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Still trying to break into the main stream

It is one of the great crane sector mysteries why the self-erecting mobile tower crane is still such a niche product. Its predicament is in many ways very similar to the spider/mini crane in that both offer many advantages more than mainstream mobile cranes that you would think more users would be aware of the benefits add them to their fleets. Fortunately for those companies which have invested in mobile tower cranes, they are still relatively rare - even in countries where they are well established particularly the Netherlands and increasingly the UK. The upside of that is that they still command a good rental return.

In last month's Cranes & Access rental rate guide the average weekly rate for a four and five axle mobile tower was £1,240 rising to almost £2,000 for the larger six and seven axle crane. These rental rates are comparable to All Terrain cranes with capacities of between 95-125 tonnes and 135-200 tonnes respectively. The average

utilisation for the mobile tower also tends to be higher at 77 and 83 percent respectively.

In the mobile tower crane feature a year ago we concentrated on the mobile tower cranes from the two main manufacturers Spierings and Liebherr. There are however, other mobile tower cranes (truck, trailer and tracked) and we will be looking at these in more detail later on.



Liebherr's largest mobile self-erector, the eight tonne capacity MK140



So what are the benefits of using a mobile tower crane and why should they be more popular?

The mobile tower crane offers many significant advantages particularly when space is at a premium. For its reach and lifting capacity, it has a compact chassis with a maximum of 12 tonnes per axle fully equipped and ready to work and able to access restricted spaces and coupled with high road speeds. When it arrives on site it is fully self-contained and can set up in less than 15 minutes by just one operator using a remote control.

The operator's cab can be raised up the tower to a point above the building's façade and get a prime view of the lift, particularly when working on roofs and lifting over buildings. The cranes have fast work cycles and are substantially more fuel efficient and therefore environmentally friendly than the equivalent larger All Terrains - a big advantage with the increasingly stringent engine emission regulations in major cities. One man can erect and operate the crane and there is no need for additional transport, keeping costs to a minimum. And finally they are very quiet when in operation and have



This City Lifting Spierings demonstrates how the vertical tower allows set-up alongside a multi-storey building

built-in work lights on the boom and jib making night lifts relatively easy. The downside? Well the cranes are more complicated to operate and maintain and finding experienced

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An early Monta-Rent truck mounted self-erector

seven axle cranes. City Lifting was possibly the first company in the UK to truly appreciate the potential of a mobile tower crane when it purchased its first - a Spierings - in 2002. The crane was the 10th unit the specialist Dutch manufacturer had ever built. It has gone on to sell around 900 units since then all over the world. Although outside of Europe they are still a rare sight.

Another UK company to adopt mobile tower cranes in a sizeable way is Ainscough Heavy Cranes which purchased its first mobile towers in 2004 for a Hathaway Roofing contract. At the time Ainscough had more than 500 All Terrains in its fleet and soon added 12 mobile tower cranes - a mixture of the Liebherr MK80, MK100 (which became the MK110) and the four, five and six axle Spierings cranes.

"We faced the same operational issues as other companies with the new technology and eventually settled on a smaller fleet of the MK100/MK110's," said Andrew Winter, Ainscough Heavy Cranes general manager. "They have proven to be reliable machines and we currently run five in the fleet."

At Bauma 2013 Liebherr launched its biggest MK mobile tower crane - the five axle MK140 with an eight tonne maximum capacity and a maximum reach of 65 metres with an additional jib head.

"When we heard about the new MK140 we were keen to get our hands on one and find out its full capabilities," says Winter. "We were attracted by the 65 metre luffing jib, and Liebherr being a proven partner, the operational compatibility and a maximum hook height of 95 metres with one-man operation."

The UK and the Netherlands have however tended to prefer Spierings, with the company being the dominant supplier. Ainscough says that it is taking delivery of a Spierings SK 1265AT this month and looks forward to running it against the MK 140 to see which one has the stronger performance.

"Ainscough operates the mobile tower cranes on a nationwide basis, but for us, the mobile towers are predominately a city centre crane due to their compact base and quick erection times. The demand for the product is good but we don't see them as an alternative to All Terrain cranes. They have their own unique place on lighter duty roof-top applications complementing our existing AT fleet."

Market leader

Spierings has been manufacturing mobile tower cranes since 1987 and has launched several new models over the past few years, including the seven axle SK2400-AT7 with 50 metre jib and an updated three axle SK375-AT3 which the company says 'is highly competitive with a 50 tonne All Terrain and will hopefully introduce the mobile tower crane concept to new users'.

It also developed the SK387-AT3 City Boy with electric hybrid drive - first seen at Bauma 2010 - however due to various reasons including financial constraints and difficulties,

drivers can cause a problem, however many companies that operate them train and develop their own operators in-house. Some operators coming from ATs are also not keen on going up in the cab, but remote control is also available. There are many times when a mobile tower crane is the only crane able to carry out a specific lift cost effectively, such as when working in a narrow street and lifting a load (such as an air conditioning unit) on to the roof of a building. Its vertical tower allows it to set up and work right alongside a multi-storey building - one feature an All Terrain crane cannot match. For it to carry out the same lift over a building the AT has to be positioned some distance away which is often impossible in busy city streets. Standing further back, means a greater lifting radius and therefore

a larger capacity, more expensive crane which hits the customer's pocket.

The mobile tower crane's ability to set-up rapidly in tight spaces, carry out the lift and pack up just as quickly means that it causes less disruption to traffic and road closures. This is increasingly important with the difficult and costly process of obtaining permission for road closures so having a crane which can get in and out quickly with minimal disruption is a huge benefit.

Early adopter

The largest fleet of mobile tower cranes in the UK is operated by London-based City Lifting. The company currently has 16 Spierings cranes with a further two - one six and one four axle crane - on order. Its fleet includes almost equal numbers of three, four, five, six and



One of the first, new Spierings SK597-AT4 with 48m jib

its development was put on hold but it looks like it may now finally go into production later this year.

Using the main structural components from the SK365-AT3 the SK375-AT3 uses a new Tier IIIB engine, ZF Intarder transmission and a totally new hydraulic and electric system. The company's strongest crane is the seven axle SK2400-AT7 which is available in two versions with maximum jib lengths of either 42 or 50 metres. The 42 metre version has a load moment of 263 tonne/metres, a maximum capacity of 18 tonnes at 14.6 metres and can lift five tonnes at 42 metres. The long jib crane can lift 2.5 tonnes at 50 metres, but only has a load moment of 149 tonne/metres and a maximum capacity of nine tonnes at 16.5 metres. Maximum lift height is 61.1 metres with the jib elevated to 30 degrees.

The latest Spierings crane launch is the four axle SK 597-AT4 - which replaces the SK 498-AT4 - with 48 metre jib with a jib tip capacity of 1,700kg, along with a new DAF Euro 6 engine. The first few units have just been delivered to Netherlands based Middendorp Montage and Swiss company Voser Transport. The chassis was further developed to be able to handle the increased capacity of the crane, while remaining within the current axle loads. Other new features are disc brakes, two new luffing positions giving 15, 30 and 45 degrees, pre-heating for the truck engine and cab as standard, a completely new design cab interior. Maximum capacity is seven tonnes at just over 14 metres radius and set-up takes one man just eight minutes and requires no extra ballast or jib parts.

Spierings Benelux and UK sales manager Koos Spierings said: "With the new SK 597-AT4 we have a

machine that perfectly serves both the crane rental company as well as the end-user. The radius of 48 metres, combined with the compact overall width of 2.75 metres offers great advantages. The lifting capacity of 1,700 kg at 48 metres and a hook height of more than 59 metres while luffing at 45 degrees give this crane numerous possibilities."

Spierings adds that its cranes are real all-rounders capable of carrying out about 80 percent of all regular lifts - particularly when lifting up to three tonnes and up to 60 metre radius.

Spierings SK 597 v Lieberr MK 88?

Liebherr currently has just two models in its mobile tower crane line-up - the four axle MK 88 and the five axle MK 140. By reducing the range to just two machines it leaves buyers wanting three, six and seven axle mobile towers with very little choice. Does this mean that we might see another addition to the range at Bauma or later in the year?

How the Lieberr MK 88 compares with the new Spierings SK 597-AT4?

	Lieberr MK 88	Spierings SK 597-AT4
Number of axles	4	4
Maximum lift capacity	8,000kg @ 10.0m	7,000kg @ 14.05m
Maximum radius	45.0 metres	48.0 metres
Maximum hook height	59.1 metres	58.1 metres
Tower height	28.8 metres	26.5 metres
Jib luffing angles	15, 30 and 45 degrees	15, 30 and 45 degrees
Outrigger spread	7.3m x 7.5m	6.93 x 7.0m
Max capacity at jib tip	1,850kg at 45m (2,050*)	1,700kg at 48m
O/A L x W x H	15.94 x 2.75 x 4.0m	15.98 x 2.75 x 4.0m
Additional ballast	2 tonnes	-
Travel speed	75km/h	83km/hr
Weight	48 tonnes	48 tonnes

*with additional two tonnes ballast



- albeit at a closer radius - but can't quite match the Spierings with its maximum seven tonnes at 14.05 metres. The new Spierings does have three metres more jib but with a 2.3 metre shorter tower it loses out by a metre when the jib is luffed to its maximum of 45 degrees. Physical overall dimensions are very similar although the Spiering's outrigger spread is slightly smaller. Which one you go for will probably depend on whether you are a Lieberr or Spierings customer, as it is rare for companies to mix the two. It will be interesting to hear from Ainscough later in the year after it has had time to evaluate the performance of its new Spierings SK 1265AT against its MK 140.

MTC still producing

Another manufacturer of mobile tower cranes is Belgian company MTC - a division of Arcomet which now concentrates on traditional tower cranes. MTC manufactures



A four wheel drive Monta-Rent 1064-WDS

The Lieberr MK 88 was launched at Intermat in 2009 so celebrates its seventh birthday this year. Given its age, its performance and features when compared to the new Spierings SK 597-AT4 are still good. Spierings makes a feature of its new disc brakes, the MK 88 already has these, although road speed is a little lower at 75kph compared to the SK 597's 83kph and it loses out in the engine emission stakes against the latest Euro 6 DAF.

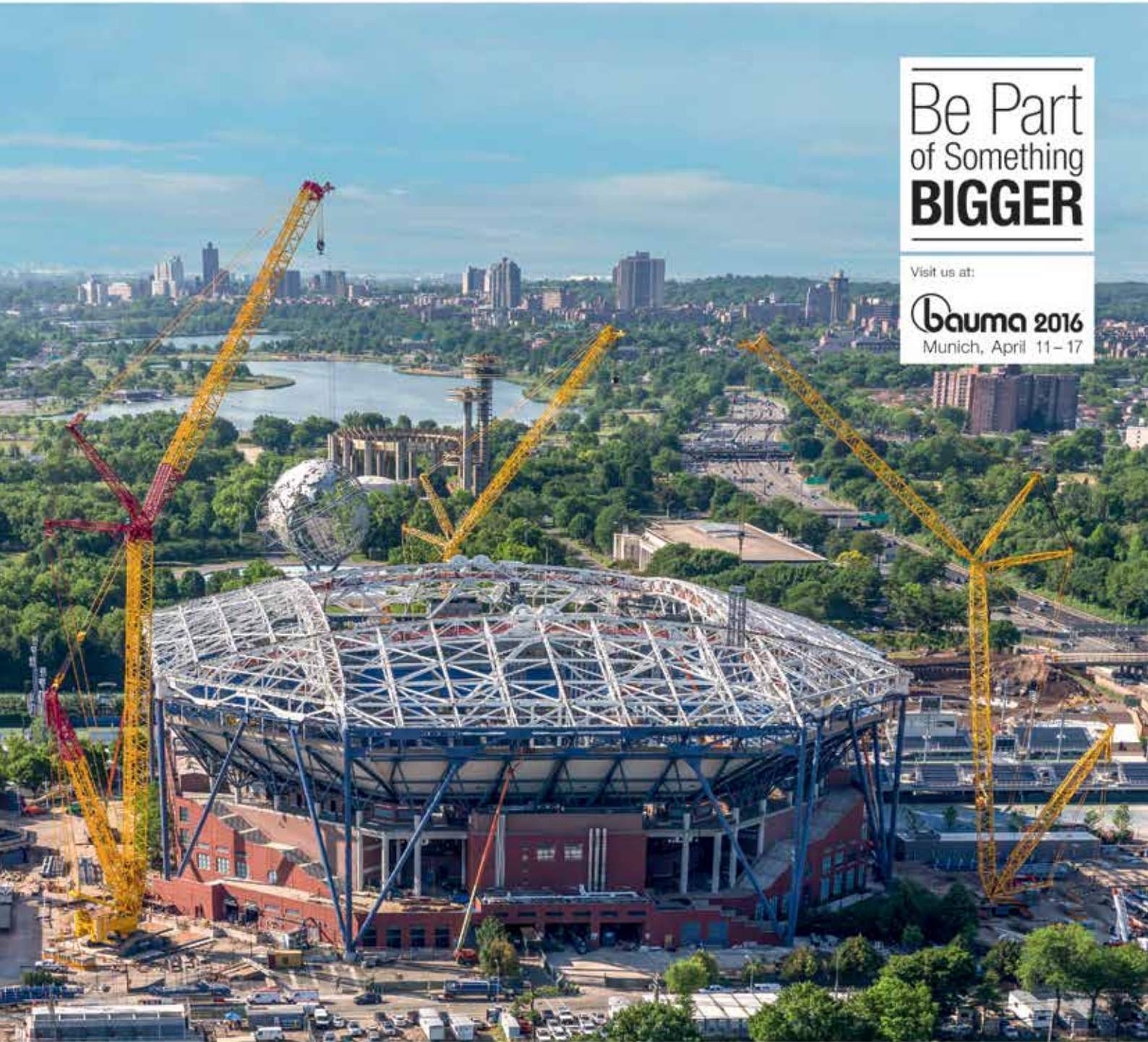
The Lieberr also has a tonne more maximum capacity at eight tonnes

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both truck and crawler mounted cranes - such as the Potain IGO mounted on tracks - as well as a variety of Arcomet self-erecting cranes.

MTC was formed in 1999 when it acquired the previously popular Dutch manufacturer Munsters, a family owned business that dated back to 1898 with Willem Munsters starting as a blacksmith. After the Second World War the company moved into agricultural machinery and then in 1960 launched its first mobile tower crane with a lift height of 12 metres and a 500kg capacity.

The years between 1970 and 1990 were the most successful for Munsters, with crane production growing in importance. After several years of parent company financial problems, Munsters ended up with the Begeman Group and concentrated on mobile tower cranes with production growing year on year. The company was then purchased by MTC in 1999 and then by Arcomet in 2001, which changed the name to Mobile Tower Cranes.

The company did show a new A45D City mobile tower crane at



The six tonne capacity MTC AF38 with 38 metre jib



The tracked MTC CR30-46



Belgium company MTC manufactures both tracked and truck self-erecting cranes

Bauma 2007 but since then new model launches have been scarce. It currently has two cranes - the Faun carrier mounted AF38 and the track mounted CR30-46. The AF38 has a

six tonne maximum capacity and a 38 metre jib. Maximum hook height is 23 metres and maximum jib tip capacity 1,800kg. The 4.4 tonne tracked CR30-46 has a shorter 30

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A Monta-Rent 1064-WDS

metre jib with a 1,150kg capacity at the tip, although the hook height is the same at 23 metres.

The Benelux region has always been a hot-bed of mobile tower crane development and boasts another company - Monta-Rent.

New Monta-Rent crane

Monta-Rent Bouwlogistiek is a small specialised and experienced mobile tower crane manufacturer based in Beverwijk, the Netherlands. With knowledge of the building industry, equipment rental and developing mobile cranes, the company says it is the country's market leader in the sales and rental of regular self-erecting tower

cranes. It claims to have built 108 of its mobile Montalift cranes, mounting an adapted superstructure without ballast from Italian tower crane manufacturer Benezato Gru. Its best year was 2008 when it sold 15 cranes. Its best seller so far is the self-propelled 4-WD(S) model with 24 metre jib, with a total of 26 units delivered in the Netherlands.

The hydraulic self-erecting concept combined with the radio remote control were important developments, but Monta-Rent developed and added the mobility to the tower crane. It also carries out all the engineering and sells the cranes under the Montalift

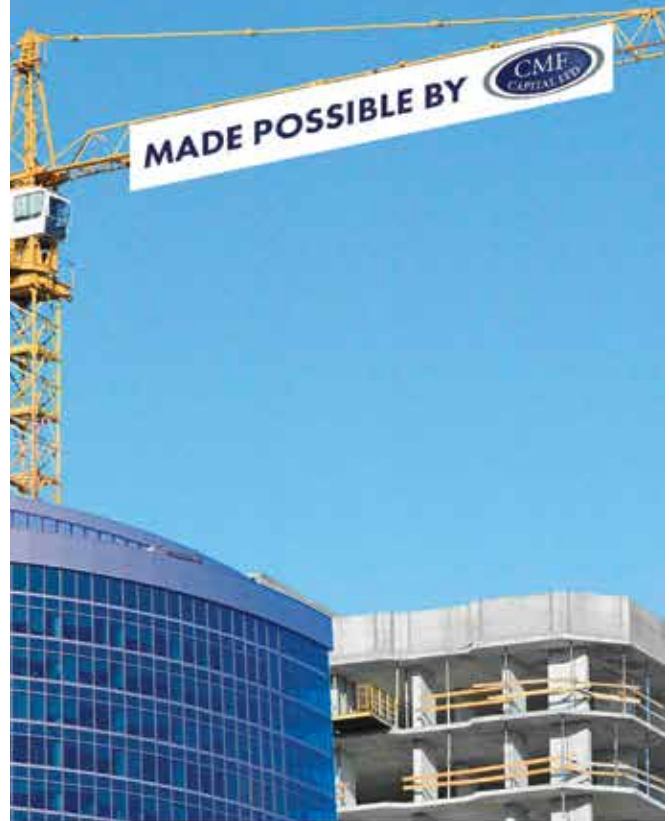


The MONTALIFT 306 self-propelled 4-WDS mobile tower crane delivered last July last year to a client in Denmark. This crane has a maximum capacity of 4,000 kg and lifts 1,200kg at its 28 metres maximum radius



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brand. The company starts by manufacturing the chassis, before assembling and mounting the superstructure.

The first crane it ever produced was a 24 metre truck mounted tower crane in 1995 followed by another road-going solution in 1997 - this time a 21 metre trailer mounted tower-crane, able to travel with full ballast up to speeds up to 80kph. In 1999 it developed the four wheel drive self-propelled undercarriage for on-site mobility, with a 20 metre tower crane, followed by a 24 metre crawler mounted version in 2001.

"All our self-erecting mobile tower cranes have compact dimensions for fast and easy transport," says Monta-Rent's Richard Blokter.

"They can be moved around site without removing any ballast or jib sections which gives the end user greater safety and efficiency and higher productivity with less manpower. Fast set-up is achieved using a fully automatic two-step hydraulic self-erecting system with Hetronic joystick remote controller, used for erection and crane operation. All these features make the Montalift crane ideal for short term hire and suitable for many applications in the building industry."

The company now produces more than eight models with lifting capacities up to four tonnes, including four versions of self-erectors - trailer, truck mounted, self-propelled and crawler. The trailer versions have mechanical or hydraulic jacks and steel ballast and are mounted on fully roadable, two axle trailers with suspension, brakes

and lights. They can be towed behind a truck, agricultural tractor, telehandler or wheel loader and can handle road speeds of up to 80 km/hour.

A few truck mounted versions have been produced over the years, all of them custom-built for clients.

Standard equipment includes hydraulic jacks, and an electric generator to power the crane.

The majority of the cranes produced are the self-propelled two and four wheel drive and can be driven on site even when fully erected. A standard low-loader is used for transporting on the road. Crawler mounted versions - useful for poor ground conditions can also drive on-site in fully erected position.

Monta-Rent is in the process of launching a new crane which it will launch in the UK first, the Montalift 106 4-WDS self-erecting tower crane with self propelled four wheel drive chassis and can be ready to lift in 20 minutes with no additional counterweight required. With a capacity of two tonnes the crane has a 28 metre jib being able to lift one tonne at the jib tip and maximum lift height of 26.5 metres. It has a fixed 14 tonne counterweight with a slew radius of 2.7 metres. The twin axle undercarriage has eight, 9.00 x 20 tyres and four extendable outriggers measuring 3.9 metres square. Overall the total weight is 29 tonnes.

ACE equipment India

Action Construction Equipment (ACE) in India is one of the few other producers of mobile self



In 2001 Monta-Rent built this 193 S on DAF 4 x 2 truck with 22 metre jib, 15 metre lift height with a maximum capacity of 1.200 kg

erecting tower cranes. The company has developed into the largest tower crane manufacturer in India, producing a range of fixed towers up to 230 metres and two types of self erecting models - the MTC 2500, the MTC 2418.

The MTC 2500 is a 23 metre remote controlled tower crane on a towable chassis with a maximum jib of 25 metres at which it can handle 800kg. Maximum capacity is 2,500kg at 7.5 metres. To minimise weight for long distance travel the MTC 2500 has a counterweight box which can be emptied and then refilled on site. Weighing eight tonnes with empty counterweight, it can take nine tonnes of ballast for a total weight of 17 tonnes. With the jib raised it has a maximum hook height of 36 metres. Overall length of the wheeled chassis is 4.8 metres, or 11.5 metres when stowed for transport. Overall width is 2.5 metres and height 3.2 metres.

The MTC 2418 is self propelled mobile tower crane mounted on an articulated dump truck-type chassis which gives a very tight turning radius and easy positioning. The crane has a maximum radius of 18 metres with 550kg capacity. Maximum capacity is 1,600kg at 7.5 metres. With the jib raised 30 degrees the maximum hook height



Monta-Rent also built this 296 S on Terberg 8 x 8 truck with 28 m jib, 19 m lifting height and maximum capacity of 2.000 kg

is 24 metres. A towable trailer version (the MTC 2418T) is also available.

Like the MTC 2500 the crane has a built-in generator driven by the chassis engine making it totally independent of an outside electrical source. Using only part of the supply it can be used to power other electrical equipment on site such as mixers, vibrators and job site lighting systems. The company says it has the capacity to produce more than 500 tower cranes each year.

Models for all applications

The range and levels of price and sophistication of mobile tower cranes is varied but all achieve the prime objective of a quick set-up alongside a facade. The fact that there are so few mainline manufacturers of this equipment provides a clue as to how popular (or not) these cranes are in comparison with All Terrain or Rough Terrain cranes. However as mentioned earlier, they are often the only crane capable of carrying out particular lifts cost-effectively. Countries like the UK and USA have never taken self erecting tower cranes to heart on jobs such as residential estates, unlike Continental Europe, probably due to their preference to rent what was available or use other methods, such as telehandlers etc.... Whether this will be the case in the future remains to be seen. Surely it is only a matter of time before crane users around the world start to appreciate the undoubted benefits of the mobile tower crane?



The new Montalift 106 self erecting tower crane on a four wheel drive chassis



ACE has two self-erectors including this MTC 2418 on a ADT-type chassis

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