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NOVEMBER 2015
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on the part of the speakers and the organisers is so worthwhile. I'll take the liberty of thanking them on behalf of everyone who attended and to say that the effort is appreciated.

At the 2015 WCTS I had the feeling that, in more ways than one, a real turning point had been reached. Part of it was that the event has very much come of age and is now firmly established as a significant and valuable feature of the industry's calendar. The speakers' presentations were world-class and especially thought-provoking this year. They stimulated debate during the question and answer sessions that continued into the breaks and networking sessions and, hopefully, beyond the event.

A primary aim of the WCTS is to provide a forum that helps generate and give people ideas so that they can make the industry safer and run things more efficiently. I hope that as many as possible of the 270-plus attendees from more than 100 companies left the event with something valuable. Another development I sensed over previous events was a stronger showing of people from more countries – this year nearly 30 were represented. Highlights and further details of the event are presented in our review starting on page 44.

Also in this issue is our main feature on below the hook lifting equipment, starting on page 15 and featured on the front cover. In a sector where things often get taken for granted it is great that people are making the most of opportunities. A lot of thought and effort is being put into technical innovation and other interesting developments designed to improve safety and to enhance performance. Long may it continue.

ALEX DAHM

Editor



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Having just returned from our 2015 World Crane and Transport Summit (WCTS) in Amsterdam, Netherlands, all sorts of things are rushing around in my head. Other than what you may be thinking, many of them, I am pleased and proud to say, are positive feedback from this two-day conference for the lifting and transport industry worldwide. It is great to know that the huge amount of hard work

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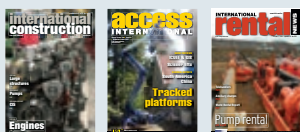
Below the hook

THE MAGAZINE FOR EQUIPMENT USERS AND BUYERS

Modulift's new Trunnion End Unit is designed to improve safety and reduce the set up time. See page 15 for more on below the hook equipment.

SUBSCRIPTIONS

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FEATURES

BELOW THE HOOK

Being versatile while improving safety and productivity are just some of the demands for below the hook equipment. *Laura Hatton* finds out more

SPMT

As components get bigger and technology more advanced, a new generation of self propelled modular transporters has begun. *Laura Hatton* investigates

SITE REPORT

Turkish crane and transport service provider Sistem Vinç is helping to construct a bridge over the Bay of İzmit in Turkey. *Gökhan Uz*, editor of *IC* sister magazine *CPT*, reports

ROUGH TERRAINS

The main market for rough terrain cranes has shifted and manufacturers are introducing upgrades and new higher capacity models. *Laura Hatton* reports

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ICM20

A 10 % decline in total combined sales for the world's top 20 crane manufacturers over the previous year might not come as a huge surprise. Within that, however, there are still some bright spots. *IC* reports

SPMT SITE REPORT

Aertssen Kranen and its subsidiary Roll-iT helped transport and install a reactor at the BP plant in Geel, Belgium. *IC* reports

WC&TS REVIEW

The fifth World Crane and Transport Summit was welcomed by more than 270 delegates as it opened its doors at the NH Grand Krasnapolsky Hotel in Amsterdam, the Netherlands. *IC* reports



SC&RA

SC&RA COMMENT

Comment from Joel Dandrea, SC&RA executive vice president

SC&RA NEWS

The September 2015 SC&RA Crane & Rigging Workshop in Colorado, USA, offered great opportunity. *Mike Chalmers* reports

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HIGHLIGHTS

■ UK-based heavy lift and specialized transport company ALE has opened a new branch in Tianjin, China. The service provider already has offices in Vietnam, Indonesia, Thailand, the Philippines and Malaysia. Jeff Lee, ALE country manager China, said, "We have been operating and executing projects in China for many years, focusing on transportation and load-out services. We made the decision to invest in a permanent base in the port city of Tianjin to better service the Chinese developing global EPC contractors, the existing offshore markets, and expand our business development opportunities throughout the country."

■ German crane manufacturer Liebherr has opened a sales and service centre in Bogotá, Colombia. The centre will be used to help improve the range of services for mobile and crawler cranes in South America, the manufacturer said. The centre will also be used to provide service support in Ecuador. The new location is operated by Liebherr Colombia SAS, which was founded in October 2011. The company's head office employs around 50 people and is in Barranquilla. As well as providing service, the centre also sells mobile cranes for ports and harbours. This new location also offers a local spare parts warehouse and four trained local service engineers, a spokesperson said.

■ Heavy lifting and transport service provider Wagenborg Nedlift has taken delivery of a new Palfinger PK 27002-SH compact crane. The compact crane has a 12.8 metre main boom. Total boom length, including fly-jib, is 22.2 m. The model offers capacities up to 8.6 tonnes. The Palfinger PK 27002-SH is suitable to work in tight spaces and has dimensions of 5.4 x 2.4 x 2.3 m. In addition, it is electric and eco-friendly.

Manitowoc chairman and CEO steps down

Glen Tellock has resigned as crane manufacturer Manitowoc's chairman, president and chief executive officer and will step down from the board of directors, to pursue other opportunities. Board member Kenneth Krueger was appointed interim chairman, president and chief executive officer, effective immediately. The Manitowoc Board of Directors reported that it has initiated a search for a chief executive officer of Manitowoc Cranes.

Roy Armes, Manitowoc lead independent director, said, "The Board of Directors, believe this is the right time for



Glen Tellock

new leadership at the company. Ken's deep knowledge of Manitowoc's businesses, coupled with his robust financial and operational expertise, make him an excellent choice to lead the company's efforts as we execute

a search for our next chief executive officer.

Armes continued, "On behalf of the Board of Directors, I want to thank Glen for his efforts and contributions to Manitowoc over the last 24 years. We wish him well in his future endeavours."

Tellock's resignation came just after the Manitowoc Company reported third-quarter 2015 sales of \$863.5 million, a 12.5 percent decrease from \$986.3 million in the third quarter of 2014. The company said approximately 40 percent of the decline was due to unfavourable foreign currency impacts.

New Terex president and CEO to replace Ron DeFeo

John Garrison will replace Ron DeFeo as Terex Corporation president and CEO from 1 January 2016. Garrison was previously Bell Helicopter president and CEO.

DeFeo will continue through 2016 as a consultant for Terex.

Commenting on the appointment David Sachs, Terex lead director, said, "John is a proven leader with considerable experience across a variety of industries. The Board considered a highly qualified pool of outstanding candidates and we strongly believe that John is the right person to lead Terex and Konecranes Terex into the future."

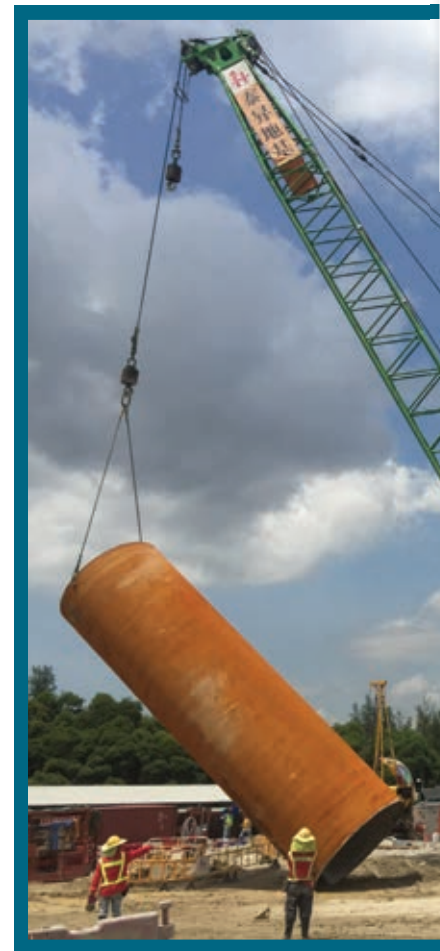
Sachs continued, "We are grateful for Ron's many contributions to Terex over the years and his leadership through both good and bad economic cycles in continuing to improve the company into the premier company it is today. We are pleased that Ron will be available

through the leadership transition."

Ron DeFeo said, "I am proud of the company Terex has become in my 23 years as Terex's leader. With my planned retirement, this day was inevitable and I am confident that John will be able to continue to create value for our shareholders and the shareholders of Konecranes Terex."

John Garrison said, "I am extremely excited to be leading Terex at such an important time in its history. I look forward to building on the strong foundation the team has built and positioning Terex and Konecranes Terex for success in the future."

Garrison is a 1982 graduate of the United States Military Academy at West Point and received a Master of Business Administration from the Harvard Business School. He will be based at Terex in Westport, Connecticut, USA.



HIGHLIGHT

■ Crane and transport service provider Havator has been awarded a €1.2 million (US\$ 1.8 million) contract to help construct a bioproduct mill in Äänekoski, central Finland. The contract was awarded by Metsä Fibre, part of the Metsä Group. The contract covers lift planning, monitoring on-site safety, and co-ordinating the logistics between the site and storage facilities. The bioproduct mill is the largest investment in Finland's forest industry. It is scheduled for completion in 2017. Jussi Yli-Niemi, Havator CEO, said, "We are proud to have been chosen as the lifting and project services provider for this major new Finnish forest industry investment."

Crawler crane pair new from Mait

Italian crane and foundation drilling rig manufacturer Mait has added two new crawler cranes to its range. The lattice and telescopic boom models were shown at the GIS Show of cranes, transport and access equipment in Piacenza, Italy, from 1 to 3 October.

Larger of the two new models is the 90 tonne capacity M90HD, a heavy duty lattice boom crane that can be used for lifting but also clamshell, compaction, grab and dragline applications. It is an export machine, said Federico Tomarelli, Mait area manager. Maximum hook height is 57.9 metres. Capacity at 20 m radius on a 30 m main boom is given as 11.5 tonnes. Power is from a 403 kW Caterpillar C15 diesel. Line pull on the first layer is 235 kN and the maximum line speed is 100 m/min.

The other new model is the T28, a 28 tonne capacity telescopic boom crawler crane with 23.4 metre boom. Maximum sheave height is given as 25.64 m. It is designed to have minimal dimensions to allow operation in confined spaces. Powering the T28 is a 129 kW Cummins QSB 6.7 diesel to Tier 4 Interim exhaust emission specification.

Its 93 kN main winch is fitted with 20 mm wire rope



Mait M90HD heavy duty lattice boom crawler crane

and the 40 kN second winch has 16 mm rope.

The T28 weighs in at 39.5 tonnes.

RECORD LIEBHERR TOWER DEAL

Liebherr has started delivering tower cranes to fulfil the company's largest ever single order. A contract for 58 tower cranes from the EC-H series was placed by Turkish contractor İGA Havalimanı İşletmesi A.Ş. with Liebherr-Werk Biberach for the construction of the new Istanbul airport.

The order comprises 32 units of 280 EC-H 12 Litronic, 16 units of the 200 EC-H 10 Litronic, and 10 of the 154 EC-H 6 Litronic. All are conventional saddle jib tower cranes with cat heads and pendants. Capacities are 12, 10 and 6 tonnes, respectively, and hook heights will be between 30 and 60 metres.

The Istanbul Yeni Havalimanı is also destined to break records in its own right as the largest airport in the world with 150 million passengers a year, Liebherr said. Work started in June 2014 on the 9,000 hectare site which is 35 km north of Istanbul. It will have six runways and 165 stands. The tower cranes will be on site until 2018.



Tysan Foundation put two Sennibogen 6130 HD crawler cranes to work on a new skyscraper project in Hong Kong. The lattice boom crawler has a

130 tonne capacity and is powered by a 708 kW engine.

The cranes are being used for piled foundations and foundation work. Work includes boring holes to a depth of 90 metres for the foundations. Using a Leffer VRM 3300 casing machine, the 6130 HD crawlers are driving

3.3 m tubular piles into the ground. The crawlers are fitted with two 30 tonne freefall winches,

which are used to operate the 22 tonne freefall inner grapple. In addition, the

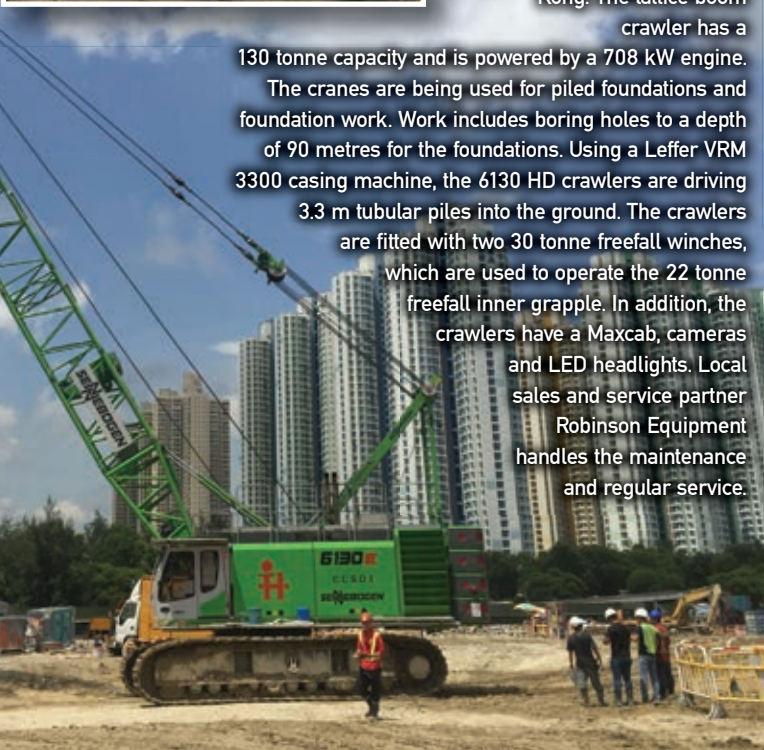
crawlers have a Maxcab, cameras

and LED headlights. Local

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Robinson Equipment

handles the maintenance and regular service.



Bauma offers waiting list initiative

More than 700 companies are on the waiting list to exhibit at Bauma - the world's biggest construction equipment exhibition. It takes place next April in Munich, Germany. Now, for the first time, those companies are being offered the chance to have a presence at the show without an exhibition booth.

Under the new initiative, companies on the waiting list will be able to have their company name listed in the Bauma directory and have access to a special lounge where they can make appointments and hold meetings during the

exhibition. Depending on the package of services booked, the new initiative will cost between €3,000 and €5,000 per company listing.

Klaus Dittich, organiser Messe München CEO, said, "We want to give companies that we have been unable to accommodate in the past an opportunity to call the Bauma community's attention to themselves and their products and to make contacts during the fair." By the start of November [2015] around 17 companies had signed up. Further information is available at: www.bauma.de

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**WORLD CRANE
AND TRANSPORT
SUMMIT 2015**
AMSTERDAM
4 AND 5 NOVEMBER

The fifth World Crane and Transport Summit was welcomed by more than 270 delegates as it opened its doors at the NH Grand Krasnapolsky Hotel in Amsterdam, Netherlands, last week. The event was opened by Alex Dahm, editor of *International Cranes and Specialized Transport* magazine, followed by Joel Dandrea, Specialized Carriers and Rigging Association (SC&RA) executive vice president. The conference was held over two days.

The World Crane and Transport Summit was organised by *IC* magazine and KHL Group. It was supported by industry associations, including the SC&RA and ESTA. Gold sponsors were Terex and Zoomlion. Silver Sponsors were Kobelco, Liebherr, Manitowoc, Scheuerle/Nicolas/Kamag and Tadano. Supporting sponsors were A1A Software, Blok Cam, Faymonville, Goldhofer, Modulift, Trimble and WireCo WorldGroup. A full review of the event is on page 44.

New models from Hiab

Hiab, part of Cargotec, has launched three new models of high capacity cranes. The new models are the Hiab X-HiPro 548, the Hiab X-HiPro 638, and the Hiab X-HiPro 658.

They are designed to lift heavy and bulky materials, with high speed and precision. Features include chain-driven stabiliser span, hydraulically tilting stabiliser legs, a quick to install jib and an easy-folding jib and hoist system. In addition, the models are fitted with auxiliary legs, Variable Stability Limit+, which automatically regulates lift capacity in relation to stability, and the Load Stability System, which dampens uneven lifting movement.

Carl Gustaf Göransson, Hiab senior vice president, sales and markets, said, "Hiab wants to be the leading provider in the heavy crane segment. These new models demonstrate our ongoing commitment to developing products that are perfectly matched to our customers' needs for safety and cost efficiency. We are delighted with the customer response we have received so far."

The Hiab X-HiPro 548



Marcel Boxem, Hiab director, heavy range, loader cranes, said, "These cranes have been designed for performance. The new hydraulic and electronic systems make control of the cranes smoother, more accurate, and faster than ever before, and the new damping system creates a very stable,

gentle performance when lifting. Our new control valve delivers much higher oil flows, which gives significant improvements in speed, and the new base design halves the time it takes to set the crane up for a lift."

HIGHLIGHT

■ UK crane rental company John Sutch Crane has added a new Kato CR-200Ri city crane to its fleet. The 20 tonne capacity model was supplied by official Kato distributor Rivertek Services Ltd in Ireland. It is the first model in the UK. John Sutch, John Sutch Crane, said, "We are delighted to receive the first new Kato CR-200Ri into the UK and we will continue to invest in the latest equipment to provide the most efficient solutions for our customers."

Hong Kong station by Leighton-Gammon

Leighton-Gammon cranes on site include three 280 EC-H 16 Litronic units and four luffing jib 355 HC-L Litronic 16/32 models

Leighton-Gammon JV has put seven Liebherr tower cranes on the West Kowloon Terminus Station North in Hong Kong.

The cranes are working on the Hong Kong section of the Guangzhou-Shenzhen-Hong Kong Express Rail Link (XRL). Once complete, the rail link will have 15 platforms, connecting passageways, customs and immigration facilities, departure lounges, retail outlets and a large entrance hall. The WKT will connect to China and is expected to have almost 99,000 passengers daily.

To overcome issues with overcrowding, the terminus and railway line will be built underground. Five of the cranes were on site at the time of writing in early November, including three 280 EC-H 16 Litronic units, each with a

capacity of 16 tonnes, and two luffing jib 355 HC-L Litronic 16/32 models. Two 355 HC-L Litronic 16/32 units are due to be installed later this year.

The cranes are rented from Liebherr Singapore. Work at the site includes an open-cut excavation of 1.7 million cubic metres of earth to a depth of 33 m. The roof is being constructed with prefabricated components, weighing up to 40 tonnes each and spanning up to 45 m.



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HIGHLIGHT

MC Industrial has been awarded a contract with Germany-based global manufacturer of bulk material handling systems, Förderanlagen Magdeburg (FAM), for a new equipment installation project at ArcelorMittal's steel mill facility in Indiana, USA. FAM supplied ArcelorMittal a new stacker reclaimer to be erected at its Burns Harbor Terminal. FAM selected MC Industrial for the approximately 1,700 tonne equipment installation after reviewing the firm's work history at the steel producer's Burns Harbor site and the technical expertise in Stacker Reclaimer projects. The project team mobilised on 15 September 2015 to begin performing the structural and mechanical site erection. The project consists of design, fabrication, delivery, site erection and commissioning.

Chevron wins award for project involving Mammoet

Mammoet congratulated Chevron for receiving the Project Management Institute (PMI) Project of the Year Award for the El Segundo refinery coke drum reliability project. Mammoet played a large role on the team and in the project.

Chevron received the PMI Project of the Year Award because the project leaders managed to complete a high-profile refinery project on a compressed timeline in a resourceful way and finished ahead of schedule, \$7 million under budget and with an excellent safety record.

"Mammoet is proud to have been a part of this project and we are excited to see Chevron receive the award and recognition for it as everyone involved strived to make it

a success," said Pierre Mille, Mammoet USA sales director. "The Chevron project team

on this project was first class and it was a privilege to be part of it."



Melbourne, Australia-based crane rental company Skylift Crane Services has added a Tadano ATF 220G-5 to its fleet. The 5-axle all terrain has a six-section 68 metre boom and a 37.2 m extension. It has full hydraulic suspension, 85 km/h maximum road speed and can climb a 69 % gradient, the manufacturer said. In addition, the model has the Asymmetrical Outrigger Base Control system. Craig Meredith of Skylift Crane Services, said, "The over 200 tonne sector opens up a new range of work opportunities. With the right crane in our fleet we would be able to pitch for work with bridge construction, chiller replacement, high rise works and so on." Skylift's Tadano ATF 220G-5 has been working in the narrow streets of Melbourne's inner suburbs.


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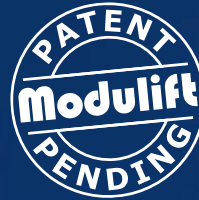
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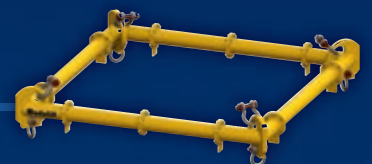
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Spreader Beams



Lifting Beams



Share prices for crane manufacturers rose in October and early November, despite more weak financial results. *IC* reports

Markets improve

Share prices around the world performed well in October. The period between weeks 40 and 45 saw the Dow Jones Industrial Average up by almost 10 %, with gains by the Nikkei 225 and FTSE 100 too.

This buoyancy was also reflected in the lifting sector where manufacturers' shares were up 12.25 % over the same period, led largely by the Asian manufacturers.

A range of factors pulled the markets up over the five week period. First was up-beat employment data in the USA, which is a key indicator of the health of the world's biggest economy. On the other hand,

there were some weak numbers in other areas, such as inflation and consumer prices, but these helped the markets.

Many believe the mixed picture on prices means that the US Federal Reserve will further put off the inevitable interest rate rise into next year. The longer interest rates stay low, the better for US companies, as any hike will further strengthen the Dollar and make exports less competitive on overseas markets. Essentially the stock markets want good news but nothing too good.

These factors helped crane manufacturers' shares rise between weeks 40 and

45, despite some lacklustre financial results. That period saw both Terex and Manitowoc report worse-than-last-year figures for the third quarter of the year. In Manitowoc's case, it prompted the resignation of Glen Tellock, Manitowoc Company chairman and CEO.

Coincidentally, Terex is also seeing a change of leadership, with Ron DeFeo stepping down as chairman and CEO. He will be succeeded by John L Garrison Jr, the current head of Textron's Bell Helicopter business.

Meeting targets

Share price rises in the face of poor financial results are always puzzling. The explanation tends to be a mixture of two factors as was the case in October.

First, as has already been discussed, the markets rose anyway, so the bad news was somewhat negated. The second is that investors may have already priced-in poor results to their company valuations, and the share price can rise if the numbers are not as bad as expected.

It is of course difficult to say for certain if that happened in October but, with some companies' shares rising more than the broad benchmark indicators like the Dow, it may have been the case.

The final months of the year tend to feature something of a rally. In any case, the usual seasonal pattern from now until January would be for a steady rally.

OCTOBER IC SHARE INDEX

STOCK	CURRENCY	PRICE AT START	PRICE AT END	PRICE CHANGE	% CHANGE	PRICE 12 MTHS AGO	12 MTH % CHANGE
IC Share Index*		49.37	55.41	6.05	12.25	63.12	-12.21
Legacy IC Share Index**		248.81	278.61	29.80	11.98	344.67	-19.17
Dow Jones Industrial Average		16272	17863	1591	9.78	17574	1.65
FTSE 100		6137	6367	230	3.74	6594	-3.45
Nikkei 225		17725	19266	1540	8.69	16781	14.81
Hitachi Construction Machinery	YEN	1604	1933	329	20.51	2390	-19.12
Konecranes	€	22.87	26.41	3.54	15.48	22.84	15.63
Kobe Steel	YEN	134	143	9	6.72	178	-19.66
Liugong	CNY	7.38	9.15	1.77	23.98	8.38	9.19
Manitowoc	US\$	15.15	15.62	0.47	3.10	21.13	-26.08
Palfinger	€	25.00	26.99	1.99	7.96	18.85	43.18
Sany Heavy Industry	CNY	6.36	7.14	0.78	12.26	6.39	11.74
Tadano	YEN	1324	1559	235	17.75	1671	-6.70
Terex	US\$	17.67	21.83	4.16	23.54	28.88	-24.41
XCMG	CNY	4.08	4.52	0.44	10.78	9.94	-54.53
Yongmao Holding	SGD	0.15	0.09	-0.06	-39.33	0.16	-41.29
Zoomlion	CNY	4.99	5.53	0.54	10.82	5.14	7.59

*IC Share Index, 1 Jan 2011 = 100

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

EXCHANGE RATES – VALUE OF US\$

CURRENCY	VALUE AT START	VALUE AT END	VALUE CHANGE	% CHANGE	VALUE 12 MTHS AGO	12 MTH % CHANGE
CNY	6.356	6.351	-0.0049	-0.08	6.06	4.79
€	0.8954	0.9191	0.0237	2.65	0.7376	24.61
Yen	120.12	121.91	1.79	1.49	102.51	18.92
UK£	0.6602	0.6589	-0.0013	-0.20	0.6119	7.69

Period: Week 40 - 45

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The Group

Modulift's new Trunnion End Unit is designed to improve safety and reduce set up time

Being versatile while improving safety and productivity are just some of the requirements for below the hook equipment.
LAURA HATTON reports

Efficient lifting

In the current market for below the hook equipment, there is a demand for versatile products that can work in a range of environments. In the bulk transport sector, for example, there is an increasing demand for versatile, low headroom lifting beams and frames. This is especially true for dockside and vessel cranes.

To help meet demands, Modulift has invested to develop advanced and custom designs for a wide range of lifting requirements. "The handling of a heavy component can often be something which is overlooked in the design phase, and is actually a very important aspect, particularly when concerning lifting equipment," Anthony Culshaw, Modulift senior design engineer explains. "There are two things that we do as standard with all of our larger products to ensure that they can be handled safely. First, the more efficient a design the lighter it can be

and therefore easier to handle. Second is the placement of handling aids (lifting lugs). We analyse our designs and test them to ensure that our components will lift balanced. This is very important as it avoids the unintentional swinging of a load as it leaves the ground."

To meet these demands, Modulift has introduced the Trunnion End Unit, a product designed to improve the safety and reduce the set up time required in heavy lift operations. "This shackleless solution is in essence a standard modular spreader. It uses the same struts and bolting configurations so is fully compatible with current and legacy equipment," Culshaw says. "The difference is apparent when looking at the end unit, the shape has been modified and a drop link removed to make way for the trunnion pin and cross pins. This allows for direct connection of slings to the spreader beam.

"In heavy lift applications slings and shackles are incredibly large and heavy, meaning assembly of a lifting rig can require multiple forklifts and in some cases can take days to complete safely.

The elimination of removable parts means that the timescale can be reduced hugely, as the slings can now just be looped over the corresponding trunnion," Culshaw adds.

The development of the eMax and load cell technology was to a large extent instigated by those using multiple units, manufacturer Elebia says

Intercomp's new CS1500 LED crane scale



From manufacturer Sparta Engineering is a range of bolt together spreader bars. The manufacturer has occasionally produced units but now offers more than 50 spreader bars in its library, including the bolt together units. The spreader bars are designed to comply with ASME B30.20 and BTH-1.

Jason Thompson, Sparta Engineering, says, "The bolt together units are made from two formed or structural channel so that no weld inspection is required. Not having to have a weld inspector look at each spreader bar recoups the cost of the bar over the life of the unit and is a lot less hassle for our customers. On our bigger telescopic spreader bars (60 tonnes and over) we use roller bearings to help them slide in and out better. This has been a huge hit with our customers.

"We have also done a number of unique custom lifting devices that are purpose built, such as a standoff bracket designed to manipulate skids made from I-beams. We have also made special below the hook lifting devices to lift 400 barrel oil tanks."

From lifting product manufacturer Caldwell Group, based in Illinois, USA, is a range of composite lifting and spreader beams. The Dura-Lite composite lifting and spreader beams are made from durable composite materials that are bonded together to form ultra-strong lifters, the manufacturer says. They are lightweight



BELOW THE HOOK

lifters that are designed to be easy to handle and transport. They are non-conductive, corrosion resistant and proof tested.

The Dura-Lite Composite Lifting Beam Model 420 offers capacities ranging from 0.25 to 3 US tons (0.22 to 2.7 tonnes) in spreads from 0.6 to 6 metres (depending on capacity). The Dura-Lite composite spreader beam Model 430 also offers capacities from 0.25 to 3 US tons (0.22 to 2.7 tonnes) in spreads from 0.6 to 6 metres (depending on capacity).

Complex lifts

Devices to help improve safety and productivity are also being introduced to the industry. From Barcelona, Spain-based Elebia is a new remote control system called the eMax and a load cell for the company's automatic load hooks. "The development of the eMax and load cell technology was to a large extent instigated by end users who were increasingly using multiple units to lift heavy or long loads or employing hooks in

demanding applications," the manufacturer explains. "This complexity of lift requires greater information about the load and advanced systems with which to operate and monitor that activity."

Oscar Fillol Vidal, Elebia CEO and founder, adds, "Once we had a hook with state-of-the-art electronics, chargeable battery and radio communication, adding a load cell represented a natural forward step. That's why we developed the eMax in turn."

The eMax records information, including open hook, closed hook, overload alarm, unbalance alarm, temperature alarm and service warning. The data is recorded and exported to a spreadsheet via a USB port. The latest technology allows users to store information about the use of the hooks and any overload situations that may have occurred. The load cell provides greater control of the load and increases productivity as weighing takes place during lifting operation.

Vidal says. "A load cell on a crane can provide information about the total

A 40 tonne spreader bar from Sparta Engineering



The Dura-Lite Composite Lifting Beam from Caldwell



The AQ06 pipe hooks are used in pairs and are available in three capacities, including 2, 4 and 8 US ton

load but not the load on each sling. Our automatic hooks with load cells and eMax technology can provide that integrated in a compact unit, while at the same time being able to remotely release and engage."

From USA-based manufacturer Intercomp is the updated CS1500 LED crane scale. The scale offers capacities ranging from 250 kg to 10,000 kg and is NTEP certified. It comes as standard with a 1.5 inch (37 mm) five digit LED display and Intercomp RFX wireless weighing technology for viewing and recording weights remotely. It has 500 hours of continuous use battery life and 9,000 hours in standby mode, the manufacturer says. It can be used in outdoor applications. The CS1500 is also available with a LCD display and can communicate with a other devices wirelessly, the manufacturer adds.

Also from the USA is the Tandemloc AQ06 range of pipe hooks. The hooks are designed around the current AC25C end caps, which range in capacity from 7 to 1,544 tonnes and are designed for 3 to 32 inch (75 to 800 mm) NPS pipe. "The multitude of various diameter pipe and their lengths at any work site create the need for proper tools and methods to move them safely and securely from one mode to another or from one location to the next. When the end caps are assembled or disassembled, there is an immediate requirement to move the pipe. The new AQ06 pipe hook is specifically designed to make this task much easier," the manufacturer explained.

The pipe hooks can be used on any open-ended load. They are available in three standard capacities, including 2, 4 and 8 US ton. The hooks are tested to 125 % of maximum capacity.



WIRELESS LOAD CELLS

Heavy lifting specialist Sarens USA used four wireless compression load cells from Straightpoint to weigh a large distillation column at a petrochemical plant on the Gulf Coast. The load cells have a capacity of 149 tonnes. Each end of the distillation column was weighed by lifting it using self-propelled modular transporter (SPMT) with the load cells positioned between the SPMT deck and the vessel support beams. The readings from each end were combined to determine the total weight, a spokesperson said.

Jay Holt, Sarens project manager, said, "The distance from support beam to support beam, along with the weights of each end were utilised to determine the location of the centre of gravity. This data was used to verify the loading to each of the two cranes that were used to upend the vessel from horizontal to vertical."

John Molitor, Straightpoint general manager, added, "This is a common method of measuring loads of this kind and it is growing in popularity; we have participated in more such lifts already this year than last and I expect that trend to continue. The cable free wireless system is user friendly and virtually maintenance free."

Data transmission is handled by the wireless system, providing high transmission of data via IEEE 802.15.4 (2.4 GHz) technology, which is capable of a transmission range of up to 243 metres.





*Arvid Bergli with his HIAB
in Lofoten, Norway*

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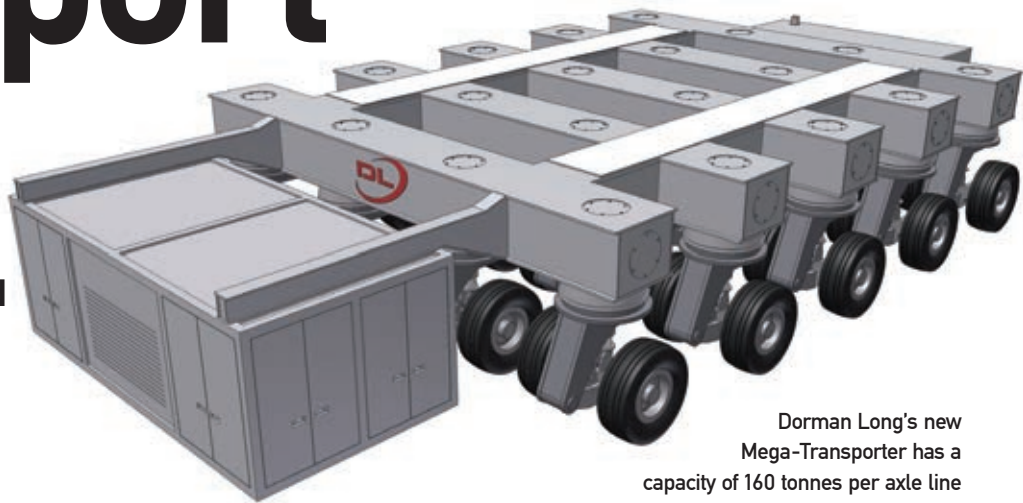


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A new era of transport

As components get bigger and technology more advanced, a new generation of self propelled modular transporters has begun. LAURA HATTON investigates



Dorman Long's new Mega-Transporter has a capacity of 160 tonnes per axle line

Self propelled modular transporter (SPMT) is used all over the world. Typical applications include moving large and oversized cargoes, for example, offshore platforms, ship sections, transformers and refinery columns.

Christopher Rimmele, German transport manufacturer TII Group press officer, says, "The SPMT has changed from a special transport system to a general tool on international oil and gas construction sites, for harbour and shipyard operations. Besides the high reliability and quality, the

great success of SPMT is also based on the possibility to couple amongst the different vehicle generations. The availability of axle lines all over the world gives a high flexibility, as customers can rent in or rent out axle lines in order to cover their demand of axle lines for their various transport projects and operations."

As technology allows manufacturing of increasingly bigger and more modular units, the need to be able to transport large and heavy cargoes is something that is experienced throughout the world.

A spokesperson from Italian trailer manufacturer Cometto explains why, "The demand evolves towards higher capacity, this may happen in large shipyards and for large offshore projects, from 5,000 to 10,000 tonne structures.

"For example, this September in Korea our customer solved a problem to Hyundai Steel Industry in Yulchon for loading and transporting 7,300 tonne floating dock to replace at the last minute the originally awarded transport company because its equipment (40 tonne per axles) was inappropriate considering the weight and dimensions of the load. Only with our MSPE Evo 2 was this possible to transport."

The Cometto MSPE has 48 tonnes capacity per axle line. Its 3 m width provides high lateral stability, the manufacturer adds. It has a 2,020 mm track and is suitable for handling cargoes such as transformers and industrial



Anjeon Enterprise and Dae Myung Crane used Cometto MSPE Evo2 self-propelled electronic modules to transport a 3,500 tonne ship section



ALE worked exclusively with specialized transport equipment manufacturer Scheuerle to design the new All Terrain Transporter

Anjeon transporting a 3,000 tonne heat recovery steam generator (HRSG). It is the biggest boiler ever produced in Korea. Transport was on 16 units of Cometto MSPE EV02 and four power pack units from Anjeon and Dae Myung's four units of MSPE EV02 Module. The boiler was shipped on a barge vessel at Pyeongtaek port and it will be delivered to SK Gas Plant for a propane dehydrogenation project in Ulsan.

components, the manufacturer says.

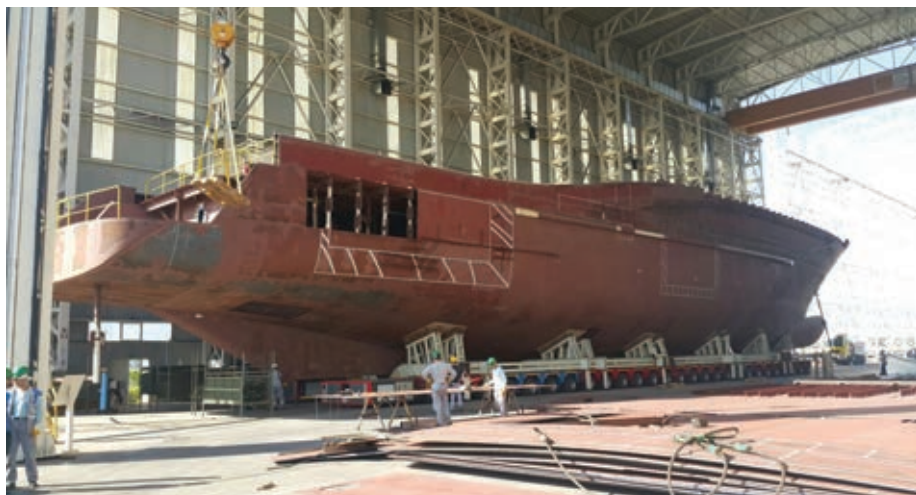
Other high capacity units on the market include the new Mega-Transporter from Dorman Long Technology in the UK. The unit (now in production) has a capacity of 160 tonnes per axle line. The Mega-Transporter is a grid of 80 tonne capacity, 2-wheel suspension points so the 160 tonnes capacity is per 4-wheel axle line. Typical spacing for the 2 wheel units is 2.2 m, longitudinally and transversely. Other arrangements can be specified to suit individual projects. Steering modes include diagonal (crab) and carousel. A double hydraulic-pneumatic braking



system is used. Maximum travel speeds are 5 km/h loaded and up to 10 km/h unloaded.

The Mega-Transporter will be used on the New Champlain Corridor bridge

project in Montreal, Canada. Working in the project casting yard it will carry precast concrete bridge elements weighing up to 1,000 tonnes and standing as tall as 11.5 metres (for more see page 8 in the IC October issue.)



Off road capability

For use on sites where the terrain is uneven or the road surface is poor, UK-based specialized transport and heavy lift service provider ALE has announced a new generation of all terrain trailer. ALE worked exclusively with specialized trailer manufacturer Scheuerle to design the new transporters. They are self-propelled with electronically controlled steering and can manoeuvre themselves through almost any route on-road, off-road and onsite, the manufacturer said.

The three file trailer is 8 m wide with axle spacing of 2.6 m and an axle capacity of 40 tonnes per file. The transporters have a driving speed of 20 km/h when loaded and 40 km per hour when unloaded. The stroke in the hydraulic suspensions will be 1,000 mm to compensate for the unevenness on route. The minimum height is 1.65 m and maximum is 2.65 m.

Ronald Hoefmans, ALE group technical director, said, "The main advantage of this new generation transporter is that it will allow fast transportation of large and heavy loads on minimally prepared roads to deep, inland locations.

"This new concept has a more advanced technical specification which will be able to travel longer distances, climb steep slopes and traverse

Turkish company Caba used Faymonville PowerMAX units to move ships and ship elements in a port



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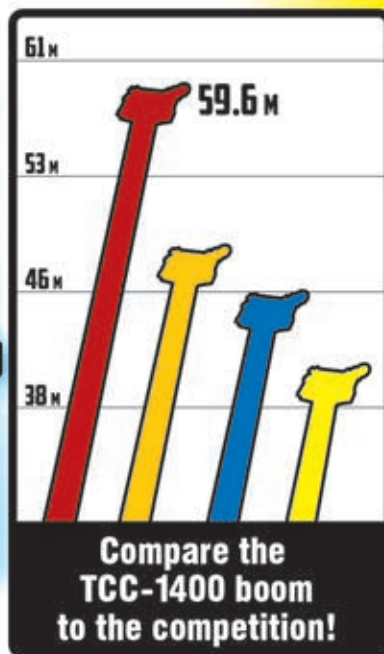
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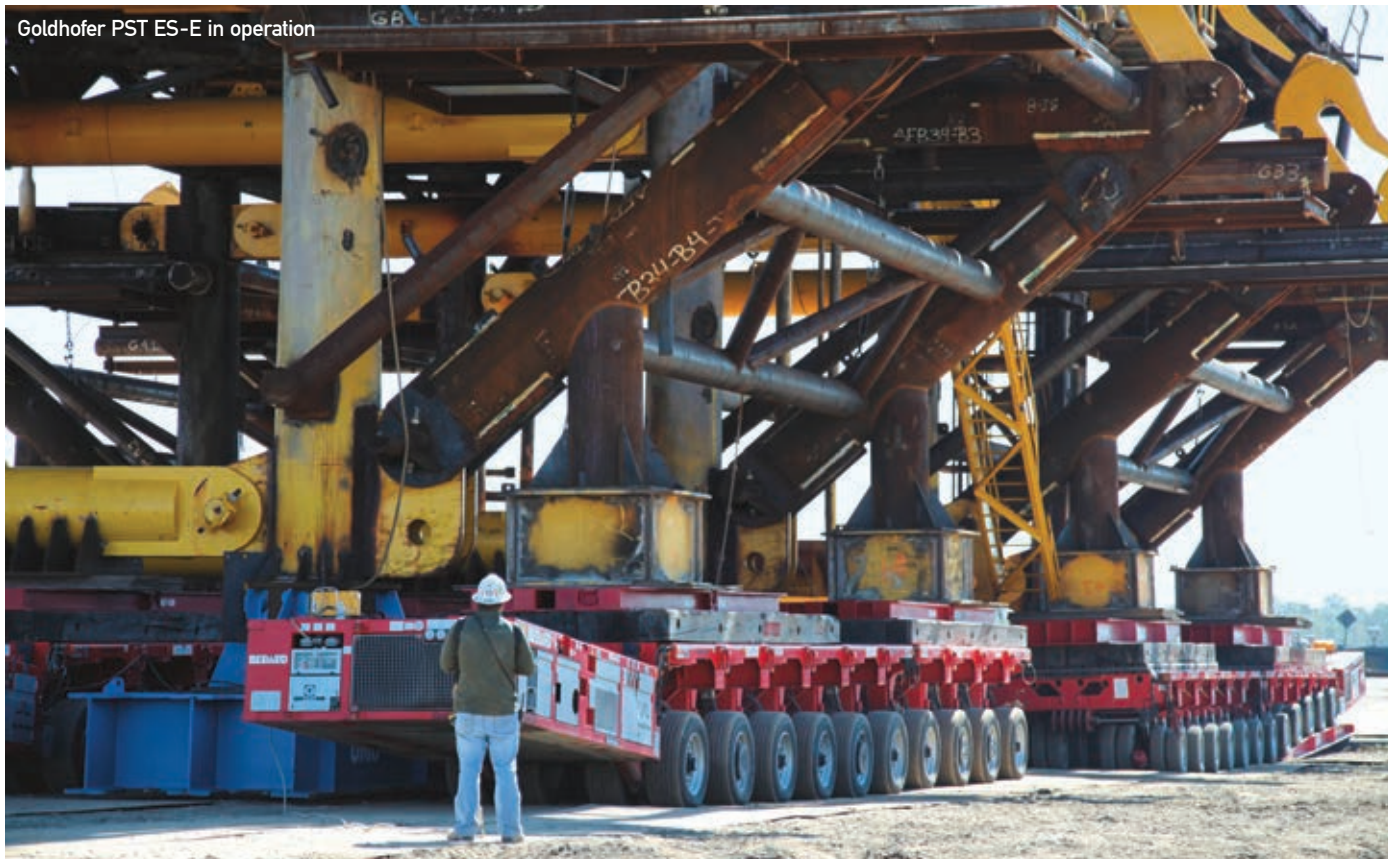
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minimally prepared roads, while having more horsepower. We envisage these transporters will revolutionise the way we transport loads, offering a more time and cost effective solution for clients in many global locations.” (for more see *IC* October 2015, page 25).

Confined spaces

To be able to work in confined areas while carrying a heavy load is just one of a number of demands from customers. The latest generation of SPMT from TII Group is the generation 4. To minimise bending moment on the spine beam, the model has a compact design, which allows high point loads due to short axle distance, the manufacturer explains. For ease of use, Generation 4 works with previous generations of Scheuerle SPMT.

TII Group also offers different options for the customer, such as widening solutions. Rimmele explains, “In confined areas our customers profit from a very precise steering and our split SPMT versions that allow especially tailored 3-file combinations when there is not enough space for two vehicles but one vehicle wouldn’t be enough.”

Other factors requested by customers include low dead weight, higher speed and higher stability of the equipment. To meet demands such as these, German trailer manufacturer Goldhofer offers the PST/ES-E 285. “The model has got the opportunity to hydraulically widen the

equipment and gains without additional assembly effort and without additional weight the width and higher stability,” Erich Traub, Goldhofer marketing says. The PST range includes models with 45 to 60 tonne axle loads. The units offer traction force up to 160 kN and speed ranges up to 15 km/h.

The latest generation from Faymonville is the PowerMax SPMC. This vehicle has a maximum technical axle load per axle line of 45 tonnes at a speed of 0.5 km/h, the manufacturer says. The unit has a maximum pulling force per axle line of 170 kN and 50 tonne point

load above the wheel arches. Maximum speed when empty is 14 km/h. For ease of handling, the Belgium-based manufacturer Faymonville has added an option for wireless remote control for some of its models. “The remote control allows for easy and better handling,” the manufacturer says. “The user-friendly system displays all relevant process and transport data quickly and clearly with the aid of a clear touch screen display. When several vehicles are connected in a group, the driver is provided immediately with a clear visual overview of the settings that have been made.” ■

Transport company Roll-iT using Scheuerle SPMT to transport dredging equipment



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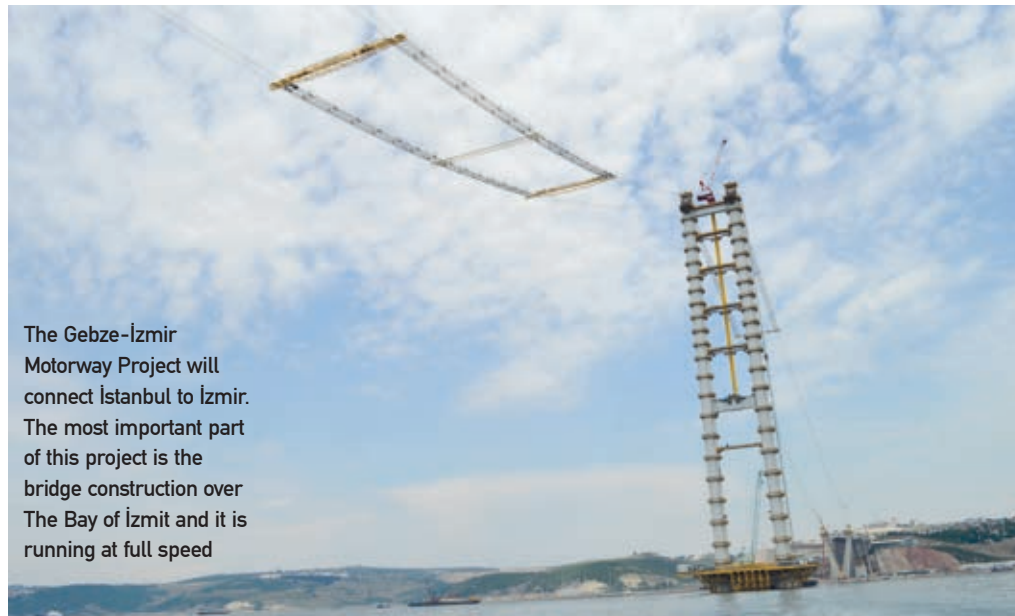
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Critical installations

Turkish crane and transport service provider Sistem Vinç helped construct a bridge over the over The Bay of İzmit in Turkey. Gökhan Uz, editor of IC sister magazine CPT reports

Izmit Bay Bridge is part of the Gebze-Izmir Otoyol Motorway Project in Turkey. It is being constructed on the Gulf of İzmit along the eastern end of the Sea of Marmara. The platform decks of the bridge are being installed with the help of lifting services company Sistem Vinç which has its workforce and equipment fleet both on the south and north worksites.

The Gebze – Orhangazi – İzmir Motorway is 400 km long. Once complete, travel times from İstanbul to İzmir will only take 3.5 hours. The most important section of the motorway is the suspension bridge over the Bay of İzmit. Sistem Vinç is placing the bridge platform decks and is a subcontractor for the Japanese company IHI. Sistem has its workforce and fleet of equipment on two worksites placed on the south and north sides of the bridge.



The Gebze-Izmir Motorway Project will connect İstanbul to İzmir. The most important part of this project is the bridge construction over The Bay of İzmit and it is running at full speed

Busy work

Sistem has a total of six cranes on both worksites. The number of cranes used in the project at times reached a total of twelve depending on the workload. According to Ahmet Önce, Sistem Vinç operations manager, the number of cranes on site at the time of writing was eight. They are wheeled mobile telescopic cranes as follows: a 700 tonne capacity Terex AC 700, a 600 tonne capacity AC 600, two units of AC 300 with 300 tonnes of lifting capacity, a 160 tonne capacity Liebherr LTM 1160 and a Liebherr LTM 1090 model with 90 tonnes of capacity.

The AC 700, AC 300, and LTM 1160 are being used at the south worksite to lay down the bridge platform decks and the related supports. The north worksite at Dilovası has an AC 600, an AC 300 and a LTM 1090. The installation of support legs was concluded in around 30 days.

Ahmet Önce said, "The weight of pieces we lifted on the north worksite at times reached to 35 tonnes and some of the pieces on the south worksite were around 40 tonnes. The support legs we installed at the start of the project were



Izmit Bay bridge is on course with both south and north worksites busier than ever



The towers have already reached a height of 252 metres and catwalks and platform decks are being laid from the north and south ends

The bridge towers will reach a final height of 252 metres



made up of pieces each weighing around 20 tonnes. We received detailed technical information from IHI prior to each lifting operation. We had to lift pieces of 35 to 40 tonnes to different heights varying between 45 and 50 metres. The technical information received from IHI staff was later measured and analysed on Autocad and this allowed us to figure out the best suitable different boom configuration for each particular lifting operation.”

Önce explained that the AC 600 and AC 700 were assembled with luffing fly boom configurations. He went on to say that both cranes had technical similarities and so luffing booms of 42 metres were fitted on the main booms. Önce stated that the most critical technical effort was spent surveying the ground strength.

“We had to be sure of the ground strength before each lifting operation,” Önce said. “Sistem Vinç has a very extensive ground surveying procedure. We were faced with some location changes by IHI and this led to further studies over the strength of the new ground. We concluded a study report based on the new ground conditions and IHI took new measures to overcome the difficulties. We then assembled the cranes on their new locations with success.”

Engineering

According to Önce, their part of the project will be finished in around three months and that they are happy to work with the Japanese firm IHI as far as engineering and work discipline are concerned. “IHI wanted every job within the worksite to be handled professionally and according to the book,” Önce said.

This, he concludes, was an advantage for Sistem Vinç since they did an extensive engineering study prior to each lift

and this was followed by a smooth and technically productive operation.

During the project, Önce is acting as the manager in charge of operations for Sistem Vinç at the İzmit Bay Bridge construction site. Sistem keeps around twenty staff, mainly consisting of operators and engineers.

Commenting on the importance of the project, Önce said, “The significant importance of working in such a prestigious project was a great challenge for us. We have had our share of difficult challenging projects in the past but taking part as Sistem Vinç at the İzmit Bay Bridge project is far more prestigious. I should also point out that we’ve received positive remarks for our engineering efforts from IHI.”



On site are a number of all terrains, including a Terex AC 300

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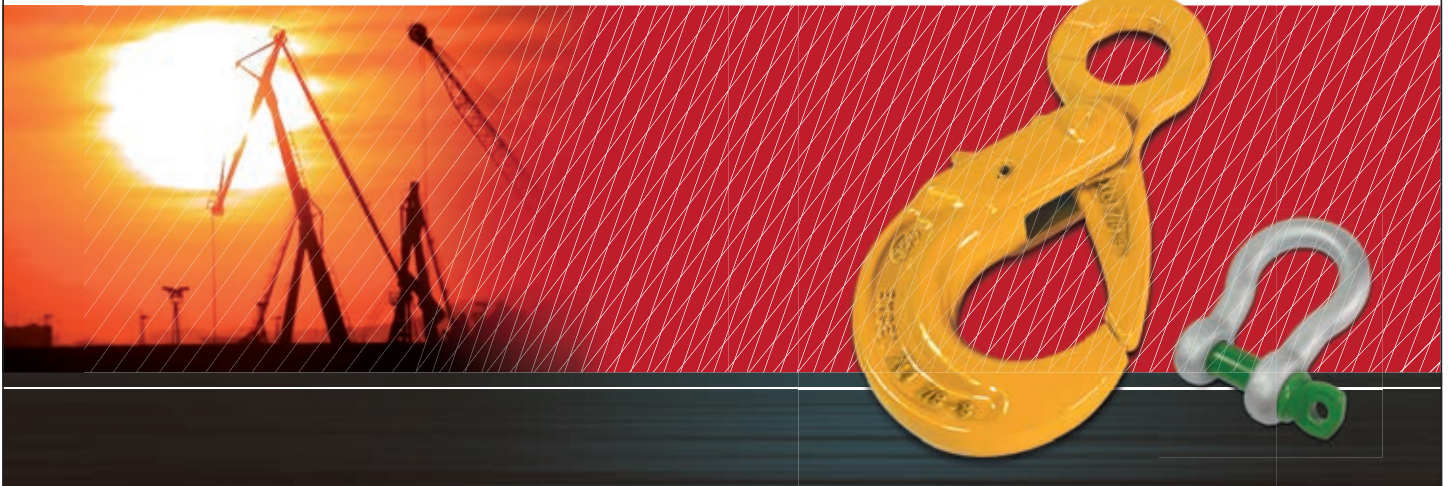
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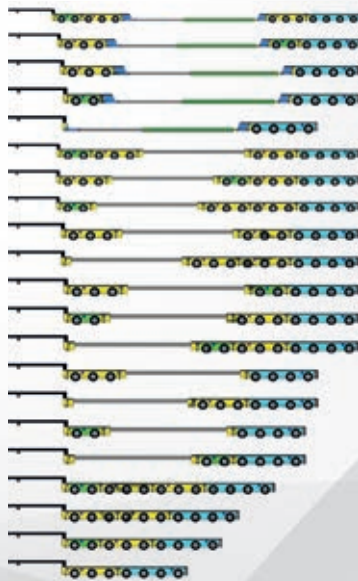


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High voltage job for Mammoet

Heavy lift and specialized transport company Mammoet has helped raise a high voltage power pylon in the Netherlands.

The task was carried out for TenneT TSO for the Rijkswaterstaat (Department of Waterways and Public Works). The 380 kV pylon needed to be raised by four metres as part of Rijkswaterstaat's project to "Make room for the river". As part of the project, dikes will be excavated at the side of the Nieuwe Merwede River to increase the flow of water in the area. This will help reduce flooding in the town of Gorinchem, where rapidly rising water levels can occur during extreme weather, a spokesperson explained. As a result, however, the area where the pylons are situated will be flooded, meaning they needed to be raised.

The challenge during the project was that the pylon needed to be raised while still maintaining its power supply. This was to avoid bypassing the power, which would be costly. Mammoet was contracted to carry out the civil works, the fabrication of the elevating piece, the complete engineering package, the reinforcement of the power pylon and the elevating of the power pylon, a spokesperson said.

To raise the 35 tonne pylon, Mammoet used four JS500 jacking system towers. The pylon was raised at each leg within a

five millimetre margin. As the pylon was to remain live during the procedure, the system was operated remotely.

A time lapse video of the entire operation is at:

<http://youtu.be/4-oKHwuj3kk>

Four JS500 jacking system towers were used, at each corner of the structure, to elevate the 35 tonne power pylon to help ensure a precise jacking manoeuvre



The power pylon had to be elevated by four metres in situ, while maintaining a live power supply

JE Oswalt goes modular with Goldhofer THP/SL

Transport company J E Oswalt & Sons of Batesburg, South Carolina in the USA, has taken delivery of German trailer manufacturer Goldhofer THP/SL heavy-duty modular system trailers.

Extras on the order included intermediate decks, trailer packages

and gooseneck. David Oswalt, J E Oswalt & Sons owner, said, "We handle jobs for several of the world's biggest conglomerates in the energy industry. So we obviously need the best transport equipment available on the market today; there is no room for compromise."

TOWER TRANSPORT FOR VAN DER VLIST

Netherlands-based international transport company Van der Vlist helped move sections of a 97 metre high wind turbine tower. They were moved through its Moerdijk terminal in the Netherlands.

The tower was brought into the terminal on a barge in 26 pieces. Some were sections and others were segments. The largest piece was 4.85 x 4.85 x 3.87 metres and weighed 39.5 tonnes. The smallest piece measured 3.16 x 3.16 x 3.87 m and weighed 27.7 tonnes.

Over a week the sections were lifted on the quay using Van der Vlist's mobile crane and loaded onto trucks, ready to be transported to Neer, close to the German border, as the tower was being built.

The blades, which weighed 11 tonnes, the 35 tonne nacelle and the 67 tonne generator were transported direct to the site from factories in Germany.

Oswalt's STHP/SL 6



European transport for Ekin

Ekin Heavy & Project Transportation Co, a member of the Cargo Equipment Experts CEE network for Turkey, moved two large cyclone components across Europe.

The transport journey began in Osmaniye, Turkey, and crossed to Lukavac, Bosnia and Herzegovina. The cyclone measured 12.84 x 4.96 x 4.35 metres

Ekin transporting the cargo to Lukavac in Bosnia and Herzegovina

The cyclone measured 12.84 x 4.96 x 4.35 metres and weighed 32 tonnes

and weighed 32 tonnes. The route required permits and police escorts, both of which were arranged by Ekin. Additional route survey operations for the shipments were

also carried out by Ekin. Following the initial transport of the first unit, the second unit was transported along the same route.



The route required permits and police escorts, both of which were arranged by Ekin

Tilt Trailer series from Talbert

USA-based specialized heavy-haul trailer manufacturer Talbert Manufacturing has launched a new Air Ramp and Air Tilt Series of trailers.

The models are designed for easy loading of low-clearance equipment, such as soil and asphalt rollers, the manufacturer said.

The series includes the 20 US ton (18 tonne) capacity AC-20-ART and 25 ton (22 tonne) capacity AC3-25-ART. The models are fitted with controls that use air power to fill bags near the front of the trailer to raise the deck and lower the ramps to the ground. The air-powered ramps eliminate handling heavy ramps and using cranes or other equipment to position loads, the manufacturer added.

The models have a 7 degree load angle, 38 inch wide, high-density Apitong wood-filled ramps, 8 inch (250 mm) headboard

and 33 inch (838 mm) deck height. The low deck height provides additional clearance for bridges and tunnels when transporting tall equipment, the manufacturer added, and allows hauliers to expand the range of equipment transported while complying with US and Canadian hauling requirements. For additional safety and driver comfort, the trailers have an air brake system and Hutch spring suspension.

The ART Series trailers come standard with Valspar R-Cure 800 paint in red or black.

Troy Geisler, Talbert vice president of sales and marketing, said, "We received several requests for heavy-duty, tilt-deck trailers with a reduced load angle. Because of that, we developed the ART series as the heavy-haul solution. The trailers provide operators maximum view of the equipment and surroundings and feature the lowest loading height available in the industry."

Talbert showed the trailer at September's International Construction & Utility Equipment Exposition (ICUEE), in Louisville, Kentucky, USA.



Talbert Manufacturing's AC3-25-ART, the newest Air Ramp/Air Tilt Series trailer model, features an ultra-low load angle of 7 degrees with a 33-inch deck height for optimal view of the equipment and surroundings while hauling



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A growing interest

The main market for rough terrain cranes has shifted. Manufacturers are introducing upgrades and new higher capacity models. LAURA HATTON investigates

The rough terrain is an ideal tool for many jobsites and often is a support for larger equipment. The market, however, has been suffering, especially in Europe and North America, where sales dropped massively last year. Michael Herbert, Manitowoc Cranes global product director, rough terrain cranes, explains why, "The main applications for rough terrain cranes is typically oil and gas, however, energy prices have softened that market slightly. Mining is also a place where RTs work well, however this is also a slow market."

Despite the slowdown in Europe and the USA, there is a rising demand in central and northern Africa, the Middle East and the Far East. "The most interesting markets are the growing economies," a spokesperson from Italian manufacturer Locatelli points out. "This is because they are all in need of infrastructure."

There has also been a shift in popular capacities of rough terrain cranes, a spokesperson from Locatelli says, "In the last 12 months the interest towards compact and light RT cranes is getting stronger. The 2015 production of Locatelli Crane will end with a spread production of light, medium and heavy duty equipments." This follows a trend in recent years towards higher capacity RTs.

On average, the 70 to 100 tonne capacity range tends to be a good size range for RT applications. Michael Herbert says, "As applications and construction practices develop there is always the possibility that the

Locatelli's new 80 tonne capacity GRIL 8800T has a 40.5 m boom and a Tier 4 Final engine



needs for new lifting solutions will follow. The RT range is an economical, reliable tool for many different applications today and this should continue in the future."

Despite the market shift, customers still require RTs to be versatile, robust and cost effective. For higher flexibility and stronger lifting capacities, Locatelli, for example, uses Weldox steel 700 or 900 high yield strength. The manufacturer has also made some overall changes, including having high comfort cabins, to all models in the range and 8 inch touch screen LMI systems.

For cost effectiveness, Tadano has been focusing on quality of crane components to reduce downtime, as a spokesperson explains, "The most fundamental demand of customers is operating the cranes anytime and anywhere they want without downtime from unexpected repair. For example, it is our standard that our crane was equipped with metal piping instead of using [rubber] hose assemblies for hydraulic oil,

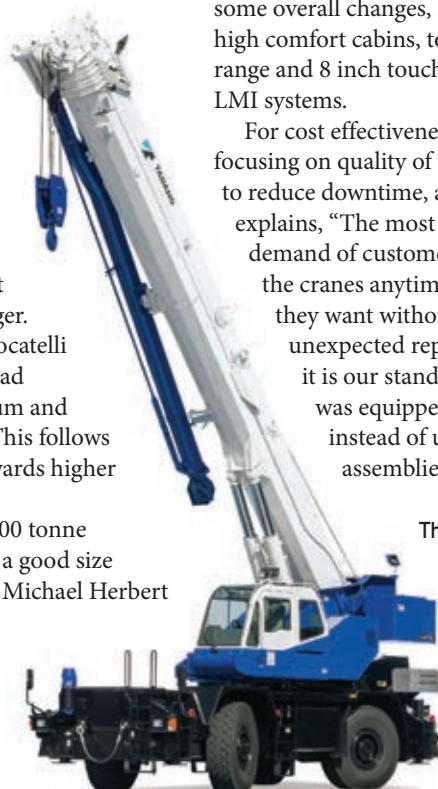
which is much more robust to avoid oil leakage. These qualities provide reliable operation at important jobsites like chemical plants, oil fields, mining, etc where downtime losses are critical."

Latest models

To keep in line with changes in the market, manufacturers have been updating and introducing new models of RT cranes. As part of its renewing process, Locatelli, for example, has introduced the 80 tonne capacity GRIL 8800T with 40.5 metre boom and a Tier 4 Final engine.

From Link-Belt is the new 100 US ton (90 tonne) capacity 100RT, introduced at CraneFest 2015. The 100RT is a four wheel rough terrain crane with a six section pin and latch boom that extends to 50 m. "With full attachment, reach is 79.8 m. No other crane in this class can match a chart that will lift 800 kg at 46 m radius like the 100RT," the manufacturer says. The new model has dual- and single-axis controllers and a 20 degree tilt cab with air conditioning, sun shade and a five-way adjustable seat. In addition, the carrier deck has six points of access.

New from Japanese manufacturer Tadano a new rough terrain crane for overseas markets. The new GR-500EXS/GR-550XLS has a 50 tonne capacity with a 33 metre, 4-section boom. Extra reach is provided by a two-staged under slung jib

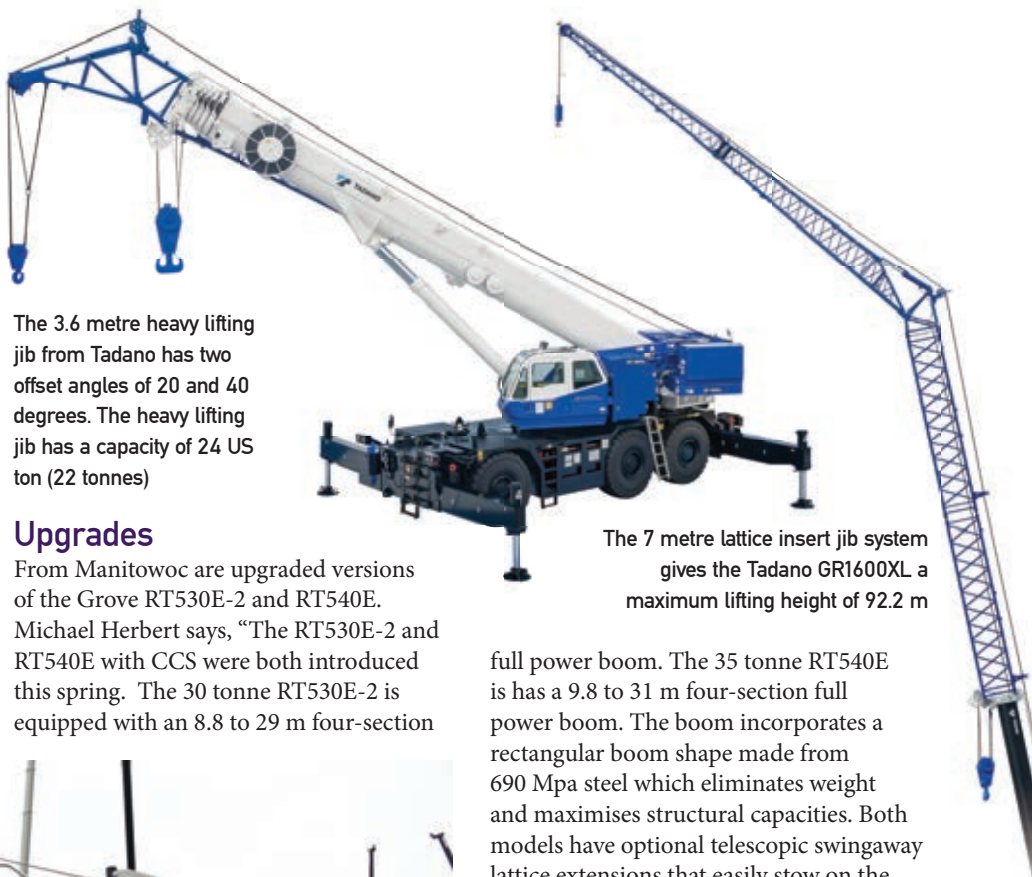


The GR-500EXS type will be sold in Africa, Asia, the Middle East and Oceania, and the GR-550XLS type will be sold in Central and South America

ROUGH TERRAINS

that stows alongside the base boom section, the manufacturer says. The model has an overall width of 3 m and is powered by a Euromot 2 Mitsubishi 6M60-TL. It has a travelling speed of 44 km/h and Eco-mode, which reduces fuel consumption when the crane is being operated, the manufacturer adds. The model is also fitted with the Hello-Net system, which monitors various crane data. The GR-500EXS type will be sold in Africa, Asia, the Middle East and Oceania, and the GR-550XLS type will be sold in Central and South America.

Tadano also launched two optional jibs for its largest RT model, the GR-1600XL/1450EX, including a 3.6 m heavy lifting jib with two offset angles of 20 and 40 degrees. The jib has a capacity of 24 US ton (22 tonnes). The second option is a 7 m lattice insert jib. The entire jib system gives a maximum lifting height of 92.2 m.



The 3.6 metre heavy lifting jib from Tadano has two offset angles of 20 and 40 degrees. The heavy lifting jib has a capacity of 24 US ton (22 tonnes)

Upgrades

From Manitowoc are upgraded versions of the Grove RT530E-2 and RT540E. Michael Herbert says, "The RT530E-2 and RT540E with CCS were both introduced this spring. The 30 tonne RT530E-2 is equipped with an 8.8 to 29 m four-section

The 7 metre lattice insert jib system gives the Tadano GR1600XL a maximum lifting height of 92.2 m

full power boom. The 35 tonne RT540E is has a 9.8 to 31 m four-section full power boom. The boom incorporates a rectangular boom shape made from 690 Mpa steel which eliminates weight and maximises structural capacities. Both models have optional telescopic swingaway lattice extensions that easily stow on the side of the base boom for easy transport."

The latest model from Terex is the 65 tonne Quadstar 1065. The model has a 32.4 m boom and a newly designed operator cab with 18 degree tilt and anti-shock suspension seat. For safety it has a RCI visual indicator system and LMI display. It also has ECO mode.



From Link-Belt is the new 100 US ton (90 tonne) capacity 100RT, introduced at the US manufacturer's CraneFest 2015 event. The 100RT is a four wheel rough terrain crane with a six-section 50 metre pin and latch boom



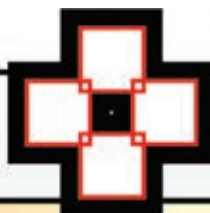
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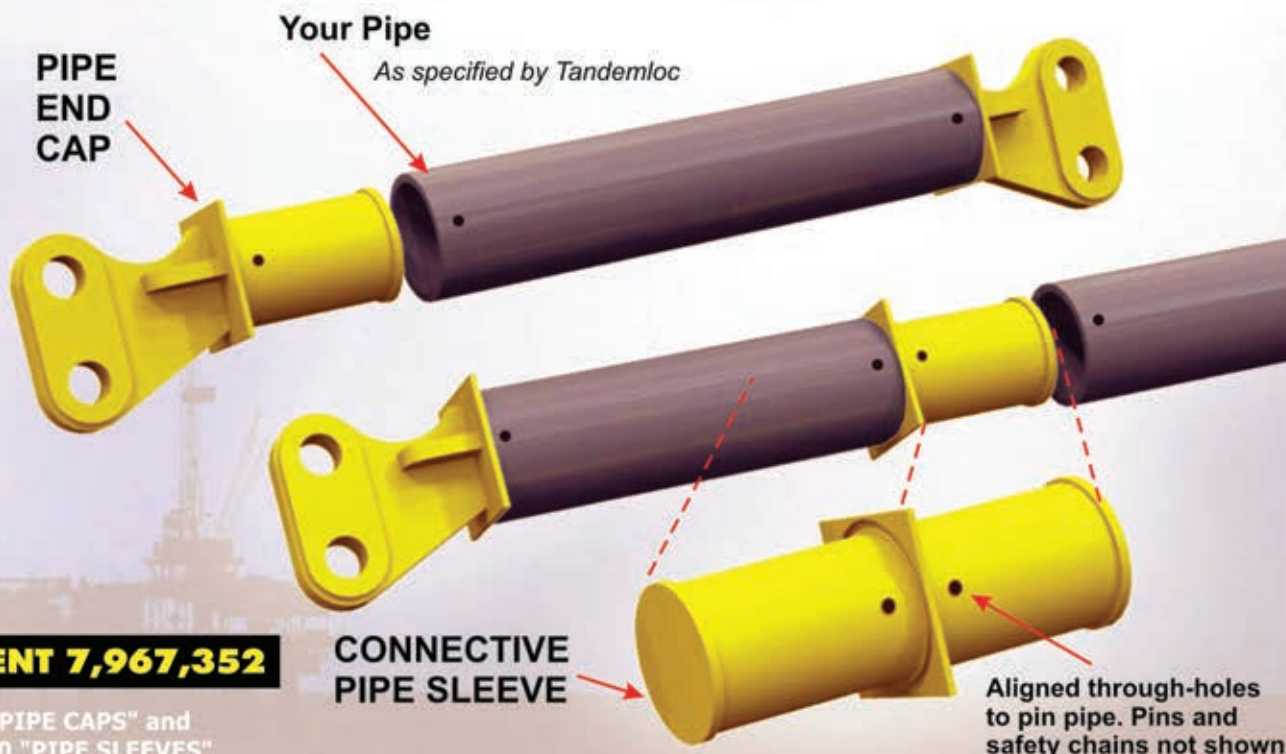


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Double down

A 10 % decline in total combined sales for the world's top 20 crane manufacturers over the previous year might not come as a huge surprise. Within that, however, there are still some bright spots. IC reports

Combining the sales for the world's 20 largest crane manufacturers – the long-established ICM20 ranking – gives a figure of US\$ 25 billion, from the most recent annual results. It is down nearly 11 % on the \$ 28 billion last year. Liebherr hung on to its top spot by a slightly smaller margin than the year before. While the top five companies have retained their places unchanged from last year, it is a different story as you move nearer the middle of the table. ZPMC at 6 and Tadano at 7 both increased sales and gained a place. Tadano showed an impressive 12.3 % increase and the change in position in the table was influenced by a 40 % decrease at Zoomlion. XCMG clung to its 9th place from last year while Palfinger (10) and Kato (11), each gained a place as Sany dropped 20 % and two places. At the same time, Palfinger was up 4.7 % and Kato managed 7.7 %.

A particularly strong performance was

put in by Kobelco, up two places to 13th and up nearly 26 % in sales, from JPY 57 billion to JPY 71 billion. As with



ICM20 MANUFACTURERS

NOTES ON THE ICM20

Figures used in this ICM20 table for November 2015 are from calendar year 2014 or the 12 month financial year to 31 March 2015. The year-on-year percentage change figures for revenue mentioned in the article were calculated in the reporting currencies of the manufacturers. They are not calculated from the figures given in the table which are conversions in US dollars from the various reporting currencies. For the figures in this year's table the exchange rates from the reporting currencies into US dollars were as follows:

Euro 1.00 = US\$ 1.10

US\$1.00 = JPY 120.00

1 CNY (RMB) = US\$ 0.16

6.35 CNY (RMB) = US\$1.00

RM (MYR) 4.28 = US\$1.00

Rank 2015	Rank 2014	Company	Sales in US\$ million	
			Year 2014	Year 2013
1	1	Liebherr	3,800	4,162
2	2	Terex Cranes, inc MHPs	3,570	3,630
3	3	Cargotec	2,320	2,625
4	4	Manitowoc Cranes	2,300	2,506
5	5	Konecranes	2,011	2,420
6	7	ZPMC	1,934	2,006
7	8	Tadano	1,700	1,818
8	6	Zoomlion	1,168	2,041
9	9	Xuzhou Heavy Machinery (XCMG)	1,153	1,553
10	11	Palfinger	721	786
11	12	Kato Works	677	681
12	10	Sany	632	824
13	15	Kobelco Cranes Co	591	510
14	13	Columbus McKinnon	580	583
15	14	Link-Belt	523	572
16	16	Sennebogen	378	405
17	17	Hitachi Sumitomo	356	334
18	19	Furukawa Unic Corporation	236	230
19	20	Manitex	211	196
20	18	Favelle Favco, including Krøll	186	252

Tadano, Kato, Hitachi Sumitomo and Furukawa Unic (all up) the main boost continues to be from demand in the domestic market, in the post-earthquake clean up and now from the 2020 Tokyo Olympics.

Half – \$1.54 billion – of the total decrease this year is from the four Chinese manufacturers in the table, which account for 20 % of the total. As a group their



sales were down 24 %. Within that, the range of decline over the previous year was extreme, from Zoomlion's 40 % fall to XCMG's 18 % (like-for-like comparison in Chinese currency). Of the Chinese manufacturers only ZPMC increased its sales and then by just 0.25 %.

It should be noted that many of the negative changes in figures for companies not reporting in US dollars appear somewhat misrepresented in the table because the downward change of, for example, the Chinese companies is further exacerbated by the increase in the strength of the dollar over the last year. Against the Euro the dollar exchange rate was 1.25 a year ago and it is now around 1.10.

Other than Manitex, all the US-headquartered companies were down. Sales at Manitex were up, due to growth from the acquisition of Italian loader crane manufacturer PM, but crane sales were actually 8 % lower than the year before. A major negative impact there and elsewhere has been from the falling oil price. This began to show in these figures (which are from the 2014 calendar year or the 12 months to 31 March 2015) but it appears that a bigger impact is yet to work its way through from this.

Looking ahead, the proposed merger



of Terex and Konecranes, due in early 2016, will stir up the table in that it will put Konecranes Terex, as the new entity will be called, firmly in the top spot. It will also be interesting to see how Manitowoc fares on its own following its early 2016 separation from the food service business. Change ahead indeed.

Web site	Wheeled mobile	Crawler	Tower	Loader	EOT	Dockside	Offshore	Industrial
www.liebherr.com	✓	✓	✓			✓	✓	✓
www.terex-cranes.com	✓	✓	✓		✓	✓		✓
www.cargotec.com				✓		✓	✓	
www.manitowoc.com	✓	✓	✓	✓				✓
www.konecranes.com					✓	✓	✓	
www.zpmc.com						✓	✓	
www.tadano.co.jp	✓	✓		✓				
www.zoomlion.com	✓	✓	✓	✓				
www.xcmg.com	✓	✓	✓	✓				
www.palfinger.com	✓			✓			✓	
www.kato-works.co.jp	✓							
www.sany.com.cn	✓	✓	✓			✓		
www.kobelco-cranes.com	✓	✓						
www.cmworks.com					✓	✓	✓	
www.link-belt.com	✓	✓						
www.sennebogen.de	✓	✓				✓		✓
www.hands-crane.com		✓				✓		
www.furukawaunic.co.jp	✓	✓		✓			✓	
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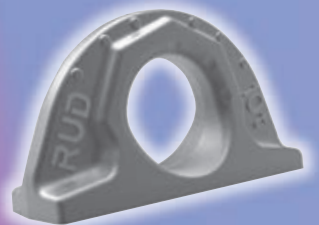
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Transport challenge

Aertssen Kranen and its subsidiary Roll-iT helped transport and install a reactor at the BP plant in Geel, Belgium. IC reports

Lift and transport service provider Aertssen Kranen from Belgium has completed the first part of the WiESOX contract with BP Chembel.

Aertssen Kranen was tasked with preliminary and final detailed engineering, pre-lifting and on site preparations, lifting and final alignment during the project.

The task involved the transportation and installation of a 420 tonne reactor at the BP plant in Geel. The reactor was 10.12 metres in diameter and 17.77 m long. It was built at Coek Engineering a few kilometres from BP Chembel. The transport of the reactor was carried out by Roll-iT, a subsidiary of Aertssen Kranen.

For the transport, Roll-iT used 32 axle lines of self propelled modular transporter (SPMT). The reactor was transported overnight. Challenges along the route included crossing the E313 highway in Belgium. To overcome the problem, traffic was temporarily stopped and crash barriers were removed to allow the



The 420 tonne reactor was 10.12 metres in diameter and 17.77 m long and transported overnight. Roll-iT used 32 axle lines of self propelled modular transporter (SPMT)

transport to continue its journey. Further challenges along the route included crossing a temporary bridge.

The following day, the reactor was tilted on site using a Terex CC 2800-1 crawler crane, with a CC 2400 acting as a tailing crane. The reactor was then lifted onto its final foundation at a radius of 15.5 m. To carry out the lift, the CC 2800-1 was rigged in SSL configuration with 54 m boom.

Bob De Jong, BP Chembel project manager, said, "Everything went smoothly, transport as well as lifting. The track from the place where we crossed the E313 highway to the construction site was covered even faster than planned. The temporary bridge was set in place just in time. The reactor was perfectly put in place right from the first time. There was an overall feeling of satisfaction and relief. Once the lifting started, everything went very fluently."

In October, a second but smaller reactor was removed from site to be modified.

In a third phase this reactor will be repositioned on a new location within the BP plant.

The Terex CC 2800-1 lifting the reactor to its final position. On the left hand side is the CC 2400 tailing crane

The reactor was built at Coek Engineering a few kilometres from BP Chembel and transported to the BP plant in Geel

Roll-iT transporting the reactor on the BP site



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Buoyancy and density

Understanding buoyancy is important for anyone involved in roll-on and roll-off operations in the specialized transport sector of the industry. MARCO VAN DAAL explains it and the practical implications

Most of us transport guys, at some point, are faced with performing a ro-ro operation. Either rolling a load from land onto a barge or from barge onto land. Of the multitude of barge types, supply barges and flat top barges are most frequently used for such operations. Supply barges are self propelled and are generally used to shuttle goods between shore and offshore locations. Flat top barges are generally not propelled but rather manoeuvred by tugboats. When driving from solid ground onto a floating object, different laws of nature apply, the most important one being Archimedes' Law.

Archimedes was a physicist from Syracuse, Italy, who lived from 278 BC until 212 BC. He is mostly known for his

hydrostatics principles (buoyancy). These principles have not been challenged in more than 2,000 years and are still used in everyday life.

In its simplest form, Archimedes Law states that a body immersed in a fluid experiences a buoyant force equal to the weight of the fluid it displaces. In popular terms, if an object is immersed in fresh water and it displaces 1 US gallon (3.78 litres) of water, the force of buoyancy equals 8.33 pounds (3.78 kg).

In the very first article of The Knowledge (July 2013) we briefly touched base on Archimedes Law. This article goes a bit deeper as a preparation for next month's article.

A bit of theory: how did Archimedes prove this principle.

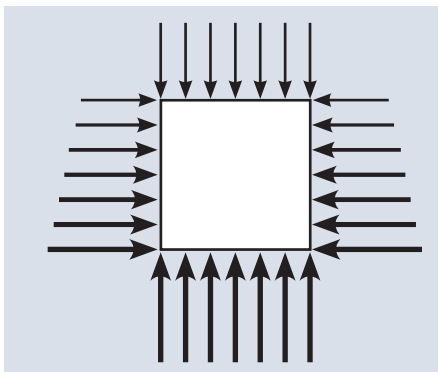
Review Figure 1, it shows the side view of an object immersed in a fluid. The arrows indicate the pressure (direction and magnitude) of the fluid onto the object. The arrows at the bottom are bigger/longer than the arrows on the top as the object's bottom is deeper in the fluid and therefore subject to a higher pressure. This is expressed with the formula $P = \rho * g * h$ where:

P is the pressure in kN/m² (or a conversion to Pascal or bar or PSI)

ρ is the fluid density (pronounced rho) in kg/m³

g is the Earth's gravity expressed in m/s²

FIGURE 1

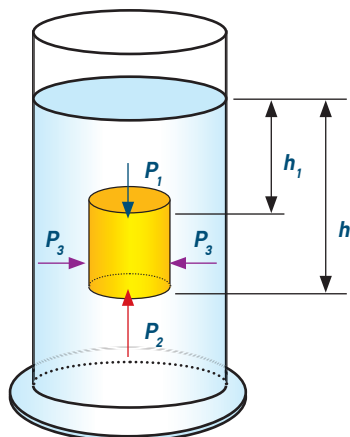


ABOUT THE AUTHOR



Marco van Daal has been in the heavy lift and transport industry since 1993. He started at Mammoet Transport from the Netherlands and later with Fagioli PSC from Italy, both leading companies in the industry. His 20-year plus experience extends to five continents and more than 55 countries. It resulted in a book *The Art of Heavy Transport*, available at: www.khl-infostore.com/books Van Daal has a real passion for sharing knowledge and experience and holds seminars around the world.

FIGURE 2



h is the depth of the object in the fluid in metres.

As the pressure on the bottom of the object is larger than on the top of the object there is a resulting pressure facing upwards, this is the buoyancy principle.

Note that the pressures on each side of the object cancel out due to equal direction and magnitude and, therefore, there is no resulting pressure either in left or right direction.

To determine the magnitude of the buoyancy force Figure 2 helps, again showing an object immersed in a fluid.

As previously stated, the pressures P_3 on each side of the object cancel out and are of no influence on the buoyancy force. The pressures P_1 and P_2 can be written as follows:

EQUATION 1

$$P_1 = \rho * g * h_1 \quad P_2 = \rho * g * h_2$$

The forces F_1 and F_2 that results from these pressures can be written as follows:

EQUATION 2

$$F_1 = P_1 * A_1 \quad F_2 = P_2 * A_2$$

The difference between F_1 and F_2 is the buoyancy force F_b as follows:

EQUATION 3

$$F_b = F_2 - F_1$$

If we substitute F_1 and F_2 in equation 3 with the equation 2 we arrive at the following:

EQUATION 4

$$F_b = F_2 - F_1 = P_2 * A_2 - P_1 * A_1$$

Further substitution of P_1 and P_2 with equation 1 gives the following:

EQUATION 5

$$F_b = \rho * g * h_2 * A_2 - \rho * g * h_1 * A_1$$

Looking at Figure 2 again we can generalise the object's area and height into the following:

$$A_1 = A_2 = A \quad h_2 - h_1 = h_{obj}$$

Substitute these generalisations into equation 5 gives the following:

$$F_b = \rho * g * A * (h_2 - h_1) \\ = \rho * g * A * h_{obj}$$

FIGURE 3



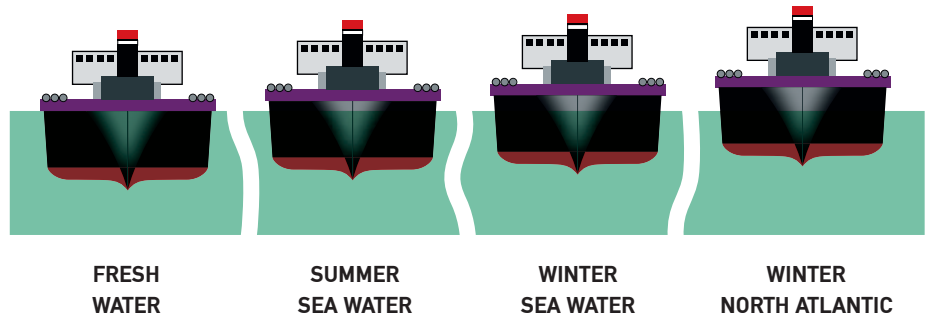
Now, an object's area (A) multiplied by its height (hobj) equals its volume (Vobj).

$$F_B = \rho * g * V_{obj}$$

This equation is known as Archimedes Law and expresses the (upward) buoyancy force F_b exerted onto an object immersed in a fluid. This force is determined by three variables:

- 1 Earth's gravity (g), this is pretty constant while on planet Earth. But if there would be lakes or oceans on, for example, the Moon the buoyancy force would only be a sixth compared to the same force on Earth as the gravity on the Moon (1.635 m/s^2 or 5.29 ft/s^2) is only a sixth of Earth's gravity (9.81 m/s^2 or 32 ft/s^2).
- 2 The volume of the submersed part of the object. When an object is completely underwater, its volume is at its maximum and so is the buoyancy force. If the object (let's take a barge or ship) is only partially submersed the buoyancy force increases as it takes on more cargo, or ballast water or supplies. The heavier the total weight of the barge or ship, the higher the buoyancy force. Obviously there is a limit to this as the vessel has to be kept afloat.
- 3 The density (ρ) of the fluid. This is an important variable. Its implication is that if the density of the fluid increases the buoyancy force increases. This is indeed exactly the case and can be seen on the hull of each ship where the load line or Plimsoll line is located, see Figure 3. The "F" stands for "fresh water", the "S" for "summer seawater". While carrying the same load, a ship has a shallower draft when sailing in summer seawater than when sailing in fresh water, hence the "F" mark being above the "S" mark on the hull. See also Figure 4.

FIGURE 4



Knowing that fresh water has a density of $1,000 \text{ kg/m}^3$ (58.9 lbs/ft^3) and salt water a density of $1,025 \text{ kg/m}^3$ (60.3 lbs/ft^3), a difference of only 2.5 %, you can see the enormous effect density has on buoyancy.

Newton's third law, action = -reaction, dictates that there has to be a force that counters the buoyancy force to keep the vessel in balance and prevent it from a continuous rise under the influence of only a buoyancy force. This counter force is the gravitational force indicated with F_g .

For any body in equilibrium (floating) the formula $F_b = F_g$ is applicable.

The buoyancy force F_b can never be larger in value than the gravitational force F_g as the buoyancy force is a reactive force, it reacts to the gravitational force once an object is submersed in a fluid.

The gravitational force, however, *can* be larger in value than the buoyancy force. This means that the object is sinking and has not yet reached equilibrium. It will reach this equilibrium when it hits the bottom.

When a ship or barge is empty (it carries no cargo) it has a certain draft. This draft is caused by the weight of the empty vessel and the volume of water (either fresh or salt) it displaces. The buoyancy force and gravitational force are in balance $F_b = F_g$.

When loading cargo on board the vessel we all know that the draft will increase. This is because the combined weight is now higher and the gravitational force F_g is pulling on it. This increase in draft means that there is now more water displaced and therefore the buoyancy force F_b has increased. The draft will increase until the buoyancy force F_b has matched the gravitational force F_g . At that point a new equilibrium has been reached.

All about densities

Gravitational force is the force that pulls any mass down to Earth. The gravitational force does not discriminate, it pulls equally hard on all mass. But how do we explain that during an oil spill, oil is visible on top of the water and not the other way around. In popular terms we state that the lighter

fluid floats on top of the heavier fluid. From a physics point of view this is an incorrect statement. In nature, things don't just happen for no reason. There must be a force that keeps the lighter fluid on top of the heavier fluid. The heavier fluid, water in this case, contains more mass per volume, it has a higher density than oil. Gravity pulls harder on the heavier fluid as there is more mass to pull on per volume. As the heavier fluid is pulled down, the lighter fluid is pushed away and ends up on top. This pushing away of the lighter fluid is caused by the buoyancy force.

The same principle applies to a hot air balloon. As the air inside the balloon is heated up, it expands resulting in a lower density, less mass per volume. The result is that the air outside the balloon has more mass per volume and gravity pulls this air down. Consequently the balloon containing less mass per volume is being pushed away and ascends.

The differences in densities is used in numerous every day processes, for example, a coloured multi-layered cocktail poured by an experienced bartender. He makes use of the densities by pouring the drink with the highest density first.

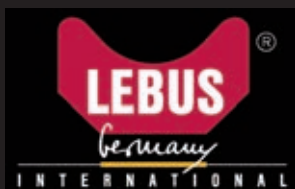
If the density of a fluid is high enough, for example, mercury at $13,534 \text{ kg/m}^3$ (845 lbs/ft^3) the buoyancy force will prevent a coin from sinking as there is much more mass per volume in the mercury than in the coin. See Figure 5.

FIGURE 5





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WORLD CRANE AND TRANSPORT SUMMIT 2015

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The fifth World Crane and Transport Summit was welcomed by more than 270 delegates as it opened its doors at the NH Grand Krasnapolsky Hotel in Amsterdam, the Netherlands. IC reports

At this year's World Crane and Transport Summit speakers and delegates from around the world met to discuss a number of issues affecting the crane and transport industry, however the recurring theme throughout everyone's presentations was safety. "It's not that we're not doing anything," Jan Kleijn, Mammoet CEO, said on behalf of the industry in his speech, "It just that we're not doing enough."

The event was opened by Alex Dahm, editor of *International Cranes and Specialized Transport* magazine, followed by Joel Dandrea, Specialized Carriers and Rigging Association (SC&RA) executive vice president. The conference was held over two days, with presentations from a range of speakers including keynote speaker Jan Kleijn. Kleijn started the two-day event with a speech highlighting some of the potential disruptive trends impacting on the industry. He mentioned disruptions to the energy industry, the refugee crisis in Europe, lower oil prices, political issues in Russia.

He also took a look at the future of the industry and influences from web-based

More than 270 people from more than 100 companies attended the event

technology companies, 3D printing and sustainability.

Carlijn Prins was next on stage, with an overview of the global economy, followed by Ton Raemakers, Euro-Rigging managing director. Raemakers' presentation looked at accidents in the lifting and transport industry and how social media is making the industry aware of just how many accidents are happening. "This is a wakeup call," Raemakers told the audience. "In the last few months there have been numerous disasters throughout the world, in Mecca, Amsterdam, Rotterdam to name a few. They have been on the front page of newspapers and some of them have been fatal. But why are there still accidents? Are we aware of our joint responsibility in this respect?" Raemakers went on to discuss the importance of training, job preparation and equipment maintenance.

Continuing with the theme of safety, Marco van Daal used his time on stage to take a look at why so many crane accidents happen in the industry, taking a look at pressures on the load, reasons behind crane collapse and how technology also changes the way the industry needs to look at job preparation. "Almost all crane accidents come down to human mistakes," van Daal said. "The use of the word accident implies that the 'accident' was not foreseeable and manageable, however, most crane accidents are avoidable."

Koen Doorman, Thierry van Schaik and Marcus Chee

Frank Bardonaro, Maxim Crane president

Norbert van Schaik, Siemens Wind Power project specialist transport, crane and installations, continued the theme of safety when transporting and lifting wind turbine components. Van Schaik discussed minimum requirements for site logistics and site construction at wind farms, the issues surrounding the increasing length of turbine blades and the future dimensions of turbine components.

Timon Ligterink, Huisman sales engineer cranes, and Lennon S de Mello, Fluor Construction Services International

success



Jan Kleijn, Mammoet Holding CEO



Joel Dandrea, Specialized Carriers & Rigging Association (SC&RA) executive vice president



Delegates during a 2015 WCTS coffee break

Norbert van Schaik then joined the first round-table discussion, along with Hans-Dieter Willim, Liebherr-Werk Ehingen general manager of design and Dclan Corrigan, Windhoist technical manager. With a focus on wind turbine projects, the speakers discussed changes in planning laws, utility providers, global growth projects and the ways in which both onshore and offshore wind markets are developing.

Vincent Teo and Steven Tan, senior director and manager health and safety at Bok Seng Logistics in Singapore were up next, with a look at the different trends in Singapore and South East Asia's crane and transport sector. The two discussed popular

crane choices in the area and ways that companies are installing new engines to meet strict emission laws. They also talked about safety and the "good safety culture and attitude" that the industry needs to have.

Moving onto transport, David Collett was up next with an overview of ESTA guidelines on the operation of self propelled modular transport (SPMT). "There is no regulation governing the use of SPMT," Collett said. "There needs to be a base guide for the safe use of SPMT."

With training fresh in the minds of the audience, Natasja Sesink, BeOne Development operational partner presented her presentation on training and development programmes for heavy lifting and transportation. "We are living in interesting times," Sesink said.

"There are many ways to facilitate and participate in training. Digital learning now includes simulators, apps, e-learning, Google class and augmented reality. This involves the real world and the virtual world. Augmented reality on construction sites could be the learning for the future," Sesink added.

Bringing the end of day one to a close, Judy Goh, Matcor Technology & Services senior consultant, shared with the audience a selection of case studies of accident investigations. Goh presented a series of examples of accidents and the ways in which assessments into the causes of investigations are carried out, including forensic analysis.

Future generations

A focus on safety and developments in the crane and transport sector continued to be the theme of discussion as delegates attend the second day of the World Crane and Transport Summit. The morning presentation was from Jussi Yli-Niemi, Havator Group CEO. Yli-Niemi's presentation focused on health and safety in the industry and the challenges for crane companies in the future. Following on from Yli-Niemi's presentation was an update from Ton Klijn, Wagenborg Nedlift managing director and ESTA board director. Klijn provided the audience with an overview of where the proposals for a European Crane Operator Licence (ECOL) currently stands and ways in which the

WCTS REVIEW

scheme could be implemented into the industry.

Developments in rope technology and implications for transforming hoisting performance was next on the agenda, with an interesting presentation from Dr Oliver Fries, WireCo World Group vice president of global research and development, innovation and technology. Fries looked at different rope applications and how to be cost effective when deciding what rope to use, particularly where the compromises are. He looked at wire, synthetic and hybrid ropes, with a brief introduction to smart



The coffee breaks were a good opportunity for delegates to meet the sponsors of the show



There were around 30 tables of attendees at the networking dinner

ropes; quite possibly the rope of future. Fries took the opportunity to look at the problems associated with the different types of rope available for lifting applications, such as flattening, effects of temperature, UV influences and ways to protect synthetic ropes. He also looked at the cost of hybrid ropes and also approached the subject of discard criteria. A standard for discard criteria for synthetic ropes is not yet available for the industry, however this is something that rope manufacturers are working on, Fries said.

The afternoon included a round table discussion on industry recruitment, with feedback from members of the next generation of employees in the industry. Speakers included Marcus Chee, Bok Seng

crane specialist, Thierry van Schaik, SSC Wind wind turbine installation and Koen Doorman, Mammoet junior engineer.

Mathias Rehe, Daco Heavy Lift chief executive officer, then shared two challenging transport projects in Costa Rica and Guatemala and how they were successfully carried out. The final report from the day was presented by Rafael de los Santos, Tradelossa managing director, who showed the audience a video of the winning Moving Job of the Year, presented by the SC&RA at the Job of the Year Awards 2015.

The award was for the transportation of the reactor C2 Splitter for the Etileno XXI project. This move was completed one year ago in Coatzacoalcas, Veracruz, México. The 880 tonne reactor was 102 meters long and 9.75 m in diameter. It was transported 12 km (7.5 miles). In total, six major obstacles had to be overcome on the journey, including supporting bridges and developing new roads. The transportation project took 18 days to complete, during which time changes were made to the vehicle configuration.

The event was organised by *International Cranes and Specialized Transport* magazine and KHL Group and was supported by industry associations, including Alatrans, CCO, CICA, ESTA, SC&RA, Sobratema. ■

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WORLD CRANE AND TRANSPORT SUMMIT 2015

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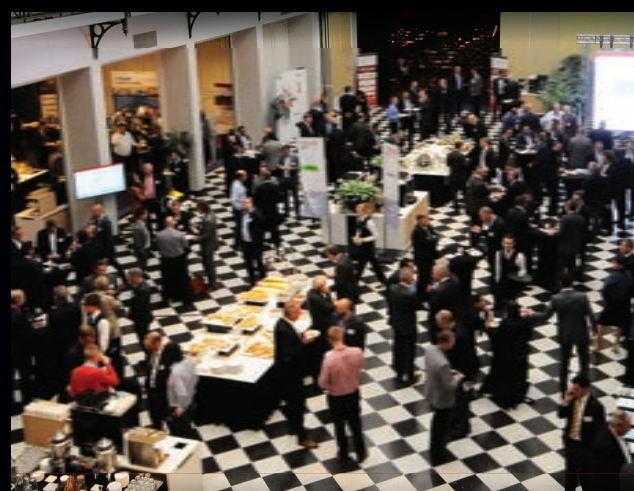
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COMMENT

Joel M Dandrea

Honouring commitments



Despite their best intentions, many business leaders and their companies often struggle with “commitment drift.” After all, it’s easy to get caught up in a pattern of making promises to customers, investors and the overall marketplace – especially as deadlines are closing in, and the competition is hot on your heels.

As a leader, you have to ask yourself, as well as your team: Is anyone keeping track of all these commitments?

Modern companies make a lot of promises – from high-quality products and experiences to careers that offer opportunity and purpose to ambitious strategies and programmes that will accelerate innovation. Many companies will even add to the commitment list – pledging ethical conduct and social and environmental responsibility to society at large.

Essentially the promise game can become a very crowded stage – especially in today’s era of transparency, driven by social media, in which businesses that don’t keep their word have nowhere to hide.

Commitment drift is very dangerous because it leads people to neglect the investments needed to maintain key capabilities, sustain customer relationships, retain employees, execute strategies and pursue innovations. It also sets the stage for breakdowns in safety, privacy and ethics, and erodes the trust of employees, customers, shareholders and the public.

Companies generally want to produce good work, stand by quality products and make good on commitments. Most business people care about keeping their word, and will make the sacrifices needed to keep promises to colleagues, employees, customers and the community. Where some companies get into trouble is that their commitments begin to stack up – and the company itself isn’t designed to remember commitments over time, or communicate them clearly.

These four commitment drift avoidance strategies from strategy + business can help:

1. QUALITY VERSUS QUANTITY:

The best commitments create value for others at minimal cost to you. Too often, however, leaders and companies make expensive promises that miss the mark for stakeholders. Similarly, leaders often invest heavily in the launch of a change initiative, when what employees really want to know is whether the change will last over time. When you take the time to understand your stakeholders’ needs, you can target your commitments to the things that make a difference.

2. DON’T LOSE SIGHT OF YOUR KEY COMMITMENTS:

The sheer volume of commitments leaders are asked to make can get them into trouble: more points of contact, more requests to get involved and more pressure to say yes. As a result, people make promises they cannot keep, and they’re more likely to forget the promises they have made as new ones eclipse their time and attention. Tracking promises doesn’t have to be elaborate. Record everything. Assign team members and even software tools to the job of remembering and honouring commitments.

3. COMMUNICATION IS KEY:

Make sure your employees in leadership roles aren’t striving to deliver on personal commitments that will, in turn, muddy the waters within the promises that you’re trying to keep as a leader. As obvious as it sounds, most companies improve enormously by ensuring teams understand how their work fits together, and motivating them to base their priorities on the company’s goals. And it all starts with open lines of communication.

4. CREATE A COMMITMENT-DRIVEN CULTURE:

Within your company, your process ultimately defines who you are as a leader, and where the business is headed. Employees will inevitably tire of problems that don’t get sorted out, which is problematic, because committed employees are critical to delivering on promises. When companies invest in developing repeatable processes, they make it easy for employees to deliver on company promises, and free up their creativity for the next big idea.



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The September 2015 SC&RA Crane & Rigging Workshop in Colorado, USA, offered great opportunity. MIKE CHALMERS reports

Creating opportunities

Denver, Colorado, USA, was the site of September's 2015 SC&RA Crane & Rigging Workshop where attendees from around the world were greeted with perfect weather and a vibrant downtown city centre. The main attraction, however, for Association members was in the Sheraton Denver Downtown Hotel.

Total numbers for the Crane & Rigging Workshop this year were impressive: a sold-out exhibit floor boasting 86 vendors, 551 event attendees (129 of whom were first-timers) and 34 internationals representing 12 countries. Meetings and sessions were literally standing room only at times – fully representing the international value of the annual Workshop, which emphasises safety issues, regulatory and legislative updates, as well as networking opportunities for the industry's foremost manufacturers and operating companies.

Crane safety

Klaus Meissner, director of product strategy at Terex USA, LLC (Germany), presented *Uncovering The Root Causes Of Crane Accidents* to a packed room. Meissner believes that sessions which bring attendees practical insights are of tremendous value.

"On the international scale, we see that crane use and safety is related to physics and human behaviour, with physics being the same worldwide – and the very aspects of human behaviour being very similar, besides some effects of different regulations and mentality," he explained. "SC&RA



Education sessions were filled to capacity at this year's Crane & Rigging Workshop

is creating an important opportunity to learn from each other on a global scale – as I hope I was able to convey with my presentation by sharing European experiences."

Meissner has been discussing matters of international standardisation at SC&RA events for a few years, and sees the Crane & Rigging Workshop as an opportunity for members from many different countries to address matters of universal interest. "In 2013 I attended my first Crane & Rigging Workshop and presented on some aspects

of mobile crane safety related to wind and ground conditions. Since then, I've seen our industry grow more together on a global scale, as the underlying physics remain the same everywhere – and things such as safety are indivisible."

Whereas Meissner adapts his presentations to the latest industry developments, the overall theme stays the same. "Cranes are built according to accepted standards, and the state-of-the-art machines are typically not the root cause of accidents," he emphasised. "If we want to make a change in our industry, we need to focus on human behaviour in many functions involved directly and indirectly in crane jobs."

Finding talent

The opportunity to share experiences with industry contemporaries like Meissner is what brings Reinhold Breitenmoser back to SC&RA events year after year. A regional sales director at Liebherr-Werk Ehingen in Germany, Breitenmoser has typically attended the Association meetings in the first half of the year, but added Denver to his list this year. "I have been attending SC&RA events for the last seven years; it's



The sold-out Exhibit Center in Denver boasted 86 vendors



For the opening session, Eric Chester presented *Strategies to Build Your Future Workforce* to a packed room

fantastic to see the SC&RA membership growing from year to year, and I was astonished at the number of attendees at the conference and the number of exhibitors at the Exhibit Center,” he noted. “In addition to very interesting workshops and speeches, I see great benefit for both crane owners and industry insiders to establish numerous opportunities to meet and develop business relationships.”

Like-minded

Taking part in the Workshop presentations is one way that Breitenmoser finds common ground with his fellow members from around the world. He found himself surrounded by like-minded SC&RA members for the opening session, *Strategies to Build Your Future Workforce*, presented by Erick Chester, Founder and CEO at Eric Chester, Inc.

Chester is a leading voice in attracting, managing, motivating and retaining emerging workforces – specializing in the tactics and strategies that top companies use to win the talent wars. His standing-



Bruce Forster, from Rigging Gear Sales, Inc is SC&RA president this year

room-only presentation was a mirror of the opening morning’s Committee Meetings – each of them filled to capacity – with the Safety Education & Training Committee requiring dozens of extra chairs.

Of particular interest to international Association members, the Governing Committee meeting provided an update on the recent International Crane Stakeholders Assembly (ICSA) meeting in Burswood, Western Australia – hosted by The Crane Industry Council of Australia (CICA). This year’s ICSA meeting, held in early September, brought together 20 participants from seven countries – representing industry users and manufacturers from around the world.

The value of information gleaned from meetings and presentations is paramount to his company’s success, said Breitenmoser, but he also looks forward to the wealth of networking opportunities available. “The SC&RA meetings overall always offer me the chance to meet with a lot of our customers and potential future customers, as well as our competitors – which I’ve always considered important as a representative of Liebherr-Werk Ehingen. It’s why I attend, and also why we sponsor events.

“The fall Crane & Rigging Workshop seems to be more specifically targeted to the industry and products our factory works with, so it has proven to be of utmost importance.”

Harmonising standards

Breitenmoser loves the collaborative nature of SC&RA events, especially for international attendees, and believes that a meeting like the Crane & Rigging Workshop truly strengthens the

Luiz Natal Laurenti speaks on behalf of Transdata Movimentacao De Cargas Complexas, Rigging Job of the Year winner (US\$ 750,000 – \$2million)



Klaus Meissner, from Terex USA, LLC (Germany), presented *Uncovering The Root Causes Of Crane Accidents*

industry. “SC&RA offers manufacturers’ representatives the chance to share globally made experiences and information about crane operation and standardisation – with the goal to continuously make crane operation safer. Additionally, collaboration with organisations outside the USA, like ESTA, CICA, CRAC, ICSA, FEM and others, helps the industry to harmonise regulations and standards – with the big target to make a ‘world crane’ available, which would make life easier for both users and suppliers.”

Alvaro Rodriguez, President of MPE Group (Mexico) agrees. “I’ve been attending SC&RA events for ten years now and I’ve seen how these events have been growing in both attendance and content for members,” he said. “This has been very useful to me, as I’ve been able to grow a very strong network of partnerships and also experience the latest trends in the industry.”

Rodriguez enjoys SC&RA meetings for an undeniable reason. “The possibility to meet new people and build business relationships. Either at the sessions or even the receptions, some of those relationships I have made during these years have helped me develop my international activities within the USA, Mexico and Spanish speaking countries.”

And Rodriguez doesn’t need to ponder long on the type of value he gets from attending the Crane & Rigging Workshop. “I made a very strong partnership this year with a couple of companies that have helped me develop new markets in my area of expertise. Every time I attend an SC&RA meeting I experience something new that could serve as a great opportunity to grow my business.”

To see a full list of the 2016 SC&RA meetings and get full details, visit: www.scranet.com/meetings



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LIGHTWEIGHT HARNESS

Fall protection equipment and rescue system manufacturer Capital Safety has launched a new light-weight safety harness. The ExoFit STRATATM harness is part of the DBI-SALA range. It is designed to take the weight off workers' shoulders and redistribute it to the hips. It uses PolarMesh padding to keep users cool and a Revolver Vertical Torso Adjuster and Tri-Lock Revolver Connector that provide added security around the legs, the manufacturer said.

Sandra Paiva, Capital Safety EMEA product manager, said, "Safety and functionality are of limited use if harnesses cause the user discomfort. Having real industry experience means we understand issues workers face day-in and day-out. We have developed the lightest-wearing harness in the industry to address the needs of our end user."

■ For further information see: www.exofitstrata.eu

Universal Trolley offering from Columbus McKinnon

Manufacturer and marketer of material handling products Columbus McKinnon Corporation has launched new motorised units as part of its CM Universal Trolley range.

The Universal Trolley allows a single trolley to be used with virtually all CMCO powered chain hoists up to 3 US ton capacity, the manufacturer said. The motorised Universal Trolley units are suitable for high cycling or long-distance hoist travel applications and are available with traverse speeds of 15, 35 and 75 feet per minute (4.6, 10.7 and 23 m).



The motorised Universal Trolley from CM

Single-speed, three-phase controls are standard. The trolley has an easy-access control box and is available as a convertible plain model or geared for precise hoist positioning. In addition, it has wheels with permanently

lubricated shielded ball bearings for long life and low maintenance and wrap-around side plates, drop lugs and pinned suspension bolts for increased operator safety.

■ For more information see: www.cmworks.com

Tandem Axle Lift from Volvo Trucks

Volvo Trucks has launched the Tandem Axle Lift, a function which makes it possible to disengage and raise the second drive axle. According to the manufacturer, this provides better road grip and up to 4 % lower fuel consumption when the truck is driven unladen.

The system works by replacing the differential in the first drive axle with a dog clutch which allows the second drive axle to be disengaged and raised. This increases manoeuvrability and cuts the turning circle by a metre, the manufacturer adds.

Jonas Odermalm, Volvo Trucks construction segment manager, said, "Tandem Axle Lift offers many advantages, of which the most significant is the fuel saving."

"Tandem Axle Lift is perfect for operations where ground conditions or gross vehicle weights demand a tandem-drive truck but where the vehicle returns empty or lightly-loaded in the opposite direction," explained Odermalm.

The Tandem Axle Lift option is available for all models in the Volvo FM, Volvo FMX, Volvo FH and Volvo FH16 ranges.

■ For more information see: www.volvotrucks.com

INDUSTRIAL CAMERA FROM IVC

Industrial Video and Control (IVC), a supplier of cameras and video systems designed for industrial applications, has launched a new high definition industrial video camera system.

The APTZ-3045-06 camera is designed and certified for use in hazardous environments. The pan-tilt-zoom camera offers 1080 pixel resolution and low-light performance, the manufacturer said. It is Class I Division 1 certified and is designed to work in areas where ignitable concentrations of gases or liquids exist. The APTZ-3045-06 was tested and certified by Intertek.

Norm Fast, IVC chief executive officer, said "The APTZ-3045-06 offers crisp, detailed HD-SDI video in a rugged enclosure and is suitable for a variety of applications. It's a quality, economical solution for harsh, demanding environments."

Manufactured in the United States, the APTZ-3045-06 is a HD-SDI, colour video camera and includes a 30 x pan-tilt-zoom. It is housed in a Class I Division 1-rated stainless-steel enclosure. The video camera works with the IVC Relay Server and IVC's Longwatch camera management software.

■ For more information see: www.ivcco.com



The ExoFit STRATATM harness is designed to take the weight off workers' shoulders



IN THE KNOW

This picture of the month was sent in by Chris Sleight. It shows cranes from Mammoet helping to construct the Dubai Eye, a 210 metre tall ferris wheel on Bluewaters Island, in Dubai, United Arab Emirates. The wheel will cost AED 1 billion (US \$270 million). It is part of the AED 6 billion (\$1.6 billion) Bluewaters Island development. The complex will have entertainment, hospitality, residential and retail zones. Design and construction of the wheel is by Hyundai Contracting and Starneth Engineering.



Picture of the month

PEOPLE NEWS

■ The Chartered Institute of Logistics and Transport (CILT) has appointed



KEVIN RICHARDSON to chief executive. Richardson begins his role on 1 December for a handover period, before current chief executive Steve Agg steps down after nearly ten years in the role on 1 January 2016. Prior to his new role, Richardson was European development director at the Institute from XPO Logistics. Prior to that, Richardson spent 20 years at TDG Plc progressing from implementation director to strategic development director. Professor Richard Wilding, CILT chairman of the board said, "We are delighted to announce Kevin Richardson as the Institute's new chief executive. He will lead the Institute with commitment, energy and a wealth of expertise into a new era within the logistics and transport sector."

■ Heavy lift and specialized transport service provider **ALE** has received the 'Ground Hero Zero' award from Shell for their safety efforts during the superlift activities for the Malikai Project. In July, ALE jacked-up the Malikai Topside 40 metres high, before skidding it 90 m. Roberto Radicella, ALE general manager of the Malaysia branch, received the award on behalf of Edwin Blösser, ALE project manager. Blösser said, "We participated in the safety meetings and raised awareness onsite by doing walkabouts, enforcing safety standards and informing parties and the safety crew. It's fantastic to be recognised for our safety measures and best practice onsite. The ALE crew made it possible to receive this award."



■ **CHRISTIAN PRANGL** from Austrian crane service provider Prangl, has been awarded the Entrepreneur of the Year award by tax consulting firm EY. The competition showcases and promotes the entrepreneurial activity of people who have potential and inspire others to be visionaries, successful and demonstrate leadership. Around 300 guests from businesses, politics and society accepted the invitation to the award ceremony in the Redouten Halls of Vienna's Hofburg palace. The entrepreneurship prize is awarded in three categories, including trade and consumer goods, industry and high-tech, and services. Christian Prangl was awarded the prize for Services.

EVENTS DIARY

EXCON 2015

25-29 November 2015
Bangalore, India
www.excon.in

SC&RA BOARD AND COMMITTEE MEETINGS

3-6 January 2016
Cabo San Lucas, Mexico
www.scranet.org

LIFT & MOVE USA

10 February 2016
TNT Cranes & Rigging
Texas, USA
www.scranet.org

SC&RA SPECIALIZED TRANSPORTATION SYMPOSIUM

1-4 March 2016
Memphis, Tennessee, USA
www.scranet.org

BAUMA (MUNICH)

11-17 April 2016
Munich, Germany
www.bauma.de

SC&RA ANNUAL CONFERENCE

26-30 April 2016
Orlando, Florida, USA
www.scranet.org

THE COMMERCIAL VEHICLE SHOW 2016

26-28 April 2016
NEC, Birmingham, UK
www.cvshow.com

CEMAT

31 May-3 June 2016
Hannover, Germany
www.cemat.de

HILLHEAD 2016

28-30 June 2016
Buxton, UK
www.hillhead.com

BAUMA CHINA 2016

22-25 November 2016
Shanghai, China
www.bauma-china.com

SAMOTER 2017

1-5 March 2017
Verona, Italy
www.samoter.com

ESTA AWARDS OF EXCELLENCE

March-April, 2017 (to be confirmed)
Location to be confirmed
www.khl.com/esta
(Organised with the ESTA association)

■ 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.

Absolute Auction* DG Rigging, Inc.

Wed., Dec. 16, 2015, 9:00AM - Brookville, Ohio (Dayton Area)

Note: All items will sell at absolute auction without minimums or reserves, with the exception of the '09 GOLDHOFER SPMT Self Propelled Transport Module and the 2013 Versa Lift 60/80 80,000lb Forklift. These items will be offered "Subject to Owners Immediate Confirmation"

Specialized Transport and Lifting: (4) '08 GOLDHOFER THP 3-Line Transport Modules (35 Ton/Line - 12 Lines Total), w/32' deck, (Will Be Sold Piecemeal) • '09 GOLDHOFER SPMT 6-Line Self-Propelled Module (35 Ton/Line) (Offered Subject To Owner Confirmation) • '07 KALYN SIEBERT 85 Ton 9-Axle (3+3+3) Lowboy, • '98 LIFT SYSTEMS 500 Ton 4-Point Gantry System • 200 Ton 2-Point Gantry System • 100 Ton 4-Point Gantry Systems • Plus (4) 100 Ton Hydraulic Traversing Dollies; (14) Gantry Beam Lifting Links (100 - 125 Ton); (7) Gantry Beams (19' - 30'); (220+/-) Ft. of Gantry Track; • (2) Jack and Slide Systems, w/Enerpac 200 - 150 and 100 ton jacks; (118') of Slide Track; (2) Gas Pwd Hyd Power Packs.

Trucks: PETERBILT 397 Prime Mover • (4) PETERBILT, KW, & MACK Tri-Axle Tractors • (2) KW Tandem Axle Tractors • Crew Cab Service and Utility Trucks • Pickups.

Trailers: (5) 80 Ton - 35 Ton Lowboys • (2) Hydraulic Tail Trailers • (13) Tri and Tandem Axle Single Drop and Double Drop Trailers, some spread axle • '13 MANAC 53' Flat, with curtain system • Rigid Frame Gooseneck Trailers.

Forklifts: All with forks and booms - '96 LIFT SYSTEMS 75MBL, 75/50 Ton Mobil Boom Lift, (1,500 hours) • '12 CAT TL1055C, 10,000 lb Telehandler, (2,255 hours) • '11 MANITOU MT1058HA, 10,000 lb Telescopic Rough Terrain, (857 hours) • '13 VERSA-LIFT 60/80, 80,000 lb Solid Tired, (221 hours) (Offered Subject To Owner's Confirmation) • (2) '95 TAYLOR 80,000 lb Pneumatic Tired, dual fuel, (3,400 and 3,900 hours) • (2) '95 ROYAL T300B, 40,000 lb Solid Tired, • (2) CAT T300B, 30,000 lb Solid Tired • (4) '99-'95 HYSTER S155XL2, 15,000 lb Solid Tired, • (2) HYSTER S150A, 15,000 lb Solid Tired, • HYSTER 9,000 lb Pneumatic Tired • HYSTER 8,000 lb Solid Tired.

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350 t, Demag AC 350*
year 2004



180 t, Sennebogen 5500*
year 2002



100 t, Demag AC 100*
year 2003



100 t, Grove GMK 4100*
year 2009



100 t, Demag AC 100*
year 2000



80 t, Liebherr LTM 1080-1*
year 2001



80 t, Demag AC 80-2
year 2006



70 t, Terex Demag AC 60/70
year 2004



60 t, Liebherr LTM 1060-2
year 2000



60 t, Tadano Faun ATF
60-4, year 2002



60 t, Tadano Faun ATF 60-3
year 2003



55 t, Grove GMK 3055
year 2004



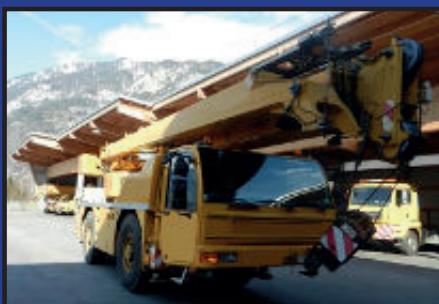
50 t, Tadano Faun ATF
50-3, year 2000



40 t, Terex Demag AC 40
year 1999



35 t, PPM ATT 400-3
year 2000



35 t, Terex Demag AC 35
year 2003



30 t, Terex Demag AC 30
year 2007



30 t, Tadano Faun
ATF 30-2L, year 1999

The following cranes are on coming soon:

500 t, Liebherr LTM 1500, year 2004

60 t, Krupp KMK 4060, year 1994

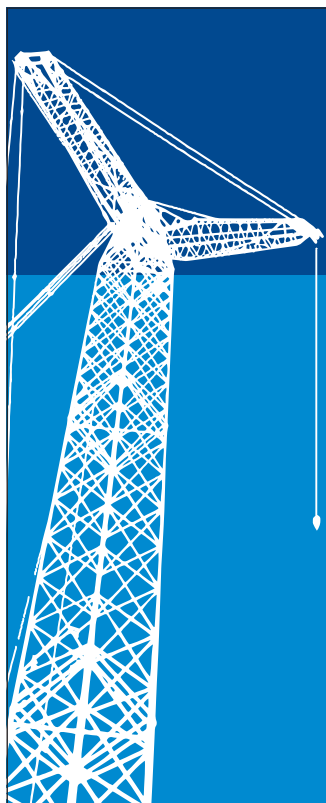
300 t, Terex Demag AC 300, year 1999

60 t, Liebherr LTM 1060-2, year 2000

70 t, Terex Demag AC 60/70, year 2002

35 t, Liebherr LTM 1030-2, year 2004

* Subject to alteration and prior sale. / Colour variation possible // Änderungen und Zwischenverkauf vorbehalten / Farbabweichungen möglich



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1x 170 t	Grove GMK 5170	2011
1x 200 t	Liebherr LTM 1200-5.1	2009
1x 220 t	Liebherr LTM 1220-5.2	2013

CRAWLER CRANES

1x 400 t	Terex-Demag CC 2400-1	2014
1x 600 t	Terex-Demag CC2800-1	2013
1x 650 t	Terex-Demag CC 3800	NEW!
1x 1250 t	Terex-Demag CC 6800	2014

ROUGH TERRAIN CRANES

2x 35 t	Tadano GR 350XL-2	2012
4x 55 t	Tadano GR 550XL-2	2012
1x 65 t	Grove RT 765E	NEW!
6x 75 t	Tadano GR 750XL-2	2012
2x 100 t	Tadano GR 1000XL-2	2012
1x 130 t	Grove RT 9130E	NEW!

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55 ton	Liebherr	LTM 1055	2003
110 ton	Liebherr	LTM 1100	2006
130 ton	Grove	GMK 5165	2006
250 ton	Grove	GMK 6250L	2005
350 ton	Grove	GMK 6350	2009
500 ton	Liebherr	LTM 1500	2004

CRAWLER CRANES

250 ton	Manitowoc	M999	2001
300 ton	Manitowoc	M2250	2008
400 ton	Liebherr	LR1400	1998
550 ton	Liebherr	LR1550	1999

TOWER CRANES

Terex	CBR 040	2011
Liebherr	71 EC-B5	2009



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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 Terex-Demag AC 30 City	2006	4x4x4	25,00m + 13,00m + 1,20m
35 t Terex AC 35 L	2005	4x4x4	37,40m
50 t Terex Demag AC 50-1	2006	6x6x6	40,00m + 17,60m
50 t Terex Demag AC 50-1	2005	6x6x6	40,00m + 17,60m
50 t Terex Demag AC 50-1	2004	6x6x6	40,00m + 17,60m + runner
50 t Demag AC 50-1	2002	6x6x6	40,00m + 17,60m
55 t Terex-Demag AC 55 City	2006	6x6x6	40,00m + 13,80m
55 t Liebherr LTM 1055-3.1	2005	6x6x6	40,00m + 16,00m + 3,00m
60 t Faun ATF 60-3	2003	6x6x6	40,00m
80 t Demag AC 80-1	1999	8x8x8	50,00m + 17,60m
80 t Faun ATF 80-4	2003	8x8x8	48,50m + 2,00m + runner
100 t Grove GMK 5100	2005	10x6x10	51,00m + 18,00m + 2,50m+runner
130 t Grove GMK 5130-1	2005	10x8x10	60,00m + 18,00m
160 t Tadano Faun ATF 160G-5	2009	10x8x8	60,00m + 37,00m
200 t Terex-Demag AC 200-1	2005	10x8x8	68,00m + 33,00m + 1,50m
220 t Liebherr LTM 1220-5.1	2005	10x8x8	60,00m + 22,00m
300 t Liebherr LTM 1300	1999	14x8x10	60,00m + 42,00m + 70,00m

LATTICE BOOM TRUCK CRANE

115 t Link-Belt HC 238	1982	10x6x6	48,00m/18,00m
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HARBOUR MOBILE CRANES

40 t Sennebogen 640 M	2000	4x2x2	22,00m
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YARD CRANES

12 t Liebherr LI 1012	1990	4x2x2	12,00m
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2013, Liebherr LTM1220-5.2, 220 Ton

ALL TERRAIN

- GROVE GMK5170 (GMK5225), 170M ton, '11, 64m boom, 18m jib... Call
- LIEBHERR LTM1130-5.1, 130T(m), '12, 60m boom, 19m jib Call
- LIEBHERR LTM1220-5.2, 220T(m), '13, 60m boom, 22m jib.... Call
- GROVE GMK 6300L (6350L), 300T(M) tons, '12, 80m Boom, 21m Jib..... Call



2013, GROVE RT9130E, 130 Ton

ROUGH TERRAIN

- TADANO GR350XL-2, 35 tons, '12, 101' boom, 42' jib..... Call
- TADANO GR550XL-2, 55 tons, '15, 114' boom..... Call
- GROVE RT765E, 65 tons, '13, 110' Boom, 56' jib..... Call
- TADANO GR750XL-2, 75 tons, '15, 141' boom, 58' jib..... Call
- TADANO GR1000XL-2, 100 tons, '15, 154' Boom, 58' jib..... Call
- GROVE RT9130E, 130 ton, '13, 160' boom, 36/59' jib... Call



Grove GMK5225/GMK5170, 225 ton/170M ton

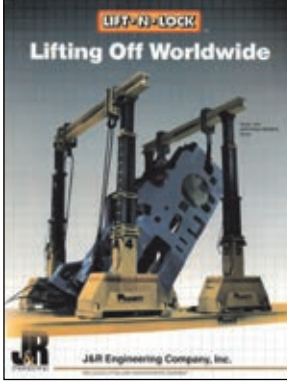
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Faun ATF 70-4
70 t YOM 1998/1999



Demag AC 205
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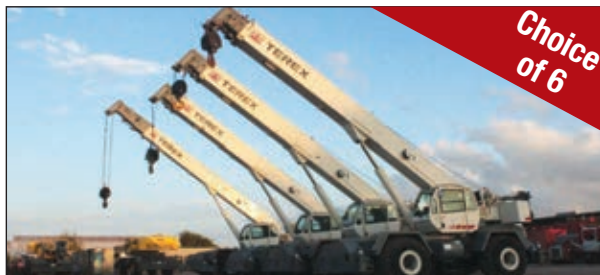
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Capacity	Manufacturer	Type	Year	Drive/Steering	Boom/jib (m)	Delivery
300 T	LIEBHERR	LTM 1300	1999	14 X 8 X 10	60 / 70 / 42	DIRECT
220 T	LIEBHERR	LTM 1220-5.1	2005	10 X 8 X 8	60 / 22	DIRECT
200 T	DEMAG	AC 200-1	2005	10 X 8 X 8	68 / 33+1,5	DIRECT
160 T	FAUN	ATF 160 G-5	2009	10 X 8 X 8	60 / 37	DIRECT
160 T	LIEBHERR	LTM 1160/2	1999	10 X 6 X 10	60 / 22	DIRECT
130 T	GROVE	GMK 5130-1	2005	10 X 8 X 10	60 / 18	DIRECT
120 T	LUNA	AT 120/47	1994	10 X 8 X 8	47 / 21	DIR. EX SPAIN
100 T	GROVE	GMK 5100	2005	10 X 6 X 10	51/18/2,5/RUN.	DIRECT
90 T	LIEBHERR	LTM 1090/2	2002	8 X 8 X 8	52 / 19	DIRECT
80 T	FAUN	ATF 80-4	2003	8 X 8 X 8	48,5 / 2+RUN.	DIRECT
80 T	DEMAG	AC 80-1	1999	8 X 8 X 8	50 / 17,6	DIRECT
70 T	LIEBHERR	LTM 1070/1	1997	8 X 6 X 8	40 / 16	DIRECT
60 T	FAUN	ATF 60-3	2003	6 X 6 X 6	40	DIRECT
60 T	LIEBHERR	LTM 1060/2	2000	8 X 6 X 8	42 / 17	DIRECT
60 T	FAUN	ATF 60-4	2000	8 X 6 X 8	40,2	DIRECT
55 T	TEREX-DEMAG	AC 55 CITY	2006	6 X 6 X 6	40 / 13,8	DIRECT
55 T	GROVE	GMK 3055	2005	6 X 6 X 6	43 / 15+RUNNER	DIRECT
50 T	TEREX-DEMAG	AC 50-1	2006	6 X 6 X 6	40 / 17,6	DIRECT
50 T	TEREX-DEMAG	AC 50-1	2005	6 X 6 X 6	40 / 17,6	DIRECT
50 T	TEREX-DEMAG	AC 50-1	2004	6 X 6 X 6	40 / 17,6+RUN.	DIRECT
50 T	DEMAG	AC 50-1	2002	6 X 6 X 6	40 / 17,6	DIRECT
40 T	DEMAG	AC 40-1	1999	6 X 6 X 6	31,2	DIRECT
35 T	TEREX	AC 35 L	2005	4 X 4 X 4	37,4	DIRECT
30 T	LUNA	AT 30/27	1989	4 X 4 X 4	27 / 7	DIRECT
30 T	LUNA	AT 30/27	1989	4 X 4 X 4	27	DIRECT
25 T	DEMAG	AC 25	1998	4 X 4 X 4	25 / 13	DIRECT

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180 T	DEMAG	TC 650	1982	10 X 6 X 6	28	DIRECT
130 T	LIEBHERR	LG 1130	1976	12 X 8 X 8	63 / 35	DIRECT
125 T	LUNA	GC 125	1986	10 X 6 X 6	56	DIRECT
115 T	LINKBELT	HC 238	1981	10 X 6 X 4	42 / 19	DIRECT

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120 t	Liebherr	HS 882 HD (2x)	1995	crawler	32	DIRECT EX DUBAI
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MOBILE HARBOUR CRANES

40 t	Sennebogen	640 M	2000	4 x 2 x 2	22 m / -	DIRECT
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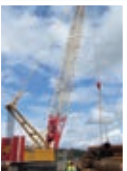
LIEBHERR LR1300,
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