will be available on the global market during autumn 2013.



Sandy rebuilding continues

Marine contracting company Albert Marine Construction from the USA has been using a Manitowoc 8500-1 crawler crane to help repair damage caused by *Hurricane Sandy*.

One of the projects for the 85 US ton (77 tonne) capacity lattice boom crawler crane included rebuilding the Lavallette Boardwalk along the Jersey Shore.

The crawler was chosen because of its compact footprint and ability to navigate near the water 9

metres from the job site, a spokesperson said.

The crawler was used to prepare foundations for the new boardwalk. Work included lifting an 8 tonne diesel hammer with a piling lead and driving 1,200 wooden pilings 7.6 m long into the sand.

"The Manitowoc 8500-1 is incredibly versatile, which was a necessity for this job. The hydraulic system on the crane makes it simple to adjust the width of its tracks,

greatly increasing stability," Bob Albert, owner of Albert Marine Construction added.

"Because the crane needed to move up and down the beach when placing the pilings, this could have been a really time-consuming project," Izzi Albert, owner of Albert Marine Construction explained. "However, with the Manitowoc 8500-1's removable counterweight system, assembling and disassembling the crane takes only two hours."

OBITUARY: BROCK SETTLEMIER

IC regrets to announce the death of Brock Settlemier, 79, former Owner, President and CEO of Bigge Crane and Rigging Company, San Leandro, California, USA.

In the statement released by the Specialized Carriers & Rigging Association (SC&RA) it was said that Brock Settlemier died peacefully at his home on the evening of 1 August, surrounded by his family.

In 1957 Settlemier married his college sweetheart, Marlene Bigge and after two years of service in the US Army, Settlemier joined Bigge Crane and Rigging Company in 1958. He purchased the company in 1980. During 40 years at Bigge, he grew the company into a worldwide player in nuclear power construction, heavy crane rental, power generation and heavy lift rigging.

Over two decades he managed major heavy lift rigging projects in more than 30 countries and won numerous SC&RA Rigging Job of the Year awards. In 2003, Settlemier received SC&RA's most prestigious honour, the Golden Achievement Award, for outstanding lifetime accomplishments. He was also active in the Crane Owners Association, the Beavers and the Associated General Contractors of America.

In lieu of flowers, the family requests that donations be made to The Brock R Settlemier Memorial Fund for Rugby, payable to UC Berkeley Foundation.

Mega move from Allstone

Self propelled modular transporter (SPMT) from Tianjie Heavy Industries (parent company of Shanghai Fulangjie Import & Export) has been used to transport material for the Hong Kong-Zhuhai-Macao Bridge.

In total 60 axle lines of TJ-S2.43 SPMT was used to roll a mega steel structure onto a barge. Heavy transport company Allstone, China, handled the Tianjie SPMT transport operation.

The mega steel structure has

a dead weight of 1,750 tonnes and is shaped in a figure 8. It is 90 metres long, 43 m wide and 8.7 m high. Complete with cargo and load spreading beams the transport weighed 2,045 tonnes.

The 60 lines of SPMT were split into 10 individual units, with 34.1 tonnes of gross load on each axle line. The capacity of each axle line is 40 tonnes.

Around 180 lines of TJ-S2.43 SPMT will be at work on the project until the end of 2013.





Safety and efficiency at World Crane and Transport Summit

High quality information and other tools to help you run your lifting and specialized transport business more safely and efficiently top the agenda at the 2013 World Crane and Transport Summit.

Topics include an economic forecast and outline of the economic picture for the construction industry. Speakers include Ron Montgomery, SC&RA president and president at International Rigging & Heavy Haul, and Tim Ford, Terex Cranes president. David Collett, ESTA president and Collett Transport managing director, will present a European perspective on harmonising standards.

Another highlight will be the presentation *Driving safety*

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to new levels – a client's view, by Leon Schopping, from the Netherlands.

On the transport side, Marco van Daal, The Works International owner, will talk about common causes and prevention of accidents. Klaus Meissner, FEM section president, and Søren Jansen, ESTA director, will discuss the root causes of mobile crane accidents and how to reduce them.

■ For more information see www.khl.com/wcts

IPAD ISSUE NEWS

A free tablet edition of the September issue of *International Cranes and Specialized Transport* magazine is now available. The tablet version can be downloaded through the Apple News Stand on iPads or through the Pocketmags app. Other magazines from publisher KHL available as tablet editions include *American Cranes & Transport*, *International Construction* and *Construction Europe*.



HIGHLIGHT

Specialized trailer manufacturer Goldhofer will begin production of the new STZ-MPA semi-trailer generation following successful tests of its independent suspension system. The MPA Axle Technology system comprises one wheel carrier, strut and suspension arm.

The first shipments of the new trailer are scheduled before the end of 2013. Look out for more on this in an upcoming issue of *IC*.

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Into the ringer

Entering the super heavy lift crane arena is a new range from Huisman – the Compact Ringer Crane. ALEX DAHM reports on the seven-model CRC range of ring-based cranes in ratings from 50,000 to 240,000 tonne-metres for onshore application

Specialist in lifting, drilling and subsea solutions Huisman Equipment and fellow Dutch company Re-Move are preparing to enter the super heavy lift crane arena with a new range of ring-based units for use on land.

Under an initial proposal Huisman's Compact Ringer Crane (CRC) series will be available in seven models with ratings from 50,000 to 240,000 tonne-metres and from 2,400 to 4,800 tonnes capacity. Applications will include petrochemical plant vessel installation, power plant construction and module construction for the offshore industry.

Huisman, established in 1929, has its roots in crane design and manufacturing. It is well-known for its heavy lift offshore units, widely used in the oil and gas industry, a sector for which the company also caters with pipelay systems, drill equipment and integrated vessel designs.

For Huisman's first super heavy lift foray on land, it has engaged Re-Move, headed by Jan van Seumeren Junior, John Casteleijn, Bert Timmer and Peter Bon, as a worldwide

The ringer concept is well established for super heavy lifters



sales agent for CRC, David Roodenburg, Huisman senior business development manager, told IC.

Huisman has a long association with the van Seumeren family. Jan van Seumeren Junior said he forecasts a focus in demand around the CRC 150-3600 and CRC 180-4800, which are the 150,000 and 180,000 tonne-metre, 3,600 and 4,800 tonne capacity models in the middle of the range.

Fixed and adjustable jibs will be available. Capacity will be the same on main boom and with the fixed jib while on the adjustable jib it goes from 1,200 tonnes on the smallest model up to 2,400 tonnes on the largest.

Described as lightweight and compact, the new cranes are designed by Bert Schouten at Huisman. High tensile (960 MPa) steel will be used in

the boom to save weight. The ring concept is well-proven and compact for the super heavy lifting capacity class. To use a conventional crawler crane would need a four times bigger footprint, van Seumeren said. A disadvantage of ring cranes – that they cannot travel with load –



The new Huisman cranes will be sold worldwide by Re-Move



The winches in their frames form part of the CRC crane structure

is rarely an issue as in 90 % of cases, this feature is not required, van Seumeren said.

Large scale

A primary feature of the CRC is its scalable modular design. Components, including boom and jib sections, ring parts, winches and more are transferrable from one size crane to another. Adding more of the same parts allows the larger cranes to be built. By buying the largest crane, a customer can also build the smaller cranes, with just the addition of some different radius parts for smaller diameter rings. The same winches are used for the main hoist, boom and auxiliary (250 tonne capacity) hoists.

Light and heavy type single and double chord boom sections are used. To increase capacity the sections can be doubled up by pinning on an extra chord top and bottom. This applies to the main boom, the back mast and the jib sections. For most configurations the CRC can erect itself, van Seumeren said.

A single ring is used for the 2,400 tonne capacity units up to 100,000 tonne-metres. For the 3,600 and 4,800 tonne models there is a double ring and a total of four ring diameters are used across the whole range. Rings range from 23 to 48 m in diameter and are in 8 to 14 segments. Two types of spreader board are used across the range and the ground bearing pressure is typically 20 tonnes per square metre while on the largest model this can be up to 30 tonnes per square metre.

The main boom and the back mast are

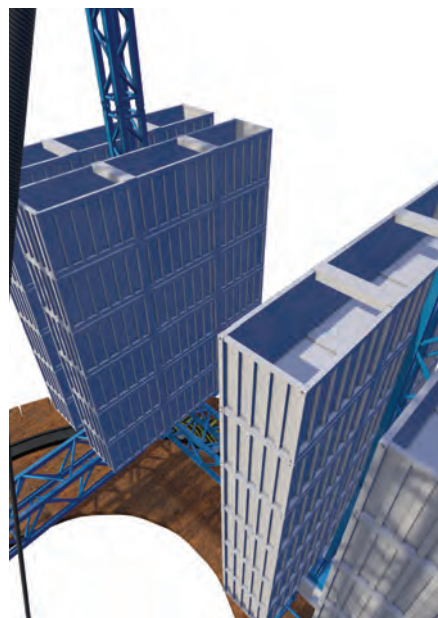
The main ballast consists of between 24 and 48 specially reinforced containers, each weighing 100 tonnes, filled with locally sourced material



supported directly on the front bogies and the ballast containers bear directly on the rear ones. The same bogies work across the range and can also be set to run in a straight line. Bogies and spreader boards can be shipped in flat rack containers.

All of the components can be transported inside shipping containers. Boom sections can be left pinned together as monoblocks or dismantled for shipment on flat rack or open top containers. The winch drums, spooled with all their wire rope, are lifted out of their frames for transport. The frames are the dimensions for a standard 20 foot shipping container. It is up to the customer to decide if they want to transport by container or not. Most components can be shipped as 20 or 40 foot container size loads.

Ballast required increases from 2,400 tonnes on the smallest models, thru 3,600 tonnes in the mid-range, to 4,800 tonnes on the largest models. For the main ballast



The CRC has a single ring up to 100,000 tonne-metres and then it switches to two rings. The tracks for the rings can be transported on flat rack containers

between 24 and 48 specially reinforced containers can be filled with locally sourced sand, rock or steel, according to what is available.

Electrical power

A departure from convention on such cranes is that the CRC will be 100 % electrically powered, driven by AC motors. Power can either be from the local grid or supplied by on site generators. It will avoid the emerging problem of engines on the crane being needed to run on low sulphur diesel in some markets but there being no cross-market compatibility (For a comprehensive

explanation of this problem see *IC* March 2013, page 57). Where the local mains electrical power is insufficient, generators will be used that conform to local regulations and fuel type requirements. Greater efficiency and lower power consumption are two more claimed benefits of electric drives. Others include cleaner and neater installation and operation.

Optimisation is a key feature. The winches are incorporated as part of the structure and not just separate elements added to it with unnecessary extra weight of additional structure. An analogy can be drawn with Colin Chapman's approach at Lotus Cars where the idea was to "add lightness" (i.e. reduce weight) by making each component serve as many functions as possible and then to reduce the weight of those pieces as far as practical without compromising strength.

Get updates on this story at www.khl.com and in *IC*.

The same bogies can be used for all sizes of the CRC crane. Between 64 and 128 bogie wheels are used



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Cranes buck the trend

IC's Share Index for a basket of 12 crane manufacturers enjoyed a 3.94% rise in August. Although not a spectacular increase, the same period from week 30 to 34 saw many of the most-watched mainstream market indicators lose ground.

As regular readers of this column will realise, this was very much against the run of play that has been seen so far this year. To date, 2013 has been characterised by the mainstream benchmarks charging ahead, while weakness among Chinese manufacturers has seen the crane sector left behind.

Mainstream falls

But last month gains for the crane sector were contrasted by a 3.82 % fall in the Dow and a 2.46 % drop in the FTSE 100 index, while the Nikkei 225 was flat overall.

To put these losses in context, all three indices have had a remarkable time of it in 2013. The Dow, for example, hit a new record high in March

and has been above the 15,000-point mark for much of the time since early May. Indeed, a new high of 15,658 points was set in early August, before the tail-off towards the end of the month.

Another side

In contrast, the *IC* Share Index was down 14.51 % for the year to the end of August, with those losses coming mainly from China. Indeed, the Legacy *IC* Share Index, an older measure of the sector which excludes Chinese manufacturers, was up 11.51 % over the same period – more or less the same level of growth

as seen by the Dow.

As has previously been discussed in this column, the Dow's and other's remarkable performance this year has been somewhat artificial. Growth has not been due to the normal stock market drivers of corporate profitability and economic growth. Rather, it has been a case of investors looking for a relatively safe haven at a time when gold has lost some of its shine and bond yields are weak.

What changed in August was that bond yields started to recover, which has seen some money go out of equities and back into debt instruments. ■

Crane manufacturers' shares enjoyed modest growth in August, despite a decline on the wider markets.
CHRIS SLEIGHT
reports

AUGUST IC SHARE INDEX

STOCK	CURRENCY	PRICE AT START	PRICE AT END	CHANGE	% CHANGE	PRICE 12 MTHS AGO	12 MTH % CHANGE
IC Share Index*		54.63	56.54	1.91	3.49	57.64	-1.90
Legacy IC Share Index**		333.20	344.14	10.94	3.28	232.23	48.19
Dow Jones Industrial Average		15559	14964	-595.09	-3.82	13157.74	13.73
FTSE 100		6596	6433	-162.53	-2.46	5765.12	11.59
Nikkei 225		13661	13661	-0.58	0.00	9033.29	51.22
Hitachi Construction Machinery	YEN	2037	1997	-40	-1.96	1374	45.34
Konecranes	€	22.95	24.18	1.23	5.36	20.29	19.17
Kobe Steel	YEN	145	161	16	11.03	63	155.56
Liugong	CNY	6.08	6.12	0.04	0.66	8.72	-29.82
Manitowoc	US\$	19.11	21.17	2.06	10.78	12.57	68.42
Palfinger	€	23.70	25.50	1.80	7.57	17.54	45.35
Sany Heavy Industry	CNY	6.84	7.08	0.24	3.51	10.85	-34.75
Tadano	YEN	1383	1440	57	4.12	549	162.30
Terex	US\$	28.49	30.97	2.48	8.70	20.28	52.71
XCMG	CNY	7.35	7.75	0.40	5.44	11.14	-30.43
Yongmao Holding	SGD	0.17	0.21	0.04	24.24	0.10	99.03
Zoomlion	CNY	5.01	5.17	0.16	3.19	8.12	-36.33

*IC Share Index, 1 Jan 2011 = 100

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

The Dow's and other's remarkable performance this year has been somewhat artificial.

EXCHANGE RATES – US\$

CURRENCY	VALUE AT START	VALUE AT END	CHANGE	% CHANGE	VALUE 12 MTHS AGO	12 MTH % CHANGE
CNY	6.1346	6.1214	-0.0132	-0.22	6.3582	-3.72
€	0.6501	0.7496	0.0995	15.30	0.6338	18.27
Yen	97.97	98.93	0.96	0.98	78.52	25.99
UK£	0.7537	0.7496	-0.0040	-0.54	0.8010	-6.42

Period: Week 30 – 34

ENTRY 1

Building bridges

EQUIPMENT USER: Riga Mainz

LIFTING EQUIPMENT USED: Lattice boom crawler crane

LOCATION: Germany

Lifting services specialist Riga Mainz lifted a steel bridge over the A6 freeway in Germany. The 265 tonne bridge was 70 metres long. A 500 tonne capacity Terex CC 2500-1 lattice boom crawler crane was used to carry out the lift. The crane was assembled with a 54 m main boom, 30 m superlift mast and a 200 tonne superlift counterweight.



Rising to the

This year's entries for the *IC Top Lift 2013* competition include a range of impressive lifts that were carried out in challenging environments. Readers are asked to pick their favourite from our selection of 10 outstanding lifting

ENTRY 3

Power tower

EQUIPMENT USER: XCMG

LIFTING EQUIPMENT USED: Crawler crane

LOCATION: China

An XCMG model XGC88000 4,000 tonne capacity level crawler crane was used to lift a propylene tower weighing 1,680 tonnes in Yantai, at the Wanhua Industrial Park, China. The tower measured 118 m tall and 14.4 m wide. The XGC88000 had an 108 m heavy boom and 33 m fixed jib. A 1,000 tonne XGW1100 was for tailing.



ENTRY 2

Identical lifting

EQUIPMENT USER: Schmidbauer

LIFTING EQUIPMENT USED: Crawler crane

LOCATION: Germany

German crane and transport contractor Schmidbauer co-ordinated a 600 tonne lift of an upper section of a jacket structure for the Borkum West II offshore wind park. The lift was carried out at the ABC-Halbinsel offshore terminal in Bremerhaven, Germany using two 750 tonne capacity Liebherr LR 1750 crawler cranes.



ENTRY 4

Working giant

EQUIPMENT USER: Sarens

LIFTING EQUIPMENT USED: Super heavy lift ring crane

LOCATION: China

The 3,200 tonne capacity Sarens SGC-120 super heavy lift ring crane named *Big Benny* was used to carry out a 1,300 tonne lift at the Cosco Qidong shipyard on the Yellow Sea Coast, Shanghai, China. The components from the Octabuoy offshore platform were lifted at 30 metres radius.



ENTRY 5

Coastal conditions

EQUIPMENT USER: Sonamet

LIFTING EQUIPMENT USED: Crawler crane

LOCATION: Angola

A Manitowoc 18000 and a Manitowoc 16000, along with a third support crane, were used to lift a main deck from an offshore rig weighing 550 tons (498 tonnes) at a specialized fabrication yard in Lobito, Angola. The cranes are owned by yard operator Sonamet, a joint venture between Subsea 7 and Sonangol.



challenge

projects carried out over the last 12 months. To register your vote, please complete and return the form on page 18. Alternatively a form is available online at: www.khl.com.

ENTRY 6

Tandem lifting

EQUIPMENT USER: Tiong Woon

LIFTING EQUIPMENT USED: Lattice boom crawler

LOCATION: Singapore

Crane rental company Tiong Woon in Singapore used a 1,600 tonne capacity Terex CC 8800-1 lattice boom crawler crane and a 2,400 tonne capacity, 120 m tall tower lift system in tandem to lift a xylene splitter column weighing 1,147 tonnes. The lift was carried out at Jurong Aromatics Corporation's (JAC) complex at Jurong Island, Singapore.



ENTRY 9



US super launch

EQUIPMENT USER: Mammoet

LIFTING EQUIPMENT USED: Super heavy lift crane

LOCATION: Gulf of Mexico

A Mammoet PTC 140 DS with a capacity of 3,200 tonnes lifted the first spar section for a new offshore platform going to the Gulf of Mexico. The piece weighed 816 tonnes and was lifted at a radius of 69 m. Gulf Marine Fabricators (GMF) was the main contractor for the project.



ENTRY 7

Confined spaces

EQUIPMENT USER: Felbermayr

LIFTING EQUIPMENT USED: All terrain cranes

LOCATION: Slovenia

Crane service provider, Felbermayr, lifted two large pipes inside the Šoštanj power plant, Slovenia using a Terex AC 1000, from crane rental company Wasel and a 500 tonne assist crane. The AC 1000 had a counterweight of 108 tonnes. The pipes were raised to heights of 78 m.

ENTRY 10



ENTRY 8

Brewery vessels

EQUIPMENT USER: CPL Transport Services

LIFTING EQUIPMENT USED: Mobile crane

LOCATION: UK

A 250 tonne capacity LTM 1250 Liebherr crane and a 200 tonne Liebherr crane lifted brewery vessels in tandem off a ship at Salford Quays, Manchester, UK. The vessels weighed 33 tonnes each and measured 28.5 m long and 6 m wide. The vessels were part of a refurbishment project at The Royal Brewery in Manchester, UK.



Lifeboat lifting

EQUIPMENT USER: BKL

LIFTING EQUIPMENT USED: Telescopic mobile crane

LOCATION: Germany

German crane rental house BKL used a pair of Liebherr wheeled mobile cranes to move a 1950's lifeboat onto a new foundation at a museum in Munich. The lift was performed in tandem by an LTM 1200-5.1 and an LTM 1250-6.1. A total weight of around 62 tonnes was moved.

TopLift 2013 voting form

ENTRY 1 

Building bridges

EQUIPMENT USER:
Riga Mainz



Select your favourite lift from this year's entries by ticking *one* of the entry boxes and then fax, post or e-mail your entry with your full name and address details as requested at the bottom of this page

ENTRY 2 

Identical lifting

EQUIPMENT USER:
Schmidbauer



ENTRY 5 

Coastal conditions

EQUIPMENT USER:
Sonamet



ENTRY 8 

Brewery vessels

EQUIPMENT USER:
CPL Transport Services



ENTRY 3 

Power tower

EQUIPMENT USER:
XCMG



ENTRY 6 

Tandem lifting

EQUIPMENT USER:
Tiong Woon



ENTRY 9 

US super launch

EQUIPMENT USER:
Mammoet



ENTRY 4 

Working giant

EQUIPMENT USER:
Sarens



ENTRY 7 

Confined spaces

EQUIPMENT USER:
Felbermayr



ENTRY 10 

Lifeboat lifting

EQUIPMENT USER:
BKL



YOUR DETAILS

Your name: _____

Company name: _____

Country in which you are based: _____

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POST: TOPLIFT 2013

International Cranes and Specialized Transport

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East Sussex TN5 6TP, UK

NOTE: To ensure a fair competition all entry forms must be completed in full. Employees of the companies entered in TopLift 2013 are *NOT* eligible to vote.

CLOSING DATE FOR ENTRIES: THURSDAY 31 OCTOBER 2013

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Tailored solution

Japan's IHI uses experience gained from a long history to offer customised jib cranes that are individually designed and manufactured to address the requirements of each customer. HEINZ-GERT KESSEL reports

Most people outside Japan in the crane industry probably know IHI as a manufacturer of crawler cranes, port and shipyard lifting equipment. However tower cranes are also part of its crane range.

IHI Corporation, formerly known as Ishikawajima-Harima Heavy Industries, is one of the larger heavy industries groups in Japan. Its material handling systems range from general purpose industrial cranes like overhead and jib cranes, ship to shore cranes and construction cranes, to bulk handling systems for the power and steel industries.

The development of climbing tower cranes for high-rise construction can be traced back to 1966. That was when the first two Kure KTK-200W floor climbing



KTK climbing crane veterans of the first generation are still in use on shipyards for outfitting duty. Pictured is a KTK-600W, with 40 tonnes capacity at 20 m radius on a travelling portal undercarriage, and one KTK-180W, which lifts 12 tonnes at 20 m radius. Both are working in Kure

cranes were used to raise the 147 metre Kasumigaseki Building in Tokyo. A patented climbing system, of jacking the machinery platform of the crane alongside the new crane mast sections being inserted through the slewing ring, became a characteristic basic design feature for nearly all Japanese climbing cranes.

Particulars

Tower crane applications in Japan have specific requirements. An example is high wind resistance of up to 55 m/sec to withstand typhoons. Another is strict safety requirements concerning earthquake resistance. A luffing boom design is used to cope with neighbourhood oversailing

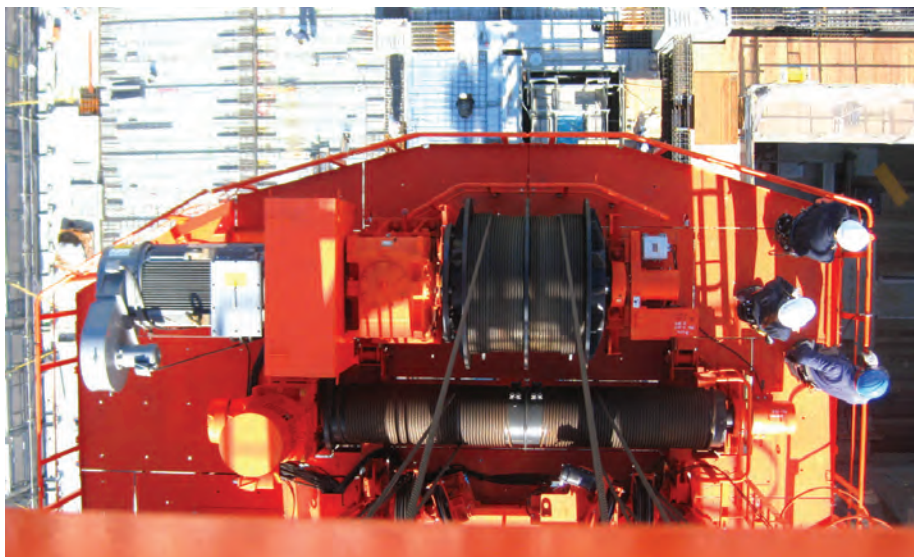
JCC-V240S climbing cranes with 4.7 tonnes capacity at 35.5 m radius working in Tokyo on an apartment building project. The climbing system can be transferred on site from external to internal without any component changes

restrictions and there is a move to raise efficiency of construction machines by using sophisticated control systems. Combining all the above has led to development of a specialized breed of rigid and high technology construction climbing cranes for the domestic market.

In 1963 building height restriction permits were opened up in Tokyo, which meant the development of a high rise building construction industry in Japan where KTK (Kure Tower Crane) internal climbing cranes found a ready market. When the crane manufacturing division of Kure Shipbuilding & Engineering was integrated into IHI in 1968, these floor climbing construction tower crane were known as JCC (jib climbing cranes) series cranes. Capacity was increased over the years from 200 tonne-metres in 1966 to 70 tonnes capacity and 1,500 tonne-metre units in 1990.

Outside Japan tower crane





View from the A-frame head on the machinery deck of the JCC-700K, showing the typical tandem drum design of the large hoisting winch behind the luffing winch

manufacturing has become a more and more modular series production process, with runs of generally at least 10 similar units. These are designed to meet, as closely as is reasonably possible, a universal set of rental company requirements. Tower crane production in Japan, however, differs significantly. Annual production at IHI is between about 10 and 30 cranes. The company's Yasuura Works delivers around 70 to 80 % of all climbing cranes manufactured in Japan.

While many climbing cranes were supplied during the "bubble economy" era in Japan, the market has shrunk since the early 1990s. Rising popularity of prefabricated units and steel structures being used for high rise building construction has made the 500 to 700 tonne-metre capacity class the best seller, according to Ito Tadashi, IHI overseas sales department manager. For apartment building projects, where there is more work with precast concrete elements, the

300 tonne-metre class crane is in demand. For 2013 IHI secured contracts of 12 new units and, during IC's visit in February, three cranes were in fabrication while a new prototype in the 500 tonne-metre class was on the test pad.

Market variation

In contrast to Europe, where tower rental crane companies are dominating the market, in Japan many cranes are designed in close relationship with the customer.

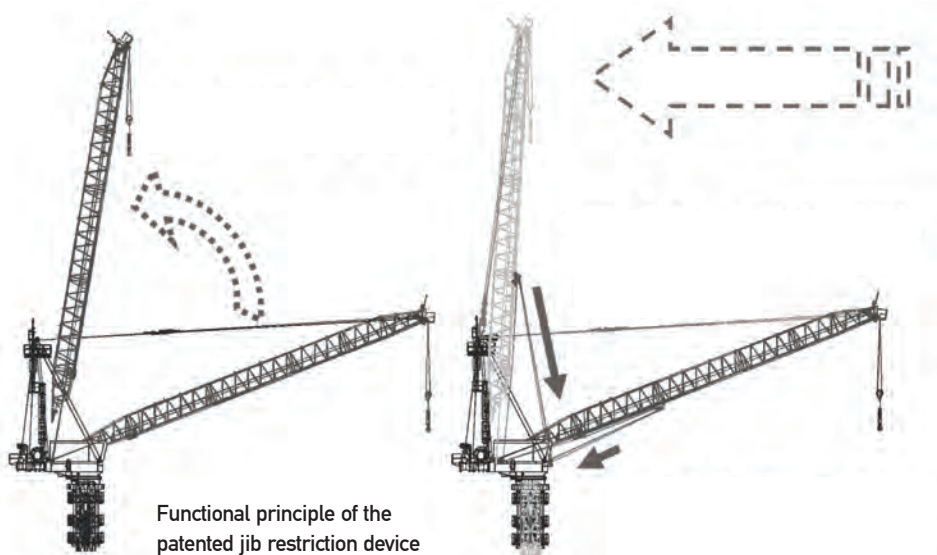
A remarkable improvement of the JCC series cranes was the 1969 introduction of a safe, easy and fast hydraulic climbing system. It was for the JCC200H and followed the tricky conventional wire rope operated climbing mechanism used until then. In addition, the constant 4 line fall operation mode became standard. That meant no risk of the hook rope twisting due to a tandem hoisting drum where one hook rope is stored as S-laid on one drum and the other being Z-laid. The hoisting motor



On the prestigious Tokyo Skytree Tower project customised JCC-V720AH cranes worked under extraordinary site conditions. Note the large floating sheave blocks and the ropes leading to the sheave platform under the boom base section for the jib restriction device

operates both drums' ropes so the speed is doubled, unlike on conventional European-designed tower cranes.

A further milestone in reducing overall construction times is the JCC-V series introduced by IHI in 2000. Major improvements included reducing the crane component by 13 to 17 %; speeding up the erection procedure by using more pin connections; extending the free standing tower height from 30 to 45 m; fitting a patented floating sheave block (FSB) for optimum accuracy level luffing and minimising load sway. Inverter-controlled



Functional principle of the patented jib restriction device



Inside the cabin of the JCC-V700 is the large monitor for the hook camera on the right side

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TS series



Features of Sheave block of TS

Comparison of the floating sheave block of the JCC-V and the new JCC-TS series



The JCC-V60SK helping to dismantle a JCC-V190SK disassembly crane. On the JCC-V190SK the blue rigging frame is fitted at the boom foot section to lower the A-frame by its own means



The first JCC-TS500 fully rigged to its maximum free standing height on the IHI test ground in Yasuura, Japan

drives for all movements, a monitoring system with touch sensitive display, and an internet-based remote maintenance function add to the versatility of the JCC-V series cranes.

At work

In 2009 IHI supplied three JCC-V720AH climbing cranes and one JCC-V600 for the 634 m high Skytree Tower project in Tokyo. The project pushed the borders of crane design. The appendix AH stands for Advanced and High Lift, indicating the custom-designed extra features for this spectacular ultra-high climbing crane application in Japan. Offering a capacity of 32 tonnes at 22.5 m radius, a hook height of 420 m can be achieved at 30 m/min under full load.

Where the cranes had to operate at extreme height they were proved to withstand 100 m/s wind speed with a mast system 15 % more rigid than the standard type. In addition, the cranes had to be installed close to one another. Booms had to be stored at a steep angle in the out of service position. A patented jib restriction device, made up of a second luffing winch, held back the jib acting against the main luffing winch. Using the Slewing Assist Function (SAF) the cranes were synchronised and moved by on board computer systems in the out of service condition to orientate all the jibs in the same direction following changing wind directions. A GPS-based three dimensional collision-avoidance system was also used.

Getting better

To increase productivity, Japanese construction companies are continuing to make further improvements in crane design. At the end of 2012, for example, IHI announced the JCC-TS (Time Shortening of Construction) series.

The first example of this new series of climbing jib cranes, is the JCC-TS500 with a capacity of 20 tonnes up to 26.5 m radius



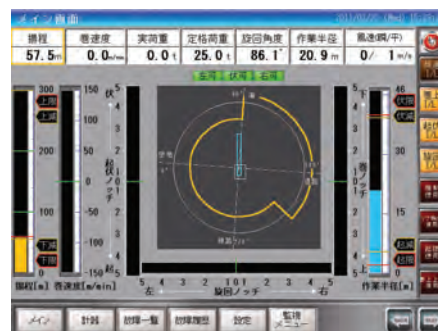
and with a tip load of 10.5 tonnes at 42 m outreach. The main improvements on the TS series JCC-TS500 include a simplified floating sheave block design to allow simple rope reeving and a 1.90 x 1.90 m mast system, which allows the mast sections to be climbed through the turntable.

Maximum free standing height has also been extended to 51 m and a second hydraulic pump will be used during the climbing procedure to double the speed of retracting the hydraulic ram when it is not loaded.

The already short floor climbing time of Japanese tower cranes is also reduced further. On the TS-series the crane upper will rest on outriggers while the whole crane, including mast, will be jacked through the climbing cage at the crane base section to allow floor climbing in one climbing process instead of two. The same mast sections are used for internal and external climbing as the ratio of external and floor climbing application in Japan is still 1:2.

The tail radius of the machinery deck has also been reduced to 7.10 m to cope with restricted construction sites.

A mechanical device for detecting the sway angle of a suspended load is mounted at the boom head to allow a sensor-based



In the new crane generation a one touch panel centralises the monitoring of all crane operating and maintenance information. The screen shows details for the collision avoidance system



A new 6 m tower section under fabrication shows the bolt holes where the lock pins of the climbing unit are inserted

sway control system to be fitted. There is also a control system for vibration suppression and shock free load positioning in accordance with the length of the hoist line and a control system for tandem lifting operations. This synchronized crane control avoids side pull on the load which may be caused by the long distance between operator and load.

Auto-tracking cameras and a remote monitoring system have also been added



Customers can specify a larger cabin unit with a separate WC

and information and machinery dates are displayed on one large touch panel screen to assist the crane driver.

The two first JCC-TS500s will be tested under construction job conditions by the end of 2013. A smaller model, the 15 tonne capacity JCC-TS300 and a bigger model, the 25 tonne TC-700, will complete the new series. Both will follow similar design principles to the existing models.

Unique units

The preference for floor climbing tower cranes has led to the development of specialized roof mounted assist cranes to bring down the climbing crane after topping out. IHI offers three sizes of disassembly cranes that can be combined to bring down even the largest JCC-V series IHI climbing crane. The largest unit is the JCC-V190SK with a lifting capacity of 16 tonnes at 12 m radius. The smallest is the JCC-V10SK, which handles 1 tonne at 10 m radius.

Unique to IHI disassembly cranes is their climbing mechanism. A small crane mast can be inserted through the machinery deck by the crane itself and the upper crane can be jacked alongside this short tower. The resulting extra height of the luffing jib crane is a benefit when optimising the hook height to reach the A-frame of the floor climbing crane that is being dismantled. A result means the boom foot of the JCC-V190SK will be raised to 13.4 m above the building roof.

To reduce the required under hook height for an assist crane to remove the JCC-V190SK, a special rigging frame can be connected with the base boom section. By operating the luffing rope connected



The small JCC-V10SK dismantling crane on the test ground in Yasuura. Note the inserted pin-connected tower raising the upper crane above the slewing unit for extra under hook height

to the rigging frame, the A-frame can be raised or folded by the crane itself. In addition, because roof space is often restricted, IHI disassembling cranes can have a folding boom to reduce the dismantling space. All crane components can be split down into units to be picked and removed from the roof by the next smaller lifting device or by hand.

IHI customised jib cranes are delivered all over the world.

For the full article visit www.khl.com



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The secondary hydroelectric plant is downstream closer to the river's mouth



Forest of flat tops

A total of 15 Linden Comansa tower cranes have been working at a hydroelectric plant in Portugal. IC reports

Tower crane manufacturer Linden Comansa distributor in Portugal, Ibergru, has supplied 15 flat top tower cranes for the Baixo Sabor hydroelectric plant project in Torre de Moncorvo.

The main contractor on the project is Energias de Portugal (EDP), the largest electricity utility company in the country. Planning and logistics of the project have been undertaken by Ibergru.

Two dams are being built at the site. The main dam is upstream of the Sabor River, while the second dam is 9.5 kilometres

downstream. The first hydroelectric plant has a double-curvature dam with a height of 123 metres and a width of 505 m. The second plant, which is close to the river's mouth, will have a dam 45 m high and 315 m wide.

Around the site

To help with the large scale project, the 15 tower cranes have been located at different sites. At the main plant, four model 10LC140 tower cranes with a load capacity of 8 tonnes are being used.

Two of the 10LC140s have been used to assist with the assembly of an air transport system with cables to pour large amounts of concrete during the construction of the dams. The unusual cable crane system is known as a blondin in honour of Charles Blondin, a famous French tightrope walker of the 19th Century.

Next to the upstream station, an LC5211 5 tonne tower crane is helping construct an administration building, while two 5 tonne capacity 5LC5010s are working as service

Working at night in Torre de Moncorvo

Linden Comansa tower cranes work on the construction of the Baixo Sabor plant



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cranes in the yards that serve as warehouses and workshops at the jobsite.

The five largest tower cranes, including two 21LC750 with up to 48 tonnes capacity, and three 21LC550s with a load capacity of 18 tonnes each, are working on the second dam.

Another 5 tonne capacity 5LC5010 is working as a service crane, helping to manage the machinery and materials required on site, the company said.

Bridge towers

In addition to these tower cranes, two Linden Comansa 21LC290s, with capacities of up to 18 tonnes, are working on the construction of a new bridge. The bridge is 268 m long and 40 m high and once completed will allow the EN102 road to cross the river.

The main plant at Baixo Sabor, located upstream, is a double-curvature dam 123 metres high and 505 m wide



Two Comansa 5LC5010 flat top towers at work as service cranes in the yards that serve as warehouses and workshops



Around 1.1 million cubic metres of concrete will be used and around 3 million cubic metres of the site will be excavated. The dams are being constructed by Baixo Sabor ACE, a joint-venture company formed by Odebrecht and Bento Pedroso Construções, and Lena Construções.

The budget for the project is estimated at more than € 480 million (US\$ 643 million). Together the two dams will flood an area of more than 50 km.

On completion the hydroelectric power plant, which has been under construction since 2008, will have an installed capacity of 170 MW and will be capable of generating up to 444 GWh per year. The power project is due for completion in August 2014.



The assembly of two of the 10LC140 cranes was a challenge due to difficult accessibility



Next to the upstream station, a 5 tonne capacity Comansa LC5211 is working to construct part of the administrative facilities of the dam

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Towering in Berlin

Preparations are well under way for the third International Tower Cranes conference. An impressive speaker programme includes leading industry figures from around the world.

IC previews the 2013 event

Safety, standards, innovation and market prospects are the primary focus at this year's International Tower Cranes (ITC) conference. ITC is a unique event devoted entirely to tower crane users, manufacturers, designers, specifiers and buyers. Held again in Berlin, Germany, ITC 2013 will be on 4 and 5 November at the five-star Kempinski Hotel Bristol.

It is run by KHL Group, publisher of *International Cranes and Specialized Transport*, *American Cranes & Transport*, *Cranes & Project Transport Turkey* and a wide portfolio of other construction industry-related magazines and information resources.

The top level one day conference and networking reception will be an opportunity to discuss the critical issues affecting the tower crane industry worldwide. It starts with a drinks reception on the evening of 4 November, with the conference on 5 November. The focus will be on global best practice, safety and the development of common international standards, regulations and work practices.

Last year's event, also in Berlin, attracted 139 delegates from 70 companies and 23 countries and brought together

leading figures from the niche sector in major markets around the world. The first ITC was held in London, UK, in May 2011 and was attended by around 150 industry professionals.

"This conference improves communication of best practice and new ideas between crane users, equipment manufacturers and their associations, with a view to helping participants achieve a world-class standard," explains Alex Dahm, IC editor and conference chairperson.

In the programme

Among other topics this year, it is planned* to include the latest thinking on the following:

- Prospects for the global construction economy.
- How to be a successful rental

company in fast-changing global markets and how to maximise manufacturer support.

- Innovation – the future of collision avoidance technology, radio remote control and other electronic systems.
- Wire rope's vital but often ignored role in tower crane operation and viability, especially in high rise construction.
- Recruitment, training and the industry's shrinking knowledge base.
- Safety – quality assurance; the latest accident analyses; visual height warnings; evacuation procedures.
- Foundation design; whose responsibility is it?

Also on the agenda are a special feature on the key issues in the tower crane markets in the USA and the Middle East, plus the latest developments in hoisting and wire rope. The programme will include guest speakers from leading tower crane user companies around the world who will give their own unique perspectives on the key issues.



Peter Schiefer



Peter Juhren



Duncan Salt



Chris Sleight

Spreading the word

Speakers at ITC 2013 will include Duncan Salt, director and general manager at HTC Plant in the United Kingdom. HTC has one of the country's largest crane rental fleets and

EVENT INFO

WHAT:

International Tower Cranes 2013 full day conference and networking event

WHEN:

4 November 2013:
Registration and evening drinks reception
5 November 2013:
Full day conference and networking

WHERE:

Kempinski Hotel Bristol, Berlin, Germany

INFORMATION:

www.khl.com/itc

is also a new crane distributor. Salt will focus on ways of adding value and improving customer experience in the tower crane supply chain.

In a similar vein, Nicola Castenetto, director customer care at Terex Tower Cranes, will explain how manufacturers and contractors jointly manage challenges on job sites.

More speakers for the 2013 event include: Nabil Al Zahlawi from NFT; Peter Schiefer; Dominique Tasch; Dr Oliver Fries from WireCo; Thomas Stegmaier; Rémi Déporte; Chris Sleight; and Peter Juhren from Morrow Equipment.

■ For further information, the full speaker programme and how to book, see: www.khl.com/itc
*The organiser reserves the right to change the conference programme at any time.

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Vessel vehicles

CPL Transport Services came up with novel solutions to transport 10 new vessels for the Royal Brewery in Manchester, UK. DAVID WESTON was there

Multi axle's Volvo 8x4 being loaded with a vessel on the docks



Lifting the last vessel from the hold

The Royal Brewery (originally named the Albert Brewery) was built in 1875 and was taken over in 2008 by brewer Heineken for the production of Foster's lager. As part of a renovation project, ten new vessels were delivered to the brewery, where already 1.2 billion pints of beer are produced a year.

Manufactured in Germany, the vessels each weigh 33 tonnes, measure 28.5 metres long and 6 m wide. For the first part of the journey, the vessels were transported by road to the River Rhine, where they were loaded onto barges and sailed to the Europort in Rotterdam, Netherlands. Once the vessels had arrived at Europort they were transferred onto a pair of cargo ships for the voyage to the Mersey estuary in the north west of the UK.

Royal arrival

Once the vessels arrived at the Mersey estuary they were moved from the docks to the Royal Brewery by road. The original plan for this part of the journey was for all ten vessels to be brought into Ellesmere Port docks by ship. From here they would be unloaded onto road transport





The convoy makes its way to the Royal Brewery



One of the first obstacles was this set of traffic lights that had been partly removed to enable their passage

unloading of the ships, the dock and water front had to be prepared, mainly because it had lain derelict for a number of years. The new building works in the area also caused problems, and fenders had to be placed in the dock to prevent the ships from coming into contact with the outlet pipes from the new buildings air conditioning over flow pipes.



One of the hardest parts of the route was a tight left turn at a set of traffic lights. Which required some shunting to negotiate

and taken via a high load route though Cheshire into Manchester.

Although the route had been used before, on this occasion UK authorities would only permit two vessels to be moved at a time, and only on a Sunday. The result of this would be a transport time of more than a month and expensive equipment being on hire for several weeks, both at the docks and on site.

To overcome this issue CPL Transport Services and project manager Andy Park stepped in to help the situation. Park said, "We only had two months to sort out the transport, which is a lot less than we normally get for something on this scale."

Despite the short time scale, CPL devised a new plan to sail the ships with the vessels up the canal into the now disused docks at Salford Quays. Although the area is undergoing development, and very little of the original docks remain, not all the water front had been built on,

meaning the idea was possible.

Following discussions with Peel ports the go ahead was given to offload the ships at Salford Quays. To carry out the

Full strength

Once the dock was prepared, the vessels were lifted from the ships in tandem using 250 tonne and 200 tonne capacity Liebherr telescopic boom wheeled mobile cranes. The vessels were lifted onto multi-axle Broshuis step frame trailers coupled to a Volvo FH 6x2 from the CPL fleet, driven by Dave Davenport, and a Volvo FH 16 from Multiaxles, driven by Don Sheene. The Liebherr cranes were supplied by John Sutch Crane Hire from nearby Liverpool.

After the unloading and loading process, the transport left the docks at 20.00 hours and travelled from Salford Quays to Moss Side. This happened over five successive nights. On the first night the journey took an hour and a half.

Challenges along the route included tramway catenary wires, bridges, parked cars and a puncture on one of the tractors, which happened just outside the brewery gates. Other than this minor hiccup the job ran smoothly.



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In the third article in our new how-to series, **MARCO VAN DAAL** turns his attention from transport to cranes with a historical perspective on developments in the lifting industry

Cranes, a bit of history

Looking at today's cranes – computerised complex machines – it is hard to imagine that they have been around for two thousand or more years. It is unknown when the first crane-like machines were used as no documentation from that far back has been found but, looking at certain structures built by, for example, the Romans and Greeks have led scientists and archeologists to believe that some type of lifting mechanism was used.

Initially two types of lifting device could be differentiated. One was a system

consisting of two masts (or poles) with a cross beam (gantry beam), on which the load was suspended. The other system was a tilted mast over the load where luffing the mast enabled positioning of the load. Later designs added the possibility of slewing the load. By this time it was already around the 1400 to 1500 era.

Although they are no less significant, this article does not cover gantry type cranes.

In the early 1800s the first commercial crane-like machines were built. Most had excavator shovels and were steam powered because the internal combustion engine did not make its introduction in the crane world for another century.

In the first half of the 20th Century the crane industry evolved relatively slowly. World War II, however, sparked the industry and major leaps were achieved. (See the table opposite).

If this trend is put in a chart we can see the, more or less, steady incline in crane capacity from the manufacturers. In the last two decades, however, a development is taking place where the crane owners are taking the lead in a demand for and manufacturing of higher capacity machines.

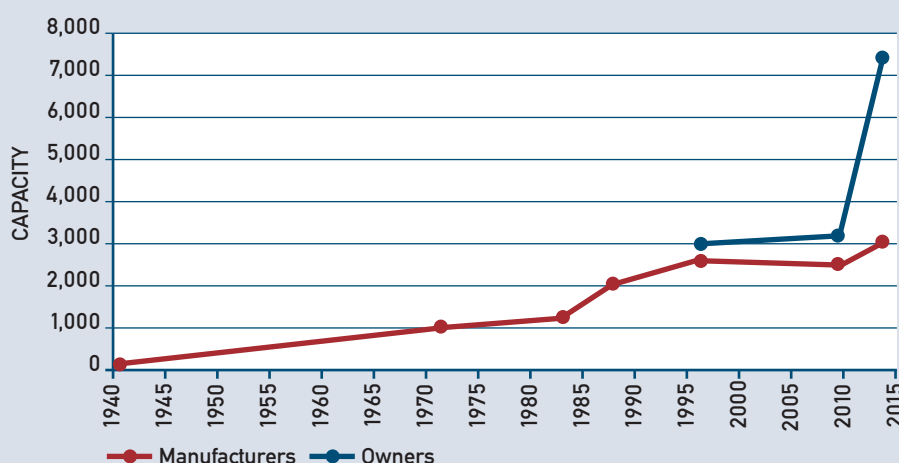
Selection process

The development brought with it a potential clash in terminology and the way that crane capacities are interpreted. Crane capacities are expressed in US tons or (metric) tonnes. A 500 tonne crane is bigger and has more capacity than a 250 tonne crane. They are two different category machines. Few 250 tonne cranes, however, can actually lift 250 tonnes at a practical radius because often the outriggers, crawlers or ring is physically in the way of performing such a lift. So the question then becomes, if a 250 tonne load is to be lifted at a certain radius would the crane analysis (selection of the right equipment) start with the 250 tonne machine or with the bigger 500 tonne machine. This largely depends on the radius but it can be stated with fair certainty that the 250 tonne machine will not be able to perform this lift. Therefore, as the planner of a lift, one would not

CRANE CAPACITY OVERVIEW

1941	Manitowoc 3900	103.5 tonne	crawler crane
1971	Coles Colossus 6000	225.0 tonne	truck crane
1979	Italgru TGN 5300	300.0 tonne	ring crane
1971	Bohne K10000 (by Demag)	1,000 tonne	truck crane
1982	Gottwald AK 1200	1,200 tonne	crawler crane
1987	Demag CC 12600	2,000 tonne	crawler crane
1995	Lampson LTL-2600	2,600 tonne	crawler crane
2008	Demag CC 8800-Twin	3,200 tonne	crawler crane
2009	Manitowoc 31000	2,300 tonne	crawler crane
2012	Liebherr LR 13000	3,000 tonne	crawler crane
1997	MSG 50 (Mammoet)	3,000 tonne 50,000 tonne-metres	ring crane
2009	AL.SK190 (ALE)	4,300 tonne 190,000 tonne-metres	ring crane
2012	SGC 120 (Sarens)	3,200 tonne 120,000 tonne-metres	ring crane
2012	PTC 200DS (Mammoet)	3,200 tonne 200,000 tonne-metres	ring crane
2011	125D ARFD (Bigge)	7,500 tonne	ring crane

NOTE: This list is not exhaustive.



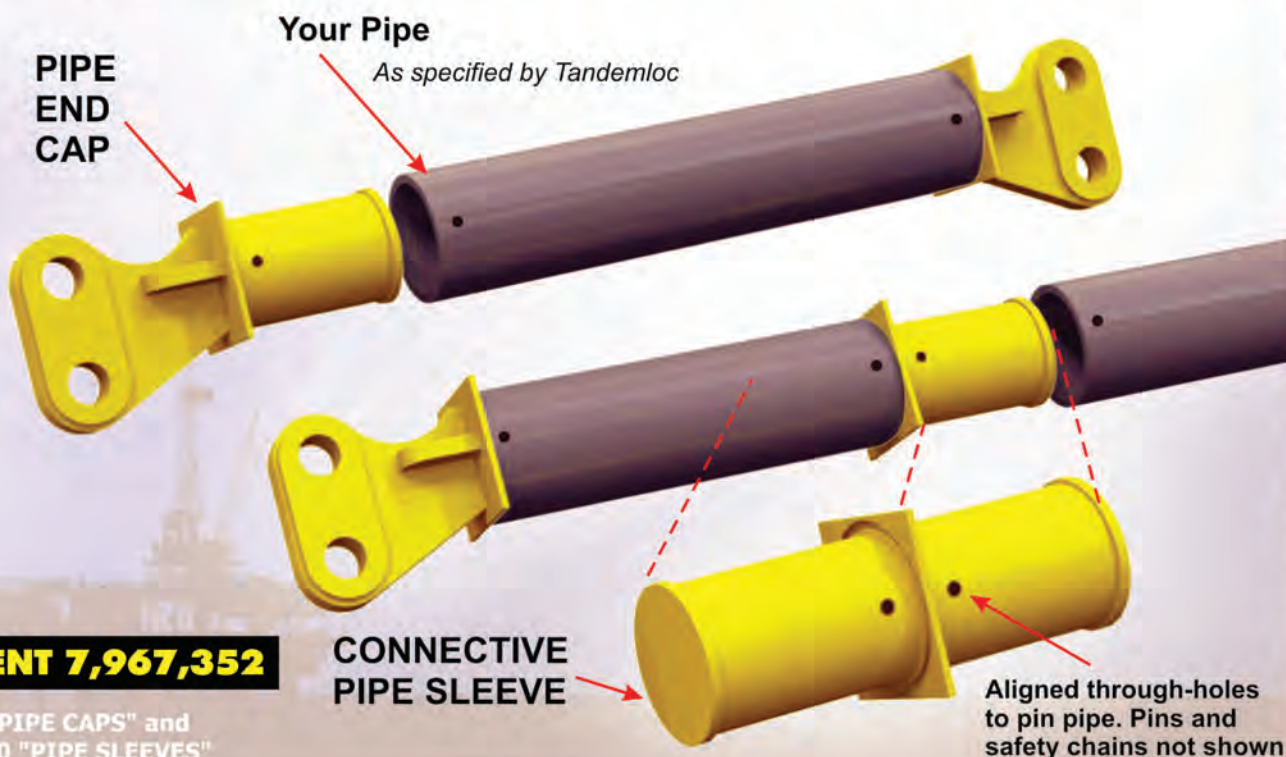


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necessarily be looking for a certain capacity machine but more for a machine with a certain capacity at a given radius. Knowing this, the capacity alone becomes much less important during the planning stage than the capacity of a machine given a certain radius. This introduces a challenge, though, as it is much easier to analyse a crane capacity than is to analyse a crane capacity at a certain radius, especially because this capacity changes with every change in radius.

To avoid that a multitude of charts have to be reviewed, which is a time consuming exercise, so we can make use of a crane chart overview. Such a chart provides a basic indication of what capacity crane is required to perform a certain lift. Crane chart overviews are often separated in hydraulic cranes and lattice boom cranes.

EXAMPLE 1: A jobsite requires an hydraulic crane that needs to make three lifts: 80 tonnes at 10 metres, 10 tonnes at 20 metres and 10 tonnes at 7 metres.

According to the hydraulic crane chart overview the first lift can be performed with a 250 tonne type crane, the second lift can be performed with a 120 tonne type crane and the last lift requires a 35 tonne type machine. In summary, all three lifts

The 125D AFRD from Bigge



could be performed with a 250 tonne type machine. With this knowledge the search for the actual machine that can be planned for this job becomes much easier.

Note that the hydraulic crane chart overview does not specify boom length or boom angle or obstructions in the lift path or the use of additional counterweight or a jib, etc. It provides the user with an order of magnitude of the required crane capacity.

Mammoet MSG 50



Radius

The radius of a lift is generally measured from the centre of rotation to the centre of the hook block of the crane. The centre of rotation is (often) the centre of the slew ring. This definition is true for all hydraulic cranes and crawler cranes. The lines started blurring with the introduction of the ring attachment. The radius can now be measured from the centre of the ring or from the edge of the ring. Common sense would indicate that the radius would have to be measured from the centre of rotation but things are not all that straight forward. If the radius of a ring type crane is measured from the centre of the ring (for this example the ring diameter is 10 m),

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the radius would be increased by 5 m as the boom from where the lift takes place sits on the ring. This creates the illusion that the crane is stronger than it is. In addition, a larger ring diameter (with the rest of the crane components remaining equal) would result in a larger radius and could wrongly lead someone to believe that the crane has increased in capacity.

But even when the radius is measured from the edge of the ring, how do we handle twin-ring cranes? Mammoet, Sarens, Bigge and ALE (to name a few) have all designed and built cranes that have an inner and an outer ring. It requires knowledge of those cranes to compare and

select the right one for the job.

Here is where the load moment makes its introduction. The load moment does away with centre of rotation and twin-ring confusion. (The load moment is expressed in tonne-metres). It is determined by multiplying the maximum capacity by the distance from the boom butt hinge point to the hook block (or strand jack anchor), where that maximum is measured.

The load moment also does not discriminate between a ring-shaped track or a straight track, a full ring or a partial ring (see figure) and whether the counterweight sits on the opposite site of the ring or is positioned in the middle of the ring or maybe even anchored to the ground (see figure).

Balancing forces

Counterweight is used to keep the crane in balance during a lift. Smart use of counterweight can increase the capacity of a crane in certain cases. The application of super lift counterweight increases the capacity of a crane without having to mobilise or invest in a larger machine. The application of super lift counterweight, however, does not necessarily mean that a 500 tonne crane can now lift 700 tonnes. It is mostly an increase in capacity at larger

radii. The boom of a crane is exposed to the highest compression load in a near vertical position. It is calculated and engineered to take a maximum load in that configuration. As the radius increases, the angle of the boom with vertical increases as well and the compression forces in the boom gradually decrease. By adding super lift counterweight, heavier loads can be lifted at larger radii, herewith increasing the compression force in the boom to a value closer to what it was engineered for. This can make a 500 tonne crane behave like a 700 tonne crane without actually having to lift 700 tonnes.

ABOUT THE AUTHOR



Marco van Daal has been in the heavy lift and transport industry since 1993. He started at Mammoet Transport from the Netherlands and later with Fagioli PSC from Italy. His experience resulted in a book *The Art of Heavy Transport*, available at: www.khl.com/books/the-art-of-heavy-transport/



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- James King, managing director, KHL Group
- Nadine Dereza, conference chairperson

Prospects for the global construction economy. Follow the money

SPEAKER: To be confirmed

Critical issues facing the global cranes and heavy transport industry – a US perspective

- Ron Montgomery, president, SC&RA and president, International Rigging & Heavy Haul
- Joel Dandrea, executive vice president, SC&RA

Key issues facing the global crane industry – a major manufacturer's perspective

- Tim Ford, president, Terex Cranes

Harmonising standards and creating a single market – a European perspective

- David Collett, president, ESTA and managing director, Collett Transport

PROJECT I. Burkhalter's award winning work on the Galveston Causeway Railroad Bridge, Galveston, Texas, USA

- Delynn Burkhalter, president and CEO, Burkhalter

Driving safety to new levels – a client's view

- Leon Schopping, senior construction engineer and PTE lifting & hoisting, Shell International Exploration & Production, the Netherlands

Safety management in the Korean crane industry

SPEAKER: To be confirmed

Transportation accidents, common causes and prevention

- Marco van Daal, owner, The Works International, Aruba

Root causes of mobile crane accidents and how to reduce them

- Klaus Meissner, president, European Federation of Materials Handling (FEM)
- Søren Jansen, Director, ESTA

Why the crane and heavy lifting sector needs to recruit more women – the greatest lost potential in the industry today

- Emma O'Dwyer, vice president market development, The Matcom Group

Roundtable discussion

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DAY 2

Welcome and opening remarks

■ Nadine Dereza, conference chairperson

Global construction markets – trends and prospects

■ Chris Sleight, editor, International Construction

Topic: To be confirmed

■ John Gillespie, president, Crane Industry Council of Australia and managing director, Gillespies Cranes Services

China – strategy, prospects and manufacturing standards in the biggest global market

SPEAKER: To be confirmed

Operating cranes near overhead power lines

SPEAKER: To be confirmed

PROJECT 2: Analysis of an award winning project from Mammoet, the Netherlands

SPEAKER: To be confirmed

Repair, refurbishment and counterfeit parts; maintaining standards

■ Andreas Koehler, owner, Koehler Kran Service

Current markets and prospects for the equipment sector in India

■ Samir Bansal, general manager, Off-Highway Research, India

The US crane operator certification debate. type, capacity and certification

SPEAKER: To be confirmed

Lashing chains – state of the art, technical innovations and practical hints

■ Alexander Hoffmann, product manager, RUD Group

PROJECT 3. To be confirmed

Concluding roundtable – creating global standards

PANEL: To be confirmed

Q&A session followed by closing remarks

* The organiser reserves the right to change the programme at any time.



Joel Dandrea

Specialized Carriers & Rigging Association (SC&RA)



Tim Ford

Terex Cranes



John Gillespie

Crane Industry Council of Australia and Gillespies Cranes Services



Emma O'Dwyer

The Matcom Group



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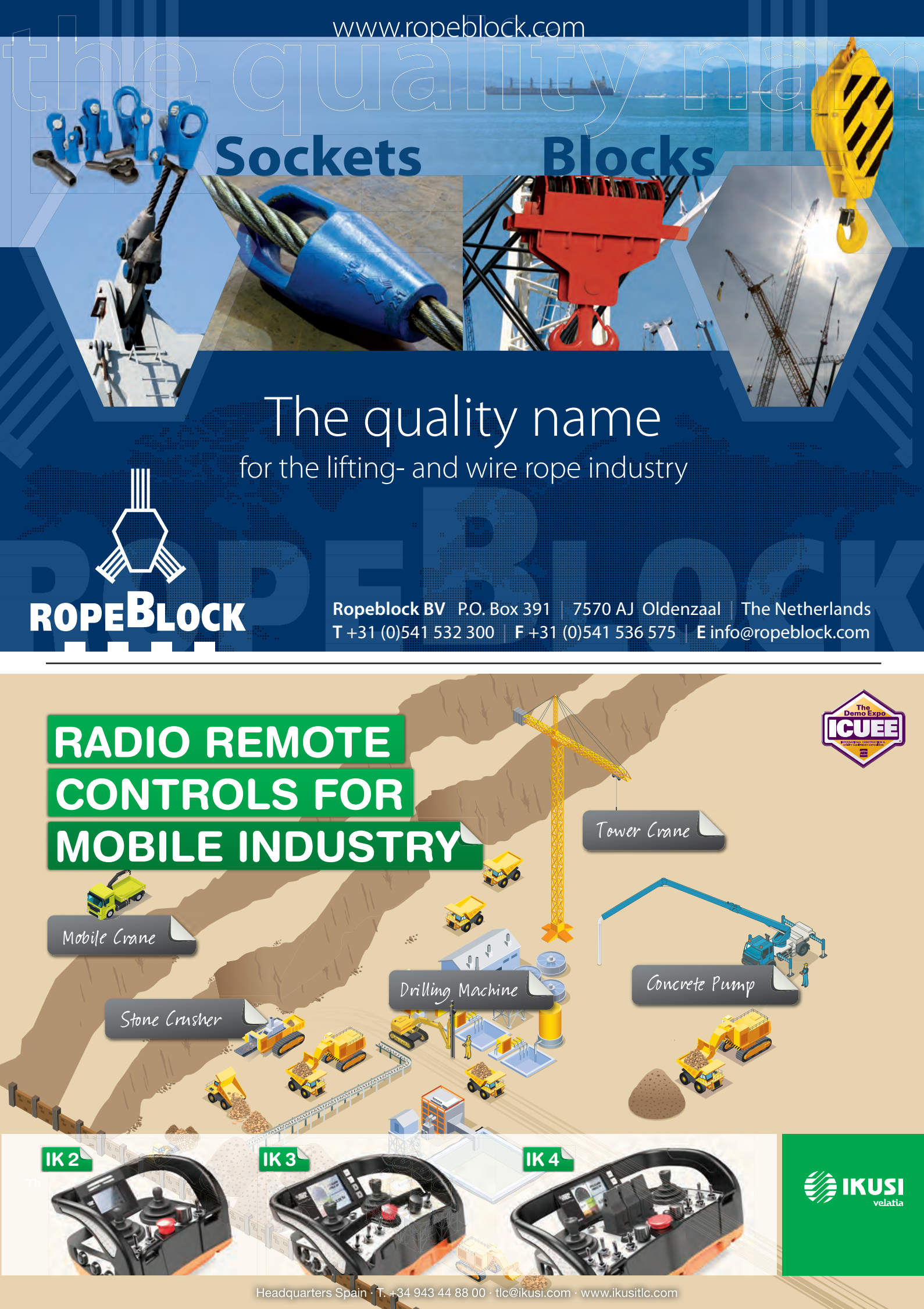


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Holding steady

This year's *IC Tower Index* for tower cranes indicates a stable and expanding global tower crane market

IC TOWER INDEX

In a similar way to the main *IC50 Index*, companies that own and/or rent out tower cranes are ranked by their *IC Tower Index*. Reflecting the widespread use of the tonne-metre rating method, the index is calculated by adding together the maximum load moment rating, in tonne-metres, of all tower cranes in a company's fleet.

Where companies supply the 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 *IC* estimates.

Like the main *IC50* listing the *IC Tower Index* will be updated in the first quarter of 2014. If you would like an application form for your company for next year's listing, please contact *IC* at the address on page 3.

In this year's *IC Tower Index* Shanghai Pangyuan Machinery Rental in China still holds the top of the table with an Index of 369,544 – an increase 16 per cent from last year's figure. Pangyuan has added 279 tower cranes to their fleet since 2012, increasing their fleet size to 1,826 units.

Tat Hong Holdings in Singapore has also increased its fleet with an additional 117 tower cranes, bringing its Tower Crane Index up to 168,187. It remains in 6th place with an overall increase of 23 % from last year's figure.

The remaining top 10 companies in this year's table have all remained in the same place as last year, with NFT (Nouman Fouad Trading) still in second and Arcomet in third place. Outside the top ten tower crane owning companies HTC Plant *IC Tower Index* has risen 24.4 % from 40,356 in 2012 to 50,204, while AmQuip has entered this year's table with an *IC Tower Index* of 45,449, up 3 % from last year's figure. Locabens has moved up the table six places into 18th, having increased by 22 % from 22,250 in 2012 to 27,200 in 2013.

Other fleet expansion outside the top ten includes Sarens. With 12 tower cranes added to its fleet, its Index has increased by 10 % from 26,597 to 29,291.



The largest tower crane in the Sarens fleet list is a Wilbert WT 2405L. Oxford Building Supplies in Canada has moved up an impressive 18 places and is listed just outside the top 20.

There have also been some fleet reductions recorded in this year's table. All Erection and Crane Rental, for example, has reduced its tower crane fleet by 10, pushing its Index down 30 % from 42,055 in 2012 to 29,350 in 2013. The company's largest crane is now a Potain MR605B.

New entries this year are BKL Baukran Logistics, which enters the table in 14th with an Index of 34,714 and Tiong Woon which also enters the top twenty with an Index of 26,591. A new entry outside the top twenty is Smith Crane and Construction, from New Zealand, which comes in at 26 with an *IC Tower Index* of 2,983.

IC TOWER INDEX 2013

2013 rank	2012 rank	Company	Country	No. of depots	Number of emps	Area of operation	No. of towers	Largest tower (make and model)	Largest tower (tonnes)	IC Tower Index
1	1	Shanghai Pangyuan Machinery Rental	China	28	4,150	National	1,826	Zoomlion D2500-120	120	369,544
2	2	NFT	UAE	10	600	Worldwide	985	Potain MD 1100	50	238,678
3	3	Arcomet	Belgium	20	354	Worldwide	1,536	Terex Comedil CTL 630-32	32	210,601
4	4	Breuer & Wasel	Germany	12	450	Continental	470	Liebherr 630 EC-H 50	50	185,000
5	5	Morrow Equipment	USA	24	256	Worldwide	519	Liebherr 1800 C 60	60	180,584
6	6	Tat Hong Holdings	Singapore	10	2,300	China	874	Sanyo M125	50	168,187
7	7	Wolffkran	Switzerland	14	450	Worldwide	574	Wolff 1250B	60	124,070
8	8	Select Tower Cranes	UK	6	1,200	Worldwide	450	Comedil CTL 630	32	96,100
9	9	Van der Spek	Belgium	3	120	Worldwide	405	Liebherr 630 EC-H 50	50	82,491
10	10	Wilbert	Germany	2	180	Worldwide	200	Wilbert WT2405L e.tronic	128	74,300
11	12	Neremat	Belgium	3	50	Continental	250	Potain MD 1100	50	55,000
12	18	HTC Plant	UK	3	320	National	247	Wolffkran 700B	50	50,204
13	15	AmQuip	USA	12	580	National	86	Potain MR 615	32	45,449
14	n/a	BKL Baukran Logistics	Germany	3	130	Continental	312	Linden Comansa 21 LC 750	48	34,714
15	21	Ramirent	Finland	8	55	National	155	Liebherr 550 EC-H	20	30,309
16	17	All Erection and Crane Rental	USA	34	1,500	Continental	90	Manitowoc/Potain MR605B	30	29,350
17	22	Sarens	Belgium	101	3,826	Worldwide	104	Wilbert WT24SOL	130	29,291
18	24	Locabens	Brazil	4	385	Worldwide	235	Potain MC475M25	25	27,200
19	n/a	Tiong Woon	Singapore	9	1,380	Asia and Middle East	85	Yongmao STT 293	90	26,591
20	31	Feurig-Baumaschinen	Germany	2	24	Rental Continental Sales worldwide	220	Liebherr 280 EC-H12 Litronic	12	17,205

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Requirements for ropes are changing throughout the crane industry. LAURA HATTON spoke to rope manufacturers about the challenges ahead and what new products they have to meet customer demands

The future for ropes

Drum crushing, multi-lay spooling and rotation resistance are well known issues with ropes in lifting applications throughout the crane industry and rope manufacturers have to take these issues into account when producing rope.

A spokesperson from Verope, a manufacturer of wire ropes, explains the challenges behind designing an appropriate rope for multi-layer drum spooling.

"To cope with heights of over 100 metres in multiple reeving applications, more than 1,000 m of rope length is spooled," Geraldine Kortas, marketing and communication at Verope explains, "In the mining industry, for example, it is typical to work with very large D/d ratios (drum diameter/rope diameter, $D/d > 100$). Mobile crane applications, on the other hand, deal with confined spaces and typical D/d ratios of 20. The spooling of the rope is then made on specially designed rope drums, which allow winding into virtually any number of rope layers. This technique is known as the

Lebus grooving."

As a result of these requirements Verope designs its ropes with rotational stability, a high bending fatigue, high breaking strength and resistance to wear. This is to ensure that the rope can handle single-fall to 25-fall configurations, a company spokesperson adds.

As Kortas explains, however, sometimes compromises have to be made when designing a rope for these applications. "A thicker wire will be more resistant to wear, however, it is less flexible and there will be a compromise regarding bending fatigue. A thinner wire will achieve higher bending fatigue values, however, it is less resistant to wear and reduction of the rope diameter will happen sooner."

To overcome these factors Verope wire ropes have a specially designed rope lubricant to maximise wear resistance. Their range of rotation resistant ropes include verotop, a hoist rope suitable for mobile, crawler and offshore cranes; verotop E, a hoist rope for construction cranes and verotop XP, a hoist rope for deck cranes. Lifting heights of the rope range from up to 50 m to more than 70 m depending on rope type and application.

Synthetic fibre

When designing a rope with a high bend fatigue, the fibres that are used in its development is another important area that rope manufacturers have to take into consideration. Manufacturer of

Testing machines are available at Verope to determine rope flexibility



The twist torque test machine at Verope

synthetic fibres, Dyneema for example, has developed a bending-enhanced fibre, Dyneema XBO, for increased flexibility and increased bending cycles. "A result of using this fibre means that ropes made with Dyneema XBO fibre match or exceed steel wire rope in bending cycles to failure and can even be more flexible," a company spokesperson says.



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Welcome and opening remarks

> **Alex Dahm**, editor, *International Cranes and Specialized Transport*, Conference chairperson

Global construction markets

> **Chris Sleight**, editor, *International Construction*

Regulatory challenges in crane operations

> **Robert Weiss**, vice president, Cranes Inc. and SC&RA member

Tower crane solutions for customer benefits

> **Dominique Tasch**, managing director, Liebherr-Werk Biberach
> **Thorsten Hesselbein**, head of tower crane solutions, Liebherr-Werk Biberach

Quality control 2.0

> **Peter Juhren**, national service manager, Morrow Equipment

Adding value to the UK construction sector

> **Duncan Salt**, director and general manager, HTC Plant

The Middle East perspective on tower crane rental and distribution

> **Nabil Al Zahlawi**, general manager, NFT

AFTERNOON SESSION

Topic to be confirmed

> **Dr Oliver Fries**, vice president global R&D, innovation and technology, WireCo Group Europe

The perfect jobsite - how manufacturers and contractors jointly manage modern day challenges on job sites.

> Speaker to be confirmed, **Terex Cranes**

Financing Tower Cranes: A look at the current situation and the way forward.

> **Dr Peter Schiefer**, CEO Wolffkran / CECE

Collision avoidance systems - their benefits and potential for development.

> **Rémi Déporte**, Manitowoc cranes

Questions followed by closing remarks and drinks reception in the Foyer Schloss-Saal

*The organisers reserve the right to change the programme at any time.



Dr Oliver Fries
WireCo WorldGroup



Thorsten Hesselbein
Liebherr-Werk Biberach



Peter Juhren
Morrow Equipment



Duncan Salt
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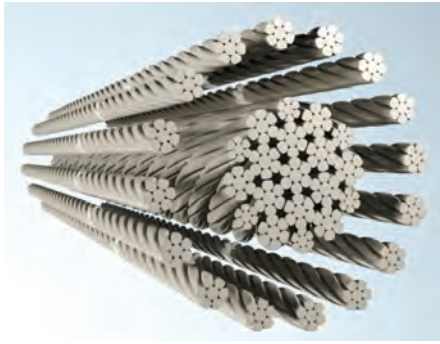
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“They are also easier to install than steel wire rope, while providing the same load-bearing capability as steel wire ropes that weigh seven times as much. Additionally, they are extremely resistant to environmental damage,” the manufacturer adds.

Other areas that rope manufacturers need to take into account are abrasion resistance and crush resistance. To overcome these issues UK rope manufacturer Bridon has introduced the Dyform eight strand ropes and multi-strand wire ropes.

“Dyform is a technology that helps shape the outer strands of a rope so it produces a smoother, lower contact force,” Jon Templman, Bridon CEO, explains. “This reduces the amount of abrasion and wear during spooling.”

“Dyform eight max ropes are very popular for mobile boom hoist cranes, for example,” Chris Newton, Bridon technology director, adds, “However, for high-speed, long-lift cranes the key is good crush resistance and multiple layer spooling. The stability of that is really important.”

Performance challenge

The shift in the industry for high-speed, long lift cranes is challenging rope manufacturers worldwide, as Markus Klinck, industrial engineer and product manager at rope manufacturer Casar, explains, “Cranes in the construction industry have increasing capacities and are getting bigger and bigger. These huge cranes have big lifting heights and are spooling very fast; therefore, it is important to have ropes with close diameter tolerances and very good spooling behaviour.

“In addition, another effect of the increasing capacities is that the requested minimum breaking loads for the ropes are getting higher and higher, while the crane components are designed to be as small as possible. This challenges the wire rope manufacturers worldwide,” Klink adds.

To meet such demands Casar developed the Casar Starlift Pro. “The new Casar Starlift Pro is a rotation resistant wire rope

Casar’s Starlift Pro wire rope is rotation resistant

made of only compacted strands except the king strand,” Klinck explains. “Based on the high filling factor, the breaking force is very high. The production tolerance is between +2 and +3.5 % and so significantly tighter than the usual market tolerance of +0 to +5 %.”

Due to its high resistance to twisting under load, Casar Starlift Pro can be used in hoist applications such as tower cranes, mobile cranes or crawler cranes. For high bending fatigue performance, Casar offers the Casar Superplast10 and the Superplast10 Mix designs, which are flexible wire ropes with high breaking force. The ropes have 10 outer strands, a plastic coated IWRC and a double parallel design.

It is not only wire ropes that are being developed for high-speed, long-lift cranes. “It is probably true to say that synthetic rope offers the best option for high-speed, long-lift cranes,” says Jorn Boesten, segment manager offshore at DSM Dyneema. “Synthetic rope can easily be made torque neutral. Most of our customers’ ropes are made in a 12 strand construction, which is inherently torque neutral, so it is very suitable for long lines.”

Development and testing

Once a rope has been designed and produced it undergoes rigorous testing. This is usually carried out in specially built testing facilities. Verope, for example, sends rope prototypes to the R&D facility in Contwig, Germany, to be tested and evaluated. At the centre tests carried out on the ropes include flexibility, breaking strength and rotational stability. To test and measure the lateral pressure stability of rope while under load is another method used by Verope.

“Rotational stability is calibrated on a specially designed test stand to determine the angle of rotation and torque. These results allow Verope to calculate the torque at maximum lifting height to optimise the rope design to work in greater lifting heights,” a spokesperson from Verope explains. The tests on Verope’s rotation-resistant ropes are carried out at the University of Clausthal in Germany. The ropes are intended for use in multi-layer drum spooling.

Casar, which has been part of the WireCo WorldGroup since 2007, has testing facilities at its plants around the world. “Beside the standard testing machines to measure breaking strength, rotational behavior, bending fatigue and elongation, we additionally have special

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equipment like the torsion-tension testing machine, which tests up to 2,400 kN,” Klink says. By the beginning of 2014 the company will also have access to a new bend fatigue machine.

Bridon also benefits from its own testing equipment, which is housed at the Bridon Technology Centre in Doncaster, UK. The centre includes a multi-layer spooling testing machine for understanding the effects and damage of multi-layer spooling, and a wire rope tensile test machine, which is used to determine the breaking load of a wire rope. The machine can pull up to 200 tonnes on a 42 mm sample of rope.

In addition, the centre has a lab for analysing results. Machines in the lab include a wire tensile test machine, which measures the breaking load of the wires in a rope, and a 3D Vickers microscope for analysing wire rope fractures.

“Because of the Technology Centre we can now concentrate on a range of different types of properties that ropes need, from construction testing for breaking load and multi-layer spooling, to torque turn characteristics and bend

fatigue, all of which are key components to understanding good performance of a rope in a crane application,” Newton says.

DSM Dyneema also tests the fibres which make up ropes. Facilities that the company has invested in include bending machines to test the performance of ropes, creep measuring systems and test equipment to mimic the effects that ropes experience when against abrasive surfaces.

A turning point

Issues with rotation resistance, abrasion and bend fatigue will continue to challenge rope manufacturers. Trends, however, in the rope industry could be about to take a new direction, as DSM, a producer of fibre for ropes, has experienced. Jorn Boesten at DSM Dyneema, says, “We are seeing that the industry is interested in replacing wire rope with full synthetic solutions. In fact, our customers are active in several developments in which they provide full synthetic alternatives for wire rope on land-based cranes and also for offshore deepwater cranes.”

It will be interesting to chart the progress of development for synthetic ropes for hoisting applications instead of wire ropes, especially for onshore applications.

The bend and reverse bend machine at the Bridon Technology Centre

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Heavy lifting and transport specialist Tiong Woon used a Terex CC 8800-1 lattice boom crawler crane for a 1,147 tonne lift at a petrochemical plant in Singapore. *IC* reports

Mega lift in tandem

Tiong Woon in Singapore used a Terex CC 8800-1 lattice boom crawler crane to lift a xylene splitter column weighing more than 1,000 tonnes.

The xylene splitter column, which is the third largest in the world, measures 108 metres tall and weighs 1,147 tonnes. It forms part of a petrochemical plant in Singapore that will produce chemicals for products that include nylon and polyester. Once completed the site will be one of Asia's largest petrochemical plants.

The main client for the project is SK E&C, an international engineering, procurement and construction contractor. The site is situated at Jurong Aromatics Corporation's (JAC) complex in Jurong Island Singapore.

As part of the project Tiong Woon constructed a temporary roll-on, roll-off jetty on Jurong Island for the arrival of the column.

From here the column was transported to the site using two sets of 16-axle, side by side self-propelled modular transports (SPMT) with turntables, a company spokesperson said.

For this part of the journey temporary road modifications had to be carried out to accommodate the size and weight of the column. In total, 300 trees were removed and replanted along the route; a concrete foundation was also prepared to stabilise the ground for the lift to take place. It took eight hours to transport the column along



The Terex CC 8800-1 lattice boom crawler crane works in tandem with the 2,400 tonne capacity, 120 metre tall tower lift system by Tiong Woon to lift the column into place

the 9 km of public roads from the jetty to the installation site.

Working together

Once at the installation site, a 1,600 tonne capacity Terex CC 8800-1 lattice boom crawler crane and a 2,400 tonne capacity, 120 metre tall tower lift system by Tiong Woon lifted the column in a tandem lift. For the lift the CC 8800-1 had a 54 m main boom in SSL configuration. The lift was completed over two days.

Ang Kah Hong, Tiong Woon's Group Chairman and Managing Director said, "We are privileged to be part of the team to contribute towards the successful completion of this project.

"It was indeed a challenging task. However, as a one-stop heavy haulage and lifting solutions provider to the oil and gas and petrochemical industries, we have the experience and expertise to meet this challenge for our client effectively."

Also on site from Tiong Woon is a 600 tonne capacity Terex CC 2800-1 configured with a 66 m main boom and 78 m luffing jib, and a 300 tonne capacity Terex CC 1800 with 42 m main boom.

The cranes are being used to erect and dismantle the upper structure of the tower system and to erect the base, respectively.

The project is estimated to cost S\$2.9 billion (US\$ 2.3 billion) and is due for completion in 2014.



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A record 1,500 exhibitors will take part in October's BICES exhibition in Beijing, China.
HELEN WRIGHT reports

This year's BICES event promises to be even bigger than 2011's record-breaking show



Beijing showcase

VISITOR INFORMATION

DATE:

15 to 18 October 2013

OPENING TIMES:

15 to 17 October: 09.00 to 17.00

18 October: 09.00 to 16.00

VENUE:

Jiu Hua International Exhibition Center, Xiaotangshan, Changping District, Beijing, 102211, China

GETTING THERE

Air

Capital airport is about 30 km from the exhibition venue. A taxi to the show will cost about RMB 100. Visitors can also take the subway at Sanyuanqiao Station, Line 10, then board a free shuttle bus at Shaoyaoju Station for the rest of the journey.

Alternatively, a public bus can be caught from Capital airport to North Tiantongyuan, where a free exhibition bus is available. Nanyuan Airport is about 50 km away from the exhibition venue. See the exhibition website for transfer details.

Train

Subways and free shuttles are also available from Beijing Railway Station, Beijing South Railway Station, Beijing West Railway Station and Beijing North Railway Station. See the exhibition website for details.

Zoomlion's product showcase will include a 300 tonne capacity all terrain crane



BICES 2013

More than 120,000 visitors are expected to attend the 12th bi-annual BICES construction equipment exhibition, which takes place from 15 to 18 October at the Jiu Hua International Exhibition Center in Beijing, China. The show will occupy a record 210,000 square metres of exhibition space – up from 195,000 m² in 2011, but a lot has changed since the last event.

Market research company Off-Highway Research estimates that two years ago 487,870 construction machines were sold in China. Soon after that, however, the market suffered a sharp drop and sales fell 34 % year-on-year in 2012.

It seems the heady days of over 30 % year-on-year growth in equipment sales in China are over, for now at least. Off-Highway Research forecasts a 3 % rise in construction equipment sales in 2013, followed by 11 % growth next year to 367,417 units, then a further 3 % in 2015.

Despite the current trough in the market, the scale of this year's BICES show is greater than ever, with 1,500 exhibitors

registered to attend, compared to 1,030 in 2011. As one of two leading shows for the Chinese construction equipment sector, BICES is often the scene of some significant launches. The exhibition attracts big names in the industry, be they international players or domestic names.

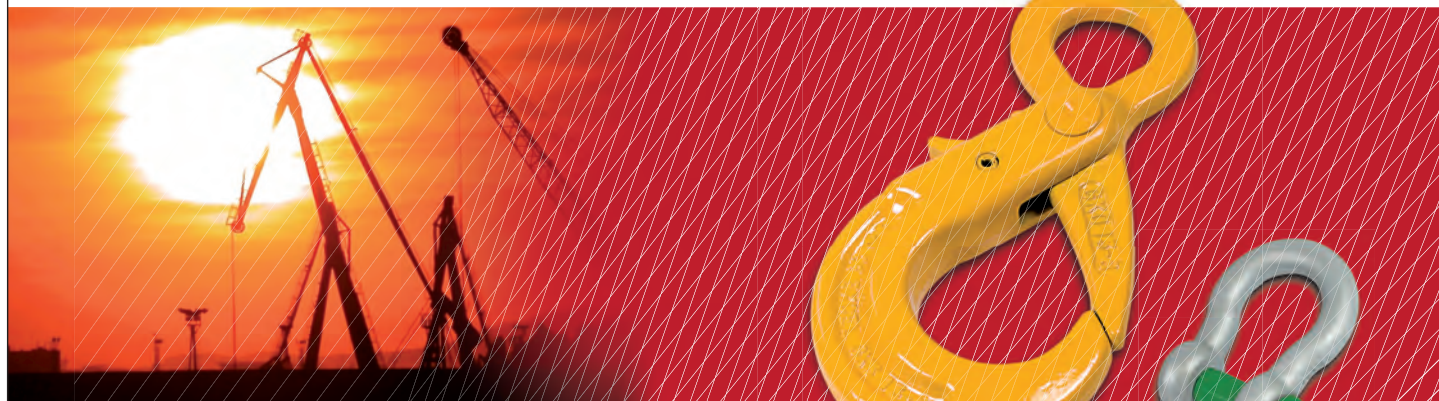
Zoomlion, for example, said it would have more than 10 new and improved products, covering the mobile crane, concrete, earth moving and pile foundation sectors. The new models will include a 300 tonne capacity all terrain crane, the QAY300.

Shantui, meanwhile, plans to launch three new machines at the show, including the GT-55 truck-mounted crane. The GT-55 is one of the first machines produced by the Shantui-Manitowoc joint venture that was formed in January. It is a Tier III engine exhaust emissions-compliant machine with a maximum lifting height of 41 metres. Launches from companies throughout the construction industry will also be on show. For full details see: www.e-bices.org

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COMMENT

Joel M Dandrea

Look closely for success



Business leaders today face two defining challenges of the time: speed and information. And just when it seems you've wrapped your mind around one or the other, the two concepts remind you who is boss, and merge. As a result of the information around us continuing to redline, many of us in this industry find ourselves juggling an ever-diverse collection of workplace dynamics: gender, ethnicity, education, technology and, of all things, age.

For assorted reasons, quite a few of them economic, the generation gap in the workplace is possibly at an all-time high. Combined with the speed of information and communication exchange, this gap is often separated by much more than years. Try manoeuvring all of these ingredients under the same roof, or even into the same room, and you've got yourself some healthy workplace diversity to contend with, and likely a lion's share of the stress.

Today's leaders need to recognise that business landscapes, no matter the industry, will be immersed in challenge. Successful men and women in positions of leadership have not discovered this vantage point by accident – there is no more guessing or flying on autopilot or figuring it out as you go. Leaders find success in modern times because they've learned how to cultivate relationships, commit to decisions and think on the move. Of these three attributes, however, the first one is often the most vital to running a successful business. It is ironic because even amid these high-speed times it is still a timeless and universal business dynamic that keeps everything glued together.

It doesn't matter how smart you are, how tough you are or how fast you can think – if you can't manage relationships, you're not well-rounded. And only well-rounded leaders thrive in today's workplace. Your business is as good as the people you've surrounded yourself with. If you can't connect with them, they

won't feel connected to your business, much less its success. And on an expanded scale, if you can't foster relationships with your industry peers, well, you're just not going to experience any lasting success.

Small world

The method by which the world communicates today has seemingly taken hold of the globe and pushed all the continents together. We have access to one another on a scale unparalleled in human history. What we've quickly discovered in both business and in life is that people who can't appreciate and find common ground with those who are different from them, struggle to find a balance. In business, this can often mean the difference between making a few deals here and there, versus becoming a global industry leader. Authenticity and willingness to understand is still the quiet measure of a successful leader and person.

Many of today's best and brightest will rush into various industries filled, in equal part, with ambition and up-to-the-minute skill sets. What they don't know is that all the talent in the world means nothing if you can't relate to your colleagues on a personal level. Fortunately, many of these youngsters have had a taste of diversity on the way up, by way of social media and a more globalised education experience in school. But they still need to learn the ropes, in a sense, because most companies are a blend of personality types, cultures, demographics, skill sets, and age groups. A well-rounded leader will provide quality mentorship for these valuable employees, often leading by example, because this person represents the future of his or her company.

You want to be honest with people. When your authenticity goes without question, you'll find an entire team of loyal people ready and willing to take your business to remarkable places. ■



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KEYNOTE SPEAKER

José María Aznar

Former Prime Minister of Spain

Mr Aznar will explore the importance of infrastructure investment within the context of globalisation and the need for innovative finance models at a time of government austerity. He will also focus on building stability and encouraging development in Latin America, where Spain has many links.

PROGRAMME

WEDNESDAY 20TH NOVEMBER

EVENING:

Welcome & drinks reception

THURSDAY 21ST NOVEMBER

MORNING:

**International construction issues
& keynote address**

AFTERNOON:

Managing complex international projects

EVENING:

Gala dinner & ICEF awards ceremony

FRIDAY 22ND NOVEMBER

MORNING:

**Improving safety & efficiency through
modern construction equipment**

OTHER SPEAKERS INCLUDE



Jules Janssen

Treasurer of European
International Contractors and
head of construction at Besix



Scott Hazelton

Director of the IHS Global
Insight's construction and
manufacturing industries
practice



Miguel Jurado Fernández

General Manager of FCC
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MIKE CHALMERS takes a look at the men behind two international transport companies on the rise as challenges in the industry change

Meeting the challenge

The construction and transport industry means a lot of things to a lot of people, but there is one undeniable element to this industry that is universal to everyone involved: it is overflowing with challenges. Professionals in this business must possess a specific elasticity, typically fed by a wide range of problem-solving capabilities. The complexities they face often include, but certainly aren't limited to, peer relationship management, staff management, machine upkeep, governmental policy, logistics, geography and the ever-changing unknowns that emerge onsite within every single job.

If a company has expanded to include international business, well, these complexities have a way of expanding similarly. It takes a serious company with a serious leader to not just survive but thrive amid an industry with such a wealth of moving parts. This shows the quality of leadership in so many SC&RA member companies around the world. We take a look at two such enterprises in this issue, and the accomplished men driving each business through the challenging terrain of international crane and specialized transport.

Frank DeVries, of Challenger, an international transport and warehousing company based in Cambridge, Ontario, Canada, knows as much about transport complexities as anyone in the business. What began as a one-man, one-truck operation in 1975, has turned into one of the largest privately owned truckload carrier companies in Canada. It has been consistently recognised by its customers, and in the industry, for the outstanding quality of its services. For 28 years Challenger has continuously strived to surpass its previous standards of quality and performance, often carving innovation into its culture along the way. Challenger transports goods between Canada, North America and around the world.

"Every day presents new challenges, either due to the actual loads, the circumstances, timelines, customer requirements and demands or simply because we sometimes tread into uncharted waters – since our economy is becoming ever more global in scope," explained DeVries. Challenger's motto is *We Go the Distance*, and the company has been pushing itself to the limit for customers since the beginning. Joining

DeVries in acknowledgement of such an axiom, Dan Einwechter, CEO, looks with fondness on what such a designation means to his business, "Our motto is perfect because of its literal meaning – travelling miles and miles throughout North America – and the emotional context of doing whatever it takes to get the job done safely for our customers and stakeholders."

Building success

In 2012 Challenger was given the honour of being recognised as one of Canada's 50 Best Managed Companies, for the 13th consecutive year and has been a Platinum Member since 2007. Challenger is an active leader in many significant green initiatives, including LEED certification of its headquarters and a SmartWay Transport partnership. In addition to the state-of-the-art headquarters in Cambridge, the Challenger Group has facilities in Montreal, Toronto, London, Mississauga, Vancouver, Calgary, Winnipeg and Edmonton.

With success and expansion comes plenty of challenge and DeVries echoes the sentiments of most of his industry peers on this reality. "Boundaries, both literal and perceived are being pushed due to the fact that various other regions of the world are competing for 'local' business, and manufacturing goods that are becoming ever larger and heavier." DeVries admits that loads that would have been impossible years ago are now routinely transported due to need, or even the fact that equipment has progressed over the years. "Electronics have made many things possible with equipment that was not possible in bygone days due to mechanical limitations, and consequently, the need for transport of bigger and heavier products is ever increasing."

Regardless of the size of his business, or advances in technology, DeVries and Challenger continue to focus on the most >

Andre Friderici



important parts of the industry – parts that will either make or break a company: safety and customer satisfaction. “One of the most rewarding aspects of the job, particularly a complex and challenging one, is the satisfaction that comes with flawless execution – where we are able to present an invoice that matches the quote, and the customer is beaming with satisfaction. Having a competent, motivated staff that ‘wears the brand’ is vital, as well, and we consistently rely on the expertise and input of our employees to help develop efficient, safe solutions.”

DeVries has inherited a unique brand of wisdom in his time with Challenger – some of it age-old, some modern and adaptable. “You have to rely on your people to do a good job for you. All competent employees strive to stand out from the rest of the crowd, and allowing and enabling them to do so is vital to the success of any organisation. Secondly, don’t be afraid to work together with other asset-based carriers. We work in a

limited market, both equipment-wise and customer-wise. Not every transportation provider can do the specialized work that we do. Find other companies that share your goals and ethics, and if the need arises, you have a valuable resource.”

He also appreciates the value of relationships, with one in particular ranking high on his list. “I believe SC&RA membership is extremely valuable. As mentioned in my previous point, working together just makes sense in our industry. It also allows us to work towards common goals more efficiently. The SC&RA has a host of valuable resources, from permitting information to guidance and advice on legal matters, and even access to discounted insurance.”

To Switzerland

Across an ocean and through several countries, we find that, as much as the geography and culture might change, the crane and transport challenges remain similar, especially for the people in charge. Andre Friderici is one of these people, and his Switzerland-based company, Friderici Special, has built a name for itself as a full-service, specialized transport carrier willing to move any load, at any time, across the challenging terrain of not only his home country, but throughout Europe and around the world.

Friderici, administrator and technical director at the business that bares his name, operates a company that prides itself on a belief system shared by many

Frank DeVries



of the industry’s success stories, including one detail that more than a few crane and specialized transport enterprises celebrate: it’s a family business.

Created in 1890, in Morges, Switzerland, Friderici Special is a fourth-generation family business employing 175 people, with 80 trucks and 200 trailers and semi-trailers of every kind and capacity. Friderici Special has 11 telescopic cranes and self erecting cranes in use locally, and boasts an ability to move heavy and oversized loads up to 500 tonnes. At the helm are Andre and his brother, Jean-Paul. Both men have a son in an essential role at Friderici as well (assuring the fifth generation).

Friderici Special, like Challenger, is known for its willingness to take on any job, no matter the challenges. Specializing in the transport of railcars, locomotives and city tramways is one unique service Friderici provides, but the fun really starts when the contract takes them up onto the often-treacherous Swiss mountain roads, with their famously unforgiving twists, turns and downhill sections.

Andre Friderici has discovered that his company benefits from strength in numbers. He represents ASTAG Switzerland (the Swiss association for all road and transport companies) in the European Association of Abnormal Road Transport and Mobile Cranes (ESTA).

“Switzerland is a little state in the middle of Europe, and we need good contact with our friends and associations, especially with the border countries. I’ve been working in two ASTAG groups, crane and heavy transport, for more than twenty-five years, representing the ASTAG Switzerland in the European ESTA.”

Since April, Friderici has held the title president of heavy transport at ESTA, representing 30 countries. His goal is to harmonise a full spectrum of procedures and requirements throughout the European crane and specialized transport industry.

Friderici has also been an SC&RA member for 15 years, understanding completely the value that this international association brings to his day-to-day operations. “The SC&RA membership has provided us with professional contacts and friends all over the world.” ■

ABOUT THE AUTHOR

Mike Chalmers is editor-in-chief at Thrive Creative Services, a creative copywriting agency based in Chicago, USA. For more information see www.thrivecs.com

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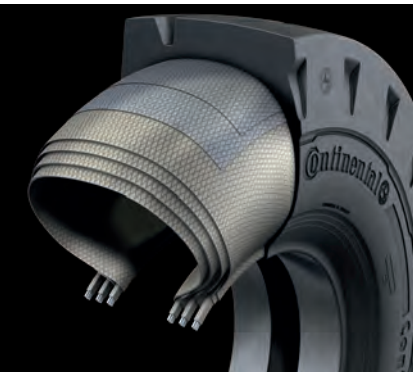
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A BIRD'S EYE VIEW FROM BRIGADE

Safety equipment manufacturer Brigade Electronics, UK, has launched a camera system that can display 360 degree views.

The Smarteye 360 degree camera system is aimed at haulage, construction and mining industries. The system consists of four cameras, which can be placed around the vehicle. The images are displayed as a single view on a high definition monitor, providing the driver with a bird's eye view of the surrounding area, the manufacturer said. Each camera has an ultra-wide angle lens and videos are displayed in real time.

Brigade Electronics will showcase the Smarteye system alongside a range of products, including the Backeye range of heavy duty cameras and monitors and the white sound reversing alarm, at the Bauma Africa construction equipment exhibition, 18 to 21 September 2013 in Johannesburg, South Africa.

■ For more information see: www.brigade-electronics.com



Tyre manufacturer Continental Commercial Specialty Tires (CST) has introduced a range of tyres for port fleets.

The range was showcased at the TOC Europe 2013 event in the Netherlands.

The portfolio contains tyres for all vehicle types operating in port logistics, including straddle carriers, reach stackers, rubber tyred gantry cranes, and

heavy-duty forklifts.

Most of the tyres use V.ply technology where the tyre is made using a weaving pattern of multiple cords and 20 layers of cross-ply fibre woven into three separate wire beads. This allows the sidewalls to be three times thicker than those used in radial tyres.

■ For more information see: www.continental-specialty-tires.com

HOOKCAM FROM PACIFIC SYSTEMS

Safety service provider for the crane and construction industry, Pacific Systems Solutions, has released a new Generation Five model of the HookCam, a camera designed for tower cranes, crawler and gantry cranes.

The HookCam can be directly attached to the hook block of a crane. It provides the operator with an aerial view, helping the operator to communicate better with the rigger. It also helps the operator see the pace and swing of the load, a company spokesperson said. The video is wirelessly transmitted to the operator in the cabin.

■ For more information see: www.hookcam.com



Lightweight hydraulic torque wrench new from Enerpac

Enerpac, a manufacturer of high-pressure hydraulics, has launched a new lightweight torque wrench pump, the TQ700.

The TQ700 has been engineered to meet torque applications in the wind turbine industry. It delivers 50 % faster bolting and improves the flow rate across the entire bolting cycle, the manufacturer said. The pump can be used in remote, low or generator-powered erection sites.

"While the TQ700 Lightweight Torque Wrench Pump is perfect for multiple

wind turbine applications, such as rotor assembly and tower segment attachment, it can also be successfully employed in the oil and gas industry, mining applications and other

industrial bolting functions," said Brian Alexander, global product manager pumps and valves at Enerpac.

■ For more information see: www.enerpac.com



MINI SERIES OF HOISTS FROM JDN

J D Neuhaus (JDN), a manufacturer of hoists, winches and cranes, has introduced the Mini Series of hoists for load capacities of 125, 250, 500 and 980 kg.

The hoists are designed to be compact and light and can be supplied with trolleys for overhead rail mounting, a company spokesperson said. A Mini Manipulator version is also available for single handed load handling and positioning. For heavy handling requirements up to 100 tonnes, there is JDN Profi TI product range.

All JDN hoists are provided with pendant controllers, have a built-in emergency air shut-off valve and can work in temperatures from -20 to +50 degrees Celsius for the mini range and +70 degrees Celsius for the remaining products.

■ For more information see: www.jdngroup.com



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www.scranet.org

BAUMA AFRICA

18 – 21 September 2013
Gallagher Convention Centre
(GCC), Johannesburg,
South Africa
www.messe-muenchen.de

INTERNATIONAL RENTAL CONFERENCE CHINA

14 October 2013
Beijing, China
www.khl.com/irc

BICES 2013

15 – 18 October 2013
Beijing, China
www.e-bices.org

HEAVY EQUIPMENT MODEL SHOW

20 October 2013
Lancashire, UK
heavyequipmentmodelshow.
infos@yahoo.co.uk

WORLD CRANE AND TRANSPORT SUMMIT

29 and 30 October 2013
Amsterdam, Netherlands
www.khl.com/wcts

INTERNATIONAL TOWER CRANES

4 and 5 November 2013
Berlin, Germany
www.khl.com/itc

ICEF INTERNATIONAL CONSTRUCTION ECONOMIC FORUM

20 – 22 November 2013
Amsterdam, Netherlands
www.khl.com/icef

INTERMAT MIDDLE EAST

14 – 16 January 2014
Abu Dhabi
www.intermatme.com

CONEXPO 2014

4 – 8 March 2014
Las Vegas, Nevada, USA
www.conexpoconagg.com

INTERNATIONAL RENTAL EXHIBITION

24 – 26 June 2014
Amsterdam, Netherlands
www.ireshow.com

BAUMA CHINA 2014

25 – 28 November 2014
Shanghai, China
www.bauma-china.com



This issue's Picture of the month was sent in by IC reader Earl Johnson from Southern Crane in the USA. Pictured is a 1969 Bucyrus Erie Hydrocrane model H3, 3 ton (2.7 tonne) boom truck, owned by PL Anderson in Danville, Virginia. According to the owner, the crane still runs and the truck only has 11,000 miles on the clock. The picture was taken by crane operator Frank Perry from Southern Crane.

PEOPLE NEWS



■ **DERRICK DEAKINS** has been promoted to president at lifting provider Bishop Lifting

Products in the USA.

Prior to joining Bishop, Deakins held senior finance and engineering positions at Shell Oil Company and Hewlett Packard, a company spokesperson said.

Otis Dufrene, CEO at SBP Holdings, parent company of Bishop Lifting Products, said, "Derrick joined Bishop Lifting Products as chief financial officer in 2007 and was appointed chief operating officer earlier this year. He has been instrumental in the development and execution of both our tactical as well as our strategic plans and is a valuable part of our executive management team."

■ **DAVID RODRIGUES** has been made chief executive officer at lifting and transport service



provider Makro Engenharia in Brazil.

His previous position at the company was

commercial director. In his new role, Rodrigues will help develop the company and strengthen its brand in the market.

Rodrigues has wide experience with cargo lifting and transportation and has been working with Makro since 1995.

■ The Association of Equipment Manufacturers (AEM) in the USA has elected **TIFFANY SEWELL-HOWARD** as director of the CE sector on the AEM board.

Sewell-Howard was chief executive officer at Charles Machine Works, in Perry, Oklahoma.

The role of an AEM board member is to work on behalf of all AEM member companies to provide guidance for Association services, activities and programmes.

■ **Yanmar** and **JCB** diesel engine distributor Power Equipment, USA, has appointed



MARK CRITCHLEY as the industrial equipment manager for Washington and Northwest Territories and Canada.

In his new role, Critchley will be responsible for both the Yanmar and JCB brands of diesel engines. Prior to this appointment Critchley worked in a similar role for 14 years for a competing company, a company spokesperson said.

"In my previous role I used to come up against the Yanmar brand all the time," Critchley observed, continuing that, "It is such a strong brand which has an extremely solid reputation for quality and durability. To now be in the position to call on dealers, OEM customers and end users throughout Washington representing Yanmar, is a privilege."

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

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2 ORGANISATION TYPE

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Industrial Establishment ☐

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STOCKLIST

TELESCOPIC AT-CRANES

Capacity	Manufacturer	Type	Year	Drive/Steering	Boom/jib (m)	Delivery
250 t	Demag	AC 665 SL	1996	12 x 8 x 8	58 / 22 / 65	direct
120 t	Liebherr	LTM 1120/1	2000	10 x 8 x 10	56 / 28	direct
100 t	Grove	GMK 4100 L	2008	8 x 8 x 8	60 / 22	direct
80 t	Faun	ATF 80-4	2005	8 x 6 x 8	48 / 16	direct
80 t	Liebherr	LTM 1080	2000	8 x 6 x 8	48 / 19	direct
80 t	Demag	AC 80-1	1998	8 x 6 x 6	50	direct
80 t	Krupp	KMK 4080	1993	8 x 6 x 8	43 / 13	direct
70 t	Faun	ATF 70-4	1999	8 x 8 x 8	40,5 / 16	direct
70 t	Krupp	KMK 4070	1995	8 x 6 x 8	38 / 16	direct
70 t	Liebherr	LTM 1070	1993	8 x 8 x 8	42 / 18	direct
70 t	Liebherr	LTM 1070	1986	8 x 8 x 8	35 / 10	direct
60 t	Liebherr	LTM 1060/2	2000	8 x 6 x 8	42 / 17	direct
60 t	Krupp	KMK 4060	1990	8 x 8 x 8	35 / 16	direct
60 t	Grove	AT 865	1990	6 x 6 x 6	35 / 18,5	direct
55 t	Liebherr	LTC 1055-3.1 (2x)	2005	6 x 6 x 6	36 / 7,8	direct
55 t	Krupp	KMK 4055	1989	8 x 6 x 8	35,1 / 16	direct
50 t	Faun	ATF 50-3	2000	6 x 6 x 6	38,6 / 16	direct
50 t	Grove	GMK 3050	1998	6 x 6 x 6	38 / 9	direct
40 t	Demag	AC 40-1 City	2000	6 x 4 x 6	31,2 / 13	direct
40 t	Liebherr	LTM 1040/1	1999	6 x 4 x 6	30 / 14,5	direct
40 t	Faun	RTF 40-3	1993	6 x 6 x 6	30 / 14,5	direct
35 t	Terex Demag	AC 35	2006	4 x 4 x 4	30,4 / 15	direct
35 t	Grove	GMK 2035	2000	4 x 4 x 4	29 / 15	direct
35 t	Grove	GMK 2035	1998	4 x 4 x 4	29 / 15	direct
35 t	Liebherr	LTM 1035-2	1988	4 x 4 x 4	26 / 8	direct
35 t	Liebherr	LTM 1030/2	2003	4 x 4 x 4	30 / 15	direct
35 t	Liebherr	LTM 1030/2	1998	4 x 4 x 4	30 / 15	direct
30 t	PPM	ATT 335	1997	4 x 4 x 4	27,4 / 15	direct
30 t	Luna	AT 30/27	1989	4 x 4 x 4	27 / 7	direct
30 t	Luna	AT 30/27	1989	4 x 4 x 4	27	direct
20 t	Krupp	KMK 2020	1994	4 x 4 x 4	20,5 / 3,8	direct

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180 t	Demag	TC 650	1981	10 x 6 x 6	72 / 60	direct
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50 t  Faun HK 50, 2008	60 t  Terex TC 60 L, 2008	60 t  2 x Liebherr LTM 1060-2, 2003 & 2002
70 t  Demag AC 60, 2002	80 t  Tadano Faun ATF 80-4, 2003	90 t  2 x Liebherr LTM 1090-2, 2000 & 2009
100 t  Liebherr LTM 1100-5.2, 2009, 33 m Spitze/Jib	100 t  2 x Demag AC 100/4, 2009	160 t  Grove GMK 5160, 1999

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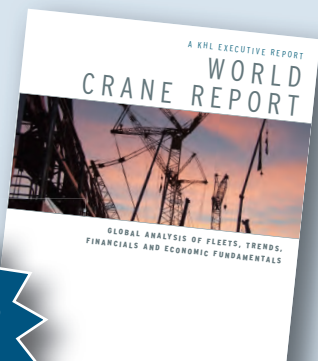


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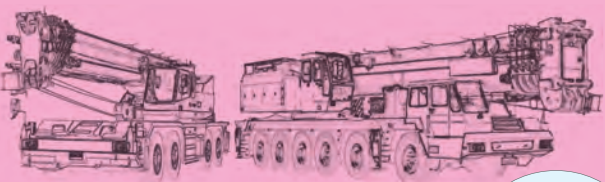


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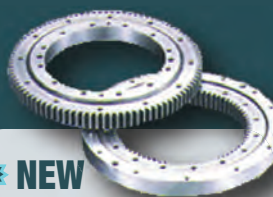
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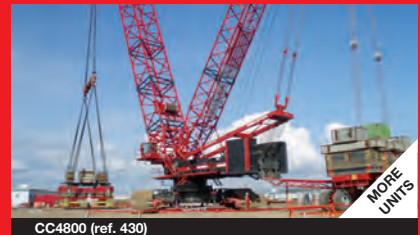
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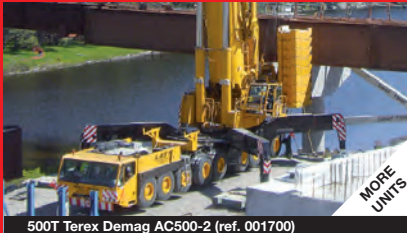
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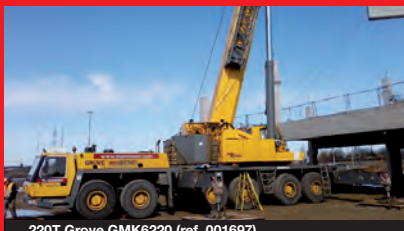
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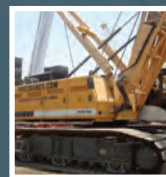
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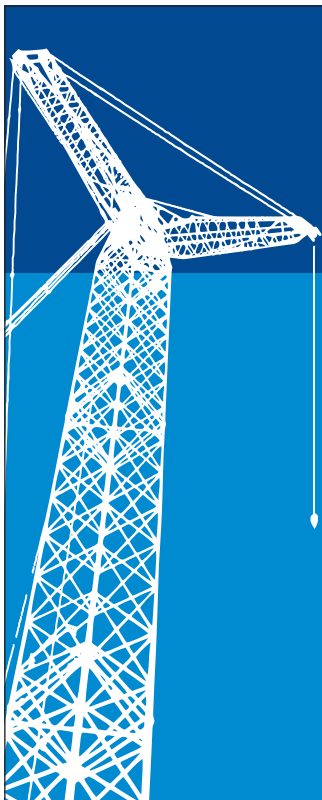


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60 t	Grove RT760E	2008
65 t	Grove RT765E	NEW!
80 t	Grove RT880E	NEW!
90 t	Grove RT890E	NEW!
130 t	Grove RT9130E	NEW!
150 t	Grove RT9150E	NEW!

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ALL TERRAIN-CRANES

Make / Type	y. o. m.	Drive	Boom / Fly Jib
20 t Gottwald AMK 31-21	1984	4x4x4	20,50m
30 t PPM ATT 335	1997	4x4x4	27,40m + 15,00m
30 t Liebherr LTM 1030/2	2003	4x4x4	30,00m + 15,00m
33 t P&H S 35	1987	4x4x4	25,90m
35 t Terex Demag AC 35	2006	4x4x4	30,00m + 15,00m
40 t Terex Demag AC 40/2L	2008	4x4x4	37,00m + 8,00m
40 t Demag AC 40-1 City	2000	6x4x6	31,20m + 13,00m
40 t Liebherr LTM 1040-1	1999	6x4x6	30,00m + 14,50m
50 t Faun ATF 50-3	2000	6x6x6	38,60m + 16,00m
55 t Liebherr LTC 1055-3.1	2005	6x6x6	36,00m + 7,80m
55 t Liebherr LTC 1055-3.1	2005	6x6x6	36,00m + 7,80m
55 t Liebherr LTM 1055-3.2	2008	6x6x6	40,00m + 16,00m
55 t Krupp KMK 4055	1989	8x6x8	35,10m + 16,00m
55 t Grove GMK 3055	2005	6x6x6	43,00m + 15,00m
55 t Grove GMK 3055	2008	6x4x6	43,00m + 15,00m
60 t Liebherr LTM 1060/2	2000	8x6x8	42,00m + 17,00m
70 t Krupp KMK 4070	1995	8x6x8	38,10m + 16,00m
70 t Faun ATF 70-4	1999	8x8x8	40,50m + 16,00m
70 t Faun ATF 70-4	1998	8x8x8	40,50m + 16,00m
80 t Faun ATF 80-4	2005	8x6x8	48,50m + 16,00m
80 t Krupp KMK 4080	1993	8x6x8	43,00m + 13,00m
110 t Tadano Faun 110 G-5	2008	10x8x8	52,00m + 30,00m
120 t Terex-Demag AC 120-1	2006	10x6x8	60,00m + 17,60m
130 t Liebherr LTM 1130-5.1	2007	10x8x10	60,00m + 19,00m

LATTICE-BOOM-TRUCK-CRANE

115 t Link-Belt HC 238	1982	10x6x6	48,00m/18,00m
170 t Demag TC 650	1981	10x4x6	72,00m/48,00m

INDUSTRIEKRAN / YARD-CRANE

14 t Demag V 73	1988	4x2x2	13,10m
12 t Liebherr LI 1012	1990	4x2x2	12,00m

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SCX800 80T 2009

1 x Sumitomo LS238	100t	1992
1 x Hitachi-Sumitomo SCX900-2	90t	2007
1 x Hitachi-Sumitomo SCX900-2	90t	2008
2 x Hitachi-Sumitomo SCX800-2HD	80t	2009
1 x Hitachi-Sumitomo SCX700-2	70t	2008
1 x Kobelco CKE700	70t	2006

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