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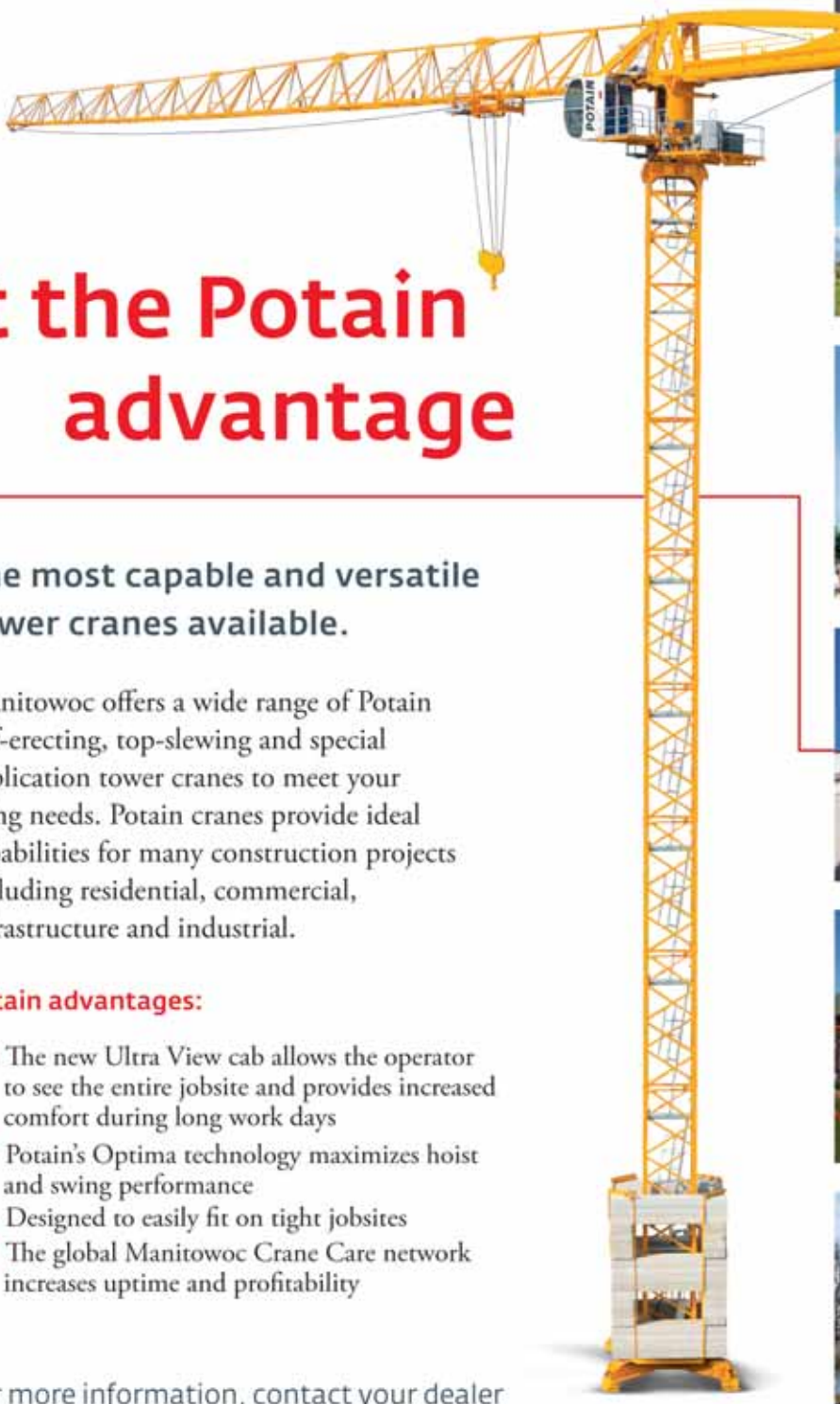

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Tower cranes back on the horizon

We last reviewed tower cranes towards the end of 2010 when the sector was showing some stirrings of life following a couple of disastrous years. Over the past six months or so the construction industry as a whole and high rise construction in particular has continued to show signs of recovery - to the point were interest in tower cranes is on the rise again. Manufacturers are also fuelling this interest by adding new models.

With almost a century of history behind it, the latest significant tower crane development was the introduction of the 'flat top' or 'topless' tower crane in the 1970s – although the concept was first seen in the 1950s.

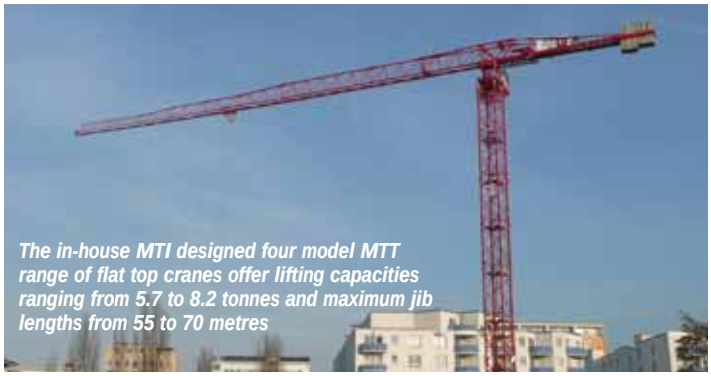
This was initially introduced where a reduction in the overall height of the crane above the hook - by eliminating the top mast and pendants - was a major factor. However more recently it has grown in popularity primarily because of its speed and ease of erection and reduced transportation costs. As a result it has started to replace many small and medium sized saddle jib cranes. And perhaps because of this, tower crane manufacturers are reacting to this demand and accordingly, introducing more 'flat top' models of varying sizes.
The latest models show that manufacturers are looking very hard at and making good progress with, reducing transportation volumes and costs as well as cutting the amount of time installation time required. There is also work going on to make the cranes more productive once on site with faster, more energy-efficient hosts. The overall aim is to help rental companies squeeze a margin out of what are relatively poor rates.

A new tower crane brand

There has even been a 'new' tower crane manufacturer entering fray. Luxembourg-based MTI (Machinery Trading International) has for the last 20 years been buying and selling tower cranes all over the world as well as being Jost Cranes distributor in the UK and Korea. The connections and experience MTI has gained over the years has resulted in the company entering the manufacturing arena with its own Lux Cranes.

The in-house designed four model MTT range of flat top cranes offer lifting capacities ranging from 5.7 to 8.2 tonnes and maximum jib lengths from 55 to 70 metres. The cranes are manufactured by an experienced crane subcontractor in Germany and have been designed to maximise transport efficiency and be fast and easy to erect. They also feature the latest generation of frequency controlled slew and hoist drives for smooth sensitive and efficient operation.

"The problem with the tower crane market at the moment is the low rental rates due to an overcapacity in many markets," says Reinhold Bräuner of MTI-Lux. "We have been buying and selling new and used tower cranes for many years shipping them all over the world. Doing this allows you to really understand the good and the bad aspects of each manufacturer's products both when new and after a few years of use."



The in-house MTI designed four model MTT range of flat top cranes offer lifting capacities ranging from 5.7 to 8.2 tonnes and maximum jib lengths from 55 to 70 metres

"We realised that customers wanted a tower crane that combined the best features from each manufacturer, was simple and reliable to use and had a keen price," he adds. "We designed a range with special focus on being easy and cheap to transport and set-up, using the latest controls and motors. But most important of all we made sure to offer a good quality product at a price that allows rental companies to make money from the low rates that are probably here to stay for some time."

MTI is one of many tower crane manufacturers looking for that perfect combination of features to suit the current market.
The manufacturer that was probably first to offer a crane design that significantly reduced the number of transport vehicles and made erection easier was German-based Wilbert.

Formed in 1932 as a family construction company, Wilbert developed and launched its first tower crane in 1964. By the mid 1980s the company had taken on the Wolff franchise and rapidly became the largest dealer in Germany. However it was also developing its own range of tower cranes and this was helped when it divested itself of the other construction equipment in 1999 deciding to concentrate solely on tower cranes. Five years later Wilbert Turmkrane (tower crane) was formed with the launch of the modern top slewing WT e.tronic series. Expansion meant improved production facilities were needed and these were started in 2005.

A sign of the increased production is seen in the group's first 50 years it built 100 tower cranes. Following the launch of its 'quick erect' and easy to transport cranes in 2005 it took just five years to built the next 100 cranes.

The company now produces a six model high capacity luffing jib range and a six model range of topless cranes.

One of Wilbert's high capacity luffing jib cranes

As well as manufacturing tower cranes, Wilbert also operates a large crane rental fleet and as such is another company which has a first-hand insight into the costs of ownership issues such as storage, transportation and assembly costs and these are, it says, the key drivers in its crane design.

The company claims that its WT e.tronic tower cranes are designed to require up to 60 percent less storage and transport space than comparable cranes, achieved by designing a jib system where two different profiles can slide together. Many of the smaller parts such as

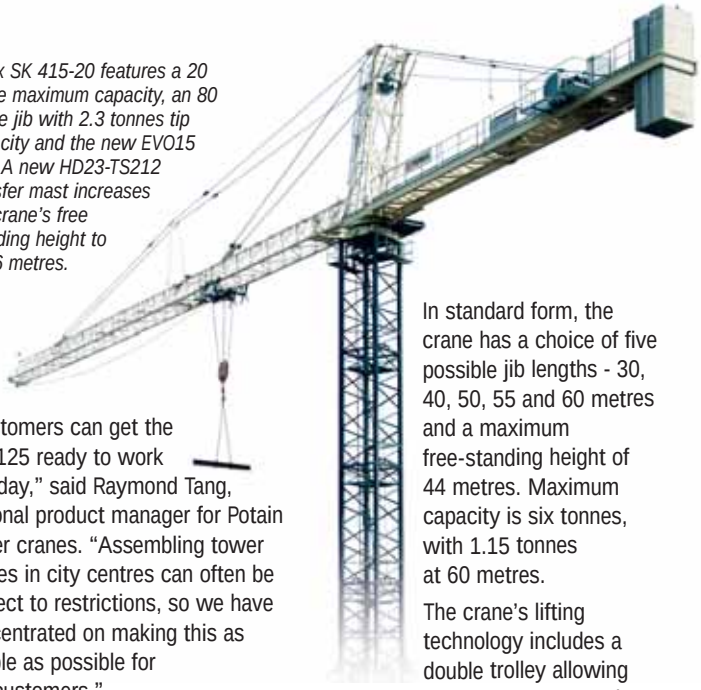
rods, rope, bolts, and spigots, have a definite mounting location during transport making it easier for erection and inspection because most parts are automatically secured at their defined location. Also only one lift is necessary per shipping unit – a feature that Potain also promotes heavily. This design not only helps reduce transport costs but also cuts down on the jobs that need to be done on site.

The counter jib of the smaller units is designed to fit a standard shipping container. Counter jibs of the larger units are equipped with 'container corners' to be mounted and transported on top of standard containers.

New MC and MCD cranes from Potain

These easy ship and erect features are also a feature of Potain's latest cranes the MC 125 and MCD 268. The MC 125 is being built at Manitowoc's Asian manufacturing facilities in Zhangjiagang, China and Pune, India, initially for the Asian market. Potain says the compact crane is ideal for a variety of city centre and general building projects because of its improved setup and installation.

The Potain MC125 is a compact crane ideal for a variety of city centre and general building projects.



Terex SK 415-20 features a 20 tonne maximum capacity, an 80 metre jib with 2.3 tonnes tip capacity and the new EVO15 cab. A new HD23-TS212 transfer mast increases the crane's free standing height to 91.6 metres.

"Customers can get the MC 125 ready to work in a day," said Raymond Tang, regional product manager for Potain tower cranes. "Assembling tower cranes in city centres can often be subject to restrictions, so we have concentrated on making this as simple as possible for our customers."

Crane assembly is improved by several design innovations including a single-tie jib which can be assembled at ground level and lifted in a single piece.
The 1.6 metre square mast sections are pin-connected for fast simple erection while other components are designed for lightweight handling.

Maximum jib length on the MC 125 is 60 metres - five metres longer than its predecessor the MC 115 B.

In standard form, the crane has a choice of five possible jib lengths - 30, 40, 50, 55 and 60 metres and a maximum free-standing height of 44 metres. Maximum capacity is six tonnes, with 1.15 tonnes at 60 metres.

The crane's lifting technology includes a double trolley allowing it to lift three tonnes with a single trolley or six tonnes when working with both. Two versions of Potain's established 24 kW 33PC15 hoist are available.

When working with a 480V power supply, the 33PC15(GH) has 400 metres of rope available for high-rise building work, with lift speeds of up to 96 m/min with 1.5 tonnes on the hook. The regular 33PC15 hoist can handle up to 260 metres of rope and can reach 90 m/min when working

with the same load. For easier maintenance on the MC 125, the cab has been located on the same side as the trolley platform. There are also platforms and catwalks leading to all the crane's mechanisms and a derrick is supplied as standard to help with maintenance duties.

The MDT 268 is one of Potain's recent additions to its topless range, offering 'fast erection and dismantling times without compromising capacity'. One of the largest tower crane operators in the world – Abu Dhabi-based Potain dealer NFT has a substantial fleet of MDT 268s, along with its big brother, the MDT368, and both were used recently on the construction of the Princess Nora bint Abdulrahman University in Riyadh, the world's largest women-only university. There were 150 cranes on the $11.5 billion project, the majority from Potain. The topless design allowed the cranes to be placed in close proximity with a smaller height variation between them, saving time and money.

Terex Cranes says that its new 300 metre/tonne CTT 321 represents 'a step forward in flat top tower crane innovation'

One interesting feature of the MDT 268 is its folding jib, claimed to be an industry first for topless cranes. This patented feature helps with one of the biggest headaches in the construction of cooling towers – dismantling the crane once construction is complete. Because the jib's radius is greater than the diameter of the cooling tower, contractors are often faced with a problem when 'climbing down' the crane but this innovative feature provides the solution. Another design feature is the folding counter jib for easier transportation, while some jib sections are interchangeable with other MDT models, such as the MDT 308 and MDT 368.

There are two versions of the MDT 268, with 10 or 12 tonnes maximum capacity and up to 65 metres of jib. For the 10 tonne version there is a choice of either the 50 LVF 25 or the 75 LVF Optima winches, while the larger model has a choice of either the 50 LVF 30, 75 LVF or the 100 LVF 30 Optima winches. Both versions of are equipped with a new trolley – the 6 DVF 4 which can reach speeds of up to 120 m/min along the jib.

Big flat top innovation at Terex

Terex Cranes says that its new 300 metre/tonne CTT 321 represents 'a step forward in flat top tower crane innovation'. The idea is to bring the 'simplified erection and transportation benefits to larger models, while improving performance. The crane has a 16 tonnes maximum capacity with jib lengths from 30 metres up to 75 metres made up of five metre long sections. Produced at the company's plant in Fontanafredda, Italy, the crane has a two-part counter jib for easy transportation which can be assembled on the ground using the pins provided for jib assembly. Terex's new EVO15 operator's cab offers excellent visibility and a comfortable working environment with new ergonomic joystick controls improved heating system and CD/radio. A full colour, anti-reflection, multi-language ICS display provides crane information and is available with an anti-collision and zoning system.

The CTT 321 comes equipped with an anti-sway module, slip-ring protection bar and rods and integral jib safety cable for lanyard attachment. A trolley device has also been introduced to prevent the pulley rope from jumping the reeving track. All electrical boxes are made from stainless steel while maintenance issues are monitored by an intelligent diagnostic system. A new automatic slew ring greasing system comes as standard, while a choice of two winch models - 45kW and 67kW - are available. An aerial jib and counterweight dismantling device is available as an option.

The Liebherr 85 EC-B 5 FR.tronic is a compact 'city' crane with a maximum capacity of five tonnes - or 1,300kg at the 50 metre jib tip.

New Liebherr flat top

The Liebherr 85 EC-B 5 FR.tronic - launched at this year's Smopyc trade fair in Zaragoza - is a compact 'city' crane with a maximum capacity of five tonnes - or 1,300kg at the 50 metre jib tip - with all loads lifted in the double-reeved mode.

The low-width 85 LC tower system - which features new pin connectors and measures 1.2 x 1.2 metres simplifies transportation - is ideal for inner-city job sites where room is at a premium and access difficult. This is helped by the cruciform base which measures just three metres square.

The complete slewing section - ready for a maximum working radius of 50 metres - can travel on just two semi-trailer trucks with the heaviest individual element weighing less than three tonnes, allowing it to be lifted by a 60 tonne truck/All Terrain crane.

The new tower system consists of a 12 metre long tower base element plus 11.7, 5.85 or 3.9 metre tower sections. The 3.9 metre long climbing section can be used inside or outside the building and can be installed in an elevator shaft where necessary. The standard 24 kW frequency converter hoist gear permits lifting heights up to 260 metres, while the maximum free-standing height is 46.2 metres- under hook.

Comansa goes faster

Linden Comansa has introduced a new highly efficient hoist controller and improved motor design that can boost line speeds by up to 70 percent. The new hoist drive/control system, called Effi-Plus, can increase overall productivity by up to 29 percent according to the manufacturer. The new system allows much faster lift and lowering speeds when handling lighter loads, drastically shortening the hoist cycle time.

Effi-Plus has been applied to the 24, 37, 50 and 65kW drives of the LC1100, LC2100 and LCL luffing-jib series of tower cranes.
The company has been fitting it to new cranes since January at no extra cost. The changes mean that the well-proven drive configuration - electric motor-brake, gearbox, drum, frequency inverter, brake resistor - remain unchanged.

Comansa has managed to significantly step up the overall hoists speeds on its luffing jib tower cranes without a radical redesign

The company also says that as the motor power stays the same the energy consumption does not change either. The control system simply accelerates and decelerates faster and more smoothly, while running to higher speeds when the load being lifted is lighter. Speed improvements depend on the weight of the load, the crane model and the hoist power fitted, but offer gains ranging from a low of 25 to a high of 73 percent with two line lift speeds of up to 360 m/min.
The efficiency claims of between 14 and 29 percent are based on the assumption that average loads lifted are just 25 percent of maximum capacity. Finally the hoist drum capacity has also been increased on some models by up 45 percent, allowing the crane to operate at a higher level.

New top end saddle jib

When it comes to heavy duty infrastructure work such as dams, bridges and other large construction jobs, the saddle jib tower crane still provides the answer and both Terex and Potain have introduced new models.

Potain has added a 550 tonne/metre model to the top end of its MD range. The new MD560B Potain claims that it offers better jib tip capacities and load curves than its competitors in most configurations. When working with an 80 metre jib the 25 tonne MD 560 B can handle 5.4 tonnes at the jib end, while the 40 tonne version can take 7.5 tonnes to 70 metres or 4.6 tonnes to 80 metres. Two prototypes of the new crane, both 25 tonne models, are working for contractor Dragados on a major expansion to Madrid's Atocha rail terminal. The cranes will stay on the job site for 12 months and will eventually reach heights of around 49 metres.

Diego Jurado, sales manager for Ibergruas, the Potain dealer for Spain which supplied the cranes for the project, said: "It only took six regular work days to unload 11 trucks, prepare the ground, erect and commission the highest MD 560 B. We were really pleased, especially since the site has restricted access, many surrounding electrical lines and we had to make several mobile crane lifts from long radii. Overall, this new MD crane seems to be much faster and easier to erect."

Several design innovations on the MD 560 B are intended simplify erection. Platforms on the counter jib are the same as those on the MD 485B, but Manitowoc's engineers have re-examined access to make it easier for riggers. The tie bars are now integrated into the counter jib and each component in the crane has a clearly positioned plate for simple identification. The jib can be erected and assembled in the air in three separate pieces or on the ground and placed as a single component, depending on the space and the size of the mobile crane available. Attaching the jib's tie bars is simple using Potain's "pear-shaped" hole system, and assembling the tie bars (and counter jib) is easier with the integrated auxiliary winch.

There are a choice of mechanisms for trolleying and hoisting, depending on configuration.
The RVF 183 Optima+ frequency-controlled slewing mechanism is standard, while lifting power comes from the 100 LVF 63 winch in the 25 tonne version or the new 270 LVF 100 on the 40 tonner. The 270 LVF 100 is a 201 kW hoist with a 10 tonne line pull, providing its maximum capacity with four falls of cable.

The 25 tonne crane sits on the 2.45 x 2.45 metres KR849 mast, while the 40 tonner requires the reinforced K850 tower to cope with the higher

The Potain MD560B at work in Madrid

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The Liebherr 71EC-B on a custom-built foundation

loadings. The MD 560 B will be equipped with Potain's new Ultra View cab.

Liebherr flat-top selected in Mumbai

Developer and contractor Nahalchand Laloochand has chosen to use a Liebherr 71 EC-B 5 FR.tronic flat-top crane to help build the 30-storey Aravat apartment complex in the suburbs of Mumbai.
Until recently Mumbai was primarily a low-rise city, however, with building height restrictions now being eased in some areas, new commercial and residential buildings are being developed with heights of 90 metres and more.

The new extension to the Amman airport is costing $640 million and should be completed next year

The 71 EC-B 5 supplied by Liebherr India - will be set on a custom-built 5.5 metre steel base which stands on top of a two metre high concrete block at foundation level. Although the site is on the fringe of open countryside, it is bounded on three sides by residential buildings of eight and 12 storeys in height.

"The excavation for the foundations is about 10 metres deep," says NL's chief site engineer Prakash Parab. "The crane stands about 45 metres in height, so to comply with safety requirements for the surrounding buildings we constructed the base to provide the relevant clearances."

The crane will eventually reach a height of 110 metres climbing with the structure as it grows.

The Aravat building will consist of two wings with the Liebherr crane climbing inside the central lift shaft and used for both structures.

With a jib length of 50 metres the crane can handle a maximum load of five tonnes, or 1 tonne at full reach which is enough to cover the project area but requires the boom over-sailing part of the adjacent residential area. Liebherr delivered the crane to the site in January, and it was installed on its steel and concrete base with the help of a German engineer. Construction time for the building is scheduled at two-and-a-half years.

"This is the first tower crane to be purchased by NL," says Parab. "Now that parts of Mumbai are allowed to have taller buildings we decided to make the investment in the Liebherr brand because of quality and reliability and with a view towards other high-rise developments." NL is one of India's leading real estate developers, and is the first in the country to offer a legally binding guarantee of handover dates of its projects, displaying its confidence in managing construction schedules.

Three Linden Comansa 21 LC 400 flat top cranes are carrying out the work at Amman airport in Jordan

Linden Comansa extends Jordan Airport

Three Linden Comansa 21 LC 400 flat-top cranes are working on the extension of the Amman airport in Jordan, known as Queen Alia International Airport. With a $640 million budget, it's one of the country's most important projects and will increase the airports capacity from the current three million passengers per year to seven million when the phase under construction is completed in 2012. The extension has been designed by Foster & Partners and is being built by Joannou & Paraskevaides. The three tower cranes - which are rail mounted in order to work in various areas of the jobsite – have heights ranging from 45 to 65.5 metres, with 18 tonnes maximum capacities and 80 metre jibs.

Potain cranes help on major Russian oil and gas project

Aker Solutions is currently building Russia's largest concrete gravity-based substructure for Exxon Neftegas. The structure - which is being built in a dry dock in Nakhodka, 180km from Vladivostok, uses gravity and water chambers to support a platform for extracting oil and gas - is part of an oil platform for Russia's Arkutun-Dagi field, situated off the coast of Sakhalin Island. Five Potain tower cranes are employed on the project, lifting formwork, rebar, concrete buckets, mechanical equipment and pipework with the heaviest loads weighing up to eight tonnes.

"The key challenges on this project are keeping to schedule and meeting the quality requirements," says Bjorn Rognlien, engineering manager for Aker Solutions. "Although these apply to most projects, if construction is delayed on this contract, bad weather will prevent us from transporting the structure to its final destination. This weather is some of the world's worst and the structure has to be of the highest quality to withstand the environment."

From November, the waters around Sakhalin Island begin to freeze and remain frozen until around May. To navigate the structure properly, the cranes will have to finish their work by the end of 2011.

Four MD 485 B cranes and an MDT 218 A owned by rental company ZAO Rosdorsnabzhenie, are working at the Nakhodka yard. The cranes arrived in February and March of 2010, with the four MD 485 B cranes assembled in April and the MDT 218 A in August. All of the MD 485 B cranes are mounted on 2.45 metre square tower sections, and each has a maximum capacity of 20 tonnes. One crane is working with a 70 metre jib, while the others have 65 metre jibs, with heights of up to 83.9 metres. The MDT 218 A is rail-mounted to allow it to move around the dry dock. This crane is mounted on a two metre square, 27 metre

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Aker Solutions is currently building Russia's largest concrete gravity-based substructure for Exxon Neftegas

high tower with 50 metre jib.

When complete, the substructure will weigh 53,000 tonnes and will be sunk at a depth of 33.6 metres below sea level. It will include 52,300 cubic metres of concrete and 19,300 tonnes of rebar.
The Arkutun-Dagi field is one of three in the Sakhalin-1 project which will cost an estimated $10-12 billion, making it the largest ever direct investment in Russia by an external source, in this case, Exxon-Neftgas.

First Potain Igo T 130 chosen for new museum construction

A major new 18 month museum construction project is being carried out in Denmark by the first Potain Igo T130. The building work forms part of a new exhibition center at the Moesgaard Museum, situated in the south of Aarhus.

The Igo T 130 is the largest in Potain's Igo T range, a line of telescoping self-erecting cranes that have lattice mast sections and are able to vary their working height to suit different project requirements.

"We are delighted to add the first T 130 to our fleet," said Torben Bloch Nielsen, head of sales Manitowoc's tower crane dealer Ajos. "Self-erecting cranes are popular in Denmark and are often preferred over smaller top-slewing cranes. They offer effortless operation, versatility and simple set up. We expect good demand for this crane, especially on large infrastructure jobs."

"We selected the Igo T 130 for this job as it has the capacity and speed to meet the lifting requirements on the job," he said. "The building design includes an expansive sloping roof that requires a number of heavy lifts. There is also a large, complex column system to support the roof.
The Igo T 130's large lift capacity and long jib will allow it to handle all lifts on this project, which is spread over a wide area."

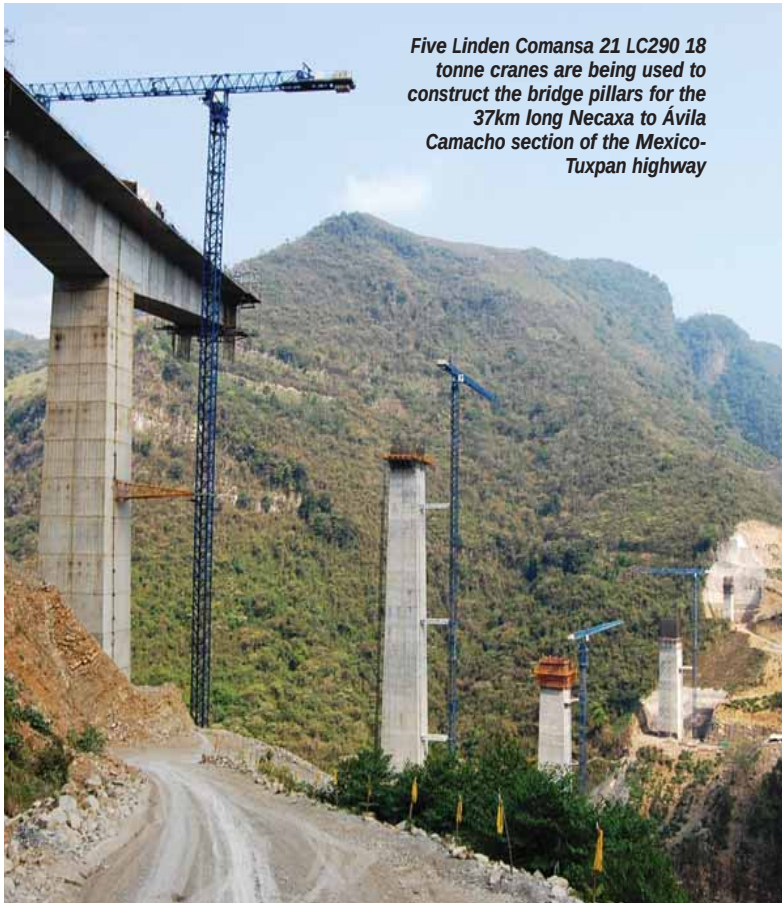
Potain's 33 LVF 20 Optima winch allows the crane to lift at speeds of up to 65 m/min. The slewing and merecting mechanisms are also frequency controlled, ensuring smooth movement. In addition, operators can adjust the crane's controls to suit their own preferences.

The crane can be ready to work in less than four hours and it is easy to transport, traveling as a single trailer with an overall length of just 17.15m. Roading regulations vary, but in Denmark, Ajos can transport the crane at up to 80 km/h.

This first Igo T 130 is closely monitored on the museum project by both Manitowoc and Ajos as part of the Pre-Production Partner program.
As part of this program, cranes are placed in actual working conditions and their performance is thoroughly assessed.
Manitowoc implements any necessary design modifications prior to serial production of the crane.

The Igo T 130, which belongs to Danish company Ajos, folds out its 50 m jib.

The Igo T 130 is easy to transport and can be ready to work in less than four hours



Five Linden Comansa 21 LC290 18 tonne cranes are being used to construct the bridge pillars for the 37km long Necaxa to Ávila Camacho section of the Mexico-Tuxpan highway

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