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# Taxi?

Over the years the notion of what constitutes a taxi crane has changed and it is currently in a state of change again as crane rental companies appear to be moving back towards units that can travel fully self-contained with everything on board and still be fully legal, ideally without the need for special permits. In spite of this there are many companies that consider taxi cranes top out at around 100 tonnes capacity - a notion that not so many years ago would have had them laughing in the aisles.

## So what makes a taxi crane?

The concept has certainly changed over the years and while there are small All Terrains and truck mounted lifts that fit the bill perfectly, there are many other types of cranes that can also be classified as a taxi crane.

It wasn't that long ago that a 25 tonner was viewed as a big crane. Taxi cranes back then were mostly cantilever lattice boom cranes, initially war surplus models such as the Coles EMA (Electric Mobile Aerodrome) cranes. These were built in their thousands and formed the backbone of the emerging crane hire industry which began in the UK. Another source of cranes for the emerging rental sector was ex-US forces equipment, particularly Lorain cranes which had been shipped over to support the war effort and were then sold off at auction, rather than shipping them home.

## Hydrocon success

The need for greater lifting heights resulted in a number of cranes with folding lattice booms and some - like the Hydrocon cranes - that stowed extra sections on the deck. The Hydrocons were a great success in the post war rebuilding of Britain, and were extremely popular for steel work erection. The company was formed in 1949 and many of the growing crane hire companies replaced their ex-military cranes with Hydrocons.

Hydrocon claimed many innovations including the first crane to be operated by hydraulic drive rather than the mechanical clutch and brake system, the first user of



Coles EMA were built in their thousands

fibreglass in the UK for cabs and the first crane to carry its own boom sections. Another feature first seen on the 50 ton Hampden model was that the operator's cabin could tilt back to allow the operator sight of the end of the jib. Ease of operation was also a major sales feature. While they had their day and their place, these early cranes spurred on the development of the telescopic cranes of the early 1960s which soon started taking over taxi crane work and within 10 years the small lattice crane was fading fast.

Many consider that any crane that is fully self-contained - carrying everything needed for the lift on board ballast, mats, slings etc that can travel without special permits/escorts - is a taxi crane. The latest crane that adopts this philosophy is the 60 tonne class Terex Challenger with 50 metre boom. However this 'self contained' idea can include AT cranes up to 100 tonnes maximum capacity.

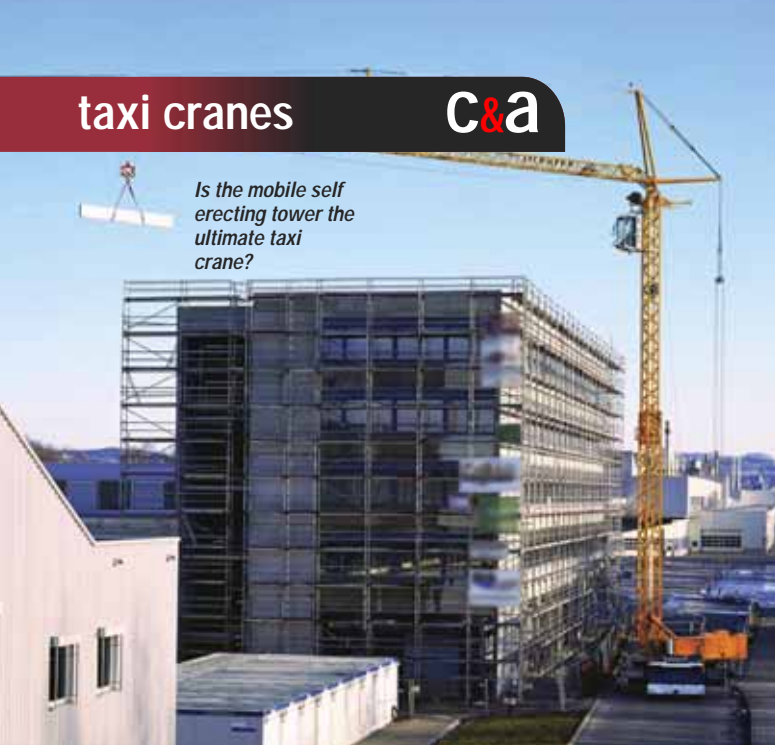
*Hydrocon cranes were a great success in the post war rebuilding of Britain, and were extremely popular for steel work erection.*



Ex US forces Lorains were also used for taxi cranes



*Is the mobile self erecting tower the ultimate taxi crane?*



*The City Boy at its launch at Bauma 2010*

**Mobile tower cranes the ultimate taxi?**

But moving away from lift capacities, what about other types of crane such as the mobile self-erecting tower crane? While it can out-pick a 350 tonner in many configurations and may have up to seven axles, it travels ready to work and is able to start lifting a load some 15 minutes after arrival on site. As well as these features its main tour de force is that it can do this in a narrow city street, often only taking up the width of a single lane, meaning less traffic congestion. While it might not be what many think of as a 'taxi crane', it is hard to argue against. In fact it may well be the ultimate taxi crane and if so, Spierings City Boy might be seen as the current ultimate mobile tower crane? Although launched at Bauma 2010, the SK387-AT3 - or City Boy as it was called - was put on hold as Spierings ran into difficulties. Although Spierings Kranen remained in business it shed a large number

of its 140 employees and was forced to concentrate on its current order book and product support for its 700 plus crane population. However the company appears to be ready to re-launch the single cab, environmentally friendly City Boy which has many features in common with city-type AT cranes. Lighter and more compact than anything that has gone before, the City Boy has a 2,000kg lift capacity at 36 metres radius and 30 metres height. Alternatively it can lift the same load to a height of 53 metres at a radius of almost 26 metres. Maximum capacity is 7,000 kg at up to 9.5 metres. The crane's chassis length is 9.7 metres with an overall width of 2.5 metres, in addition the crane includes a battery pack allowing it to both drive and operate electrically, ideal in areas where noise or emissions are an issue. The drivers cab ingeniously rotates through 90 degrees and is used as the elevated operators cab giving a better view of the lifts.

**The Japanese City Invasion**

At the smaller end of the market the city cranes from Japan are ideal for taxi crane work and are hugely popular in their home market. The sector pioneered and developed by Kobelco with the original two axle, seven tonner in the late 80s along with Kato and Tadano put paid to the 25 top 50 tonne Japanese truck crane market and several small European cranes. The Kato CR-100 arrived in Europe in early 1999 - a year after its bigger 25 tonne brother - having sold more than 2,800 units in Japan. The CR-100 featured a six section, fully powered, synchronised boom with a reach of 23.5 metres, lifting 10 tonne through 360 degrees. As with the larger version, twin hoists were standard and the fly jib had offsets of 15, 30 and 45 degrees. Measuring less than two metres wide and 2.8 metres high the unit was very compact. Both machines - and similar type units of that

era - are still in use by end users and numerous rental companies earning working regularly and earning good rates. However while very popular in towards the end of the 1990's and early 2000's small Japanese cranes such as the 10 tonne Kato CR-100 and the 25 tonne CR-250 fell foul of engine legislation and were no longer available in Europe as official imports leaving a hole that has never really been filled. Their place was partially taken up by the small City cranes such as those made by Terex, however relatively high purchase prices coupled with uneconomic rental rates meant that sales were low and therefore very few manufacturers offer City or even standard AT cranes less than 35 tonnes capacity. In fact it has often been joked that if you need a taxi, it is cheaper to hire a 25 tonne crane, complete with operator and have him drive you around than to hire a London cab! This is closer to the truth than you might think.



*The compact Kato CR-100 featured a six section, fully powered, synchronised boom with a reach of 23.5 metres, lifting 10 tonne through 360 degrees*

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# LIEBHERR

The Group



*Crowland Cranes and Zoomlion have done more than anyone to deliver a product that is up to European standards and expectations*

**Chinese answer**

Ask the average crane man to name the most popular mobile crane built today and you'll get all manner of responses, and yet the answer is not a close run thing. 25 tonne truck cranes, once the bedrock of the European taxi crane market, make up the vast majority of mobile cranes built today. However virtually all of them are built and sold in China's domestic market. The cranes are so inexpensive you would think that they would be the solution to Europe's low rental rates for this size of crane? Think again though, in spite of all the moaning about rental rates crane rental companies do not seem ready to move back to truck cranes anytime soon – at the moment it is quality, specification, resale values and regulations that prevent this happening, at least on the surface.

Crowland Cranes and Zoomlion have done more than anyone to deliver a product that is up to European standards and expectations and yet buyers are not exactly flocking to their door, although trials have gone well. Perhaps the industry needs to follow Geoffrey Marsh of the UK's Marsh Plant view and focus on financial returns for each crane, rather than how sexy the equipment looks with their name on the side?

**The latest taxis**

Moving back to the All Terrains, the smallest city cranes from the mainstream suppliers are now in the 30 to 50 tonne range and one that looks set to change the market or at least have a profound impact on it is the Liebherr LTC1045-3.1. With its single movable and elevating cab it is ideally suited to local taxi work being compact,

quick, fully self-contained and versatile. Another new addition is the slightly larger capacity Terex Challenger 3160 (and 3180 for the UK market).

In our February 2012 issue of Cranes and Access we took an in-depth look at both of these cranes – the result of the major crane manufacturers re-thinking the design concepts of smaller capacity mobile cranes.

The LTC 1045-3.1 is Liebherr's smallest mobile crane and has several unconventional features – the most striking is its telescopic boom mounted single cab which can be moved front and back giving optimal road visibility or when on site in lifting mode. There is also the option of elevating the arm to an eye level height of almost eight metres particularly useful when working close to obstructions or loading into a container or ship.

Terex says that the Challenger is "a new breed of one-man taxi crane" carrying everything needed for one person to drive to site, rig and set-up the crane and carry out the lift – without having the need to work at height. The boom can be lowered to five degrees below the horizontal, allowing quick and easy ground level assembly of the extension or re-reeving of the hook block. The three sheave Vario-Hook system with 18mm (six tonne single line pull) rope reduces rigging time and the weight of on-board equipment.

Working within the 12 tonnes per axle (36 tonne GVW) European road regulations, the 3160 has a capacity of 35.6 tonnes at four metres and can also conform to 10 tonne axle load requirements if needed, using its counterweight self-rigging ability



*The Terex Challenger is "a new breed of one-man taxi crane" carrying everything needed for one person to operate*



*Liebherr's smallest mobile crane has an optional elevating cab particularly useful when working close to obstructions*

for a vehicle weight of less than 30 tonnes. For the UK market the Challenger 3180 comes with an extra 5.3 tonnes of counterweight, all wheel drive - rather than 6x4x6 - and can carry the 16 metre bi-fold swingaway extension on board with 800kg of accessories such as outrigger pads, chains and hook block for a fully equipped GVW 46 tonnes or 15.5 tonnes an axle.

**Technology may be a saviour?**

The true test of the taxi crane is its speed, manoeuvrability and ability to carry out several jobs a day. This increase in utilisation is essential if rental companies are to make money in this end of the business. When things go well and with a good hire desk/dispatcher at work this can still be a highly lucrative business.

Looking at it this way it is easy to see how new technology might even make this sector more efficient. Developments such as GPS and telematics allow dispatchers to see exactly where the crane is

and speak to the operator for updates on how a given job is going. It is even possible for the operator to carry a credit card machine to take payment from cash customers helping with the industry's serious on-going credit control issues.

In a busy city environment it is also possible to envisage cranes parking up waiting for the next job rather than returning early to base. With live tracking the dispatcher can often tell when the job has been completed before the operator calls it in. Some companies are also looking hard at rental yields offering lower prices for customers who can afford to have a lift done on standby rather than at a specific time.

While mobile cranes have generally moved up in capacity vacating some of the smaller work to telehandlers and loader cranes, the mobile taxi crane is far from dead and technology and smarter working practices may yet encourage a renaissance?

# Totally disillusioned?

UK based rental company NMT Crane Hire was formed by three brothers – Nick, Mark and Tim Ambridge (hence the NMT name) more than 35 years ago. Originally it was set up as a recovery business in Marston Moreteyne between Bedford and Milton Keynes, however for the last decade or so cranes have dominated. Mark Darwin visited the company and spoke with managing director Tim Ambridge to find out more.

With a fleet of 26 cranes ranging from a 10 tonne Kato up to a seven axle Spierings and 350 tonne Terex AC350, NMT has a broad spread of cranes, including many that qualify as taxi cranes. In spite of the recession and increasingly difficult trading conditions, the company has continued to add new cranes to its fleet, including a Terex Challenger 3180 and it still has a 'yet to be launched' 1,200 tonne Terex AC1000 on order. However with a delivery date still not confirmed since placing the order a few years ago, Ambridge is quite taken by the recently unveiled Liebherr LTM 1750-9.1 although he says its 50 metre boom 'could be longer'.



Tim Ambridge

"As a company we always go bigger than we need so instead of purchasing a 300 tonner we would tend to buy a 350 tonner," says Ambridge. "We are currently looking at a four axle Liebherr MK mobile tower crane but as per the 'going larger' principal, we will probably go for a five axle which is only about half a metre longer. The new Spierings City Boy - which is being re-launched in mid September - also interests us because it is very compact. The only problem with the six and seven axle machines is the

length of the chassis otherwise they are great cranes for working in confined, narrow streets in city centres."

## Mobile tower taxi crane

But can a mobile tower crane be classed as a 'taxi crane'? "To me a taxi crane has a single cab, negative angled stowed boom, four wheel steer and be able to access tight situations," he says. "All Terrain cranes in the UK up to about 100 tonners carry all or most of their ballast and can be ready to lift pretty rapidly. Our 100 tonne, four axle Terex AC100/4, for example carries 21 tonnes of its total 26 tonnes on-board - we rarely use the additional five tonnes. The 100 tonners with 60 metre main booms have been very popular because of their compactness and long boom. Our new Challenger 3180 is the next step down – a 60 tonne crane with 50 metres of boom – and as such it may achieve 70 or 80 tonner rates, but only if the job needs a long boom and a lighter lift."

## Finding operators

"One factor that does help are concessions if you employ an unemployed person. We struggled to find trained operators up until 2008. Since the recession hit it has been easier to recruit, due to redundancies and closures. But over the last few months it has begun to get difficult again. To combat this we instigated a programme six years ago to put HGV 1 and HGV 2 drivers through the crane operator course. Of the eight that completed the programme six are still with us. There are numerous HGV drivers asking about work but they need



A Terex AC30 lifts an aircraft engine into position at Luton Airport

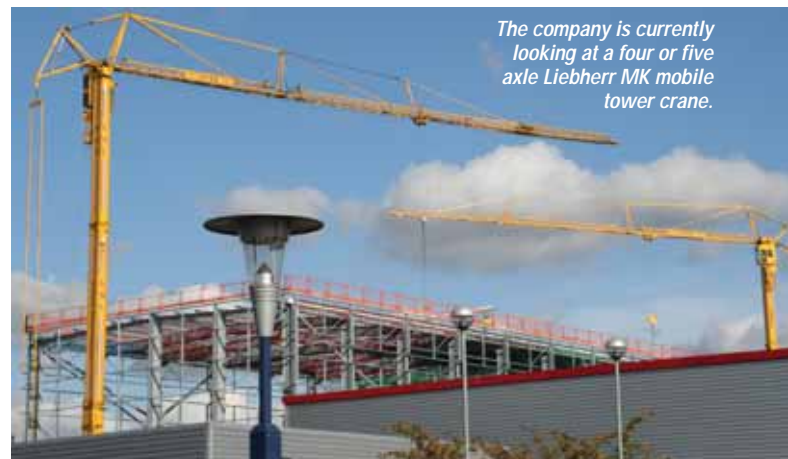


NMT purchased the first Terex Challenger AC 3180 in England

crane operator training and the main downside for them is the weekend work - people now want a lifestyle that doesn't include working weekends."

NMT operates a system where every Monday operators put in either to work or not work the following weekend. However with many jobs booked later in the week it is a balancing act finding enough operators. "Trying to man a 350 tonner at a weekend when three of your drivers have booked off is tricky. You often have to bring in crane operators who have HGV

licences to drive the ballast trucks, leaving you short on the cranes. We have 26 cranes with around 21 operators, plus three to four artic drivers, so if all cranes are out we have to bring in agency HGV drivers. Legislation limiting the number of hours worked is also a problem. Some operators may be available but have already worked too many hours," he says. "While tachographs are not required on cranes, I know of some crane companies that have had drivers stopped for driving too many hours."



The company is currently looking at a four or five axle Liebherr MK mobile tower crane.



NMT's 20 tonne rolling road was a good investment

**A 20 tonne rolling road**

NMT is one of the few companies in the UK to have installed a 20 tonne rolling road at its head office workshops. "We went through a phase of having MOT failures on brakes, so we decided to install the rolling road. As usual we opted for the larger 20 tonne per axle rather than the 16 tonne version but now we can accommodate the larger cranes," says Ambridge.

"When we inspect the lorries every six weeks and cranes every eight weeks we carry out a brake inspection and tests as well. We also change the hub oil every three to four months and check all the brake linings. With crane MOTs (Ministry of Transport road worthiness test) in the news it was a good investment for us. Over the past two years we haven't had an MOT failure due to brakes however it makes me wonder what other crane/haulage companies do. We come from a recovery background and have seen the results of lack of maintenance."

But brakes are not the only undercarriage problem. With European crane chassis generally designed for 12 tonne per axle how do they cope with the extra loads imposed under UK STGO rules?

"Speed resulting in excess heat is the main problem for tyres, particularly when travelling at 50-55 mph. Even if reduced to 40 mph there can still be blow-outs if the tyre is underinflated. We give all drivers tyre gauges and insist they keep an eye on the speed. At 40 mph there are generally no problems."

**A weight problem**

"The UK rationale for the increased axle loads is to reduce the number of vehicles on the road – possibly one ballast lorry rather than three," explains Ambridge. "As long as the total Gross Vehicle Weight – the tractor unit, trailer and load - is not more than 100 tonnes then that is acceptable. Some companies are travelling with a GVW of 120 to 130 tonnes and that is when there is damage and blowouts etc."

"We run at around 96 tonnes unless carrying a large single item - in excess of 35 tonnes - when the GVW can exceed 100 tonnes. Ballast tends to be 10 tonne slabs so trucks carry about 70 tonnes. I remember one crane company which bolted the ballast together to make them one piece to get around the weight legislation."

**Is moving cranes a problem?**

"Weight is the main problem because over a certain weight you have to get an approved route from the local authority which usually takes two days. Some authorities are talking about requiring five days notice, which would be unworkable. There is no cost for approved routing but the time taken can be the difference of being able or not to carry out the lift. Generally we route most cranes over 80 tonnes however there are areas - such as parts of Yorkshire - with weak bridges so a 50 tonner may have to have its route cleared. Motorway work is not generally a problem, it tends to be more when travelling in city centres. However even when the route has been approved there can still be narrow roads and hump back bridges. At the end of the day the crane hirer should ensure that

the route is ok but that would mean checking the route out in advance. With time constraints and low rental rates that is totally impractical."

**Dire rates**

The main issue affecting all crane rental companies is rental rates. "We purchased a 200 tonne crane in 1993 and the rental was £2,700 for the first day and then £1,600 thereafter. Today, 20 years on, we get £2,200 and then £1,200-£1,400. The rate for a 50 tonne crane should also be double what it is. A couple of years ago we were getting £500 per day but this is now down to £450-£475."

NMT does have other sides to its business including a Hertz car and van rental agency and a recovery truck division. It still offers crane recovery services however the crane rental business accounts for between 80-90 percent of revenues.

"We have been in this sector for 35 years and nothing has really changed - the whole sector needs a shake-up. The annoying thing is we can be squeezed on a 25 tonne rate to about £300 and yet there is no argument over the £250 for a banksman which is why there is a growth in contract lift companies. They source cheap crane rentals and do the job with just labour. Perhaps we should sell all the cranes, pocket the money and just supply labour and do contract lifting?"

**Hard times**

"Everyone said contract lifts were a good thing that would increase rates but companies are now doing contract lifts for the same price as CPA standard lifts," says Ambridge. "There is therefore less money for buying cranes and cash flow is



Cranes are inspected every eight weeks including a brake inspection and tests

Two cranes outside the NMT workshops at its head office in Marston Moreteyne situated between Bedford and Milton Keynes.



# Bauma China 2012

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*NMT has a variety of equipment under the Global Film Supplies banner such as this Hinowa tracked platform.*

always a problem particularly as we are kept waiting three, four or five months to be paid. We are better than most as we have other divisions and own about 80 percent of our cranes outright, how others survive is beyond me. To work for the major contractors you have to fill out a mountain of paperwork and then wait a minimum of 90 days for payment. We have had a few instances of cross hiring to other crane companies that have gone bust. They then set up again and undercut us. Why are we financing them? We are pretty disheartened to be honest and can't see anything changing." Despite all of this, NMT is still buying cranes. Between 2008 and 2012 it cancelled a couple of orders but still took delivery of eight cranes, three over 200 tonnes capacity.

#### Film work

In an effort to diversify into different sectors, NMT supplies cranes, access equipment and telehandlers to local film studios under the Global Film Supplies banner. "We have a 12 metre Genie and 17 metre JCB telehandler, a 19 metre tracked Hinowa platform, a Genie Z45 and 53ft Genie scissor which are all out on film sets (currently Fast and Furious 6). It is good work but all equipment has to be delivered on time, be clean, presentable and reliable."

The cranes we supply for films are generally much larger capacity than required as the stronger booms flex less when doing stunts. Therefore if they need a 100 tonner they will probably opt for a 160 tonner.

We did a lot of work on the latest Batman movie – The Dark Knight Rises - at Cardington, now the film has finished they are ripping the Gotham city set out. There is talk however of a film studio taking one of the enormous hangers as a purpose-built studio which would be good for us."



*With films being made locally at Cardington Hangers MMT invested in these JCB Workmax utility vehicles.*

#### NMT Tri-loader

At Vertical Days, NMT launched the new Tri-loader which makes it safer and easier to load equipment. "This was originally my father's company which he bought about 15 years ago. We took over running it after he passed away, continuing to build a larger, heavy-duty loader – the one unveiled at Vertical Days. It is more expensive than others, but we saw a gap in the market for a loader that improves safety by loading at a low level which also does away with side rails and having to work at height to tie the equipment down. Perhaps it is ahead of its time and may come into its own in a few years time."

#### Disillusioned

"It is one price increase after another yet rental rates stay the same, perhaps it is time to downscale," says Ambridge. "Mobile towers and the 200 and 250 tonners are always busy. It might make sense to get rid of the smaller cranes which is half the fleet and at least run cranes that make some money....."



*NMT launched the new Tri-loader at Vertical Days making it safer and easier to load equipment*

# A work of art

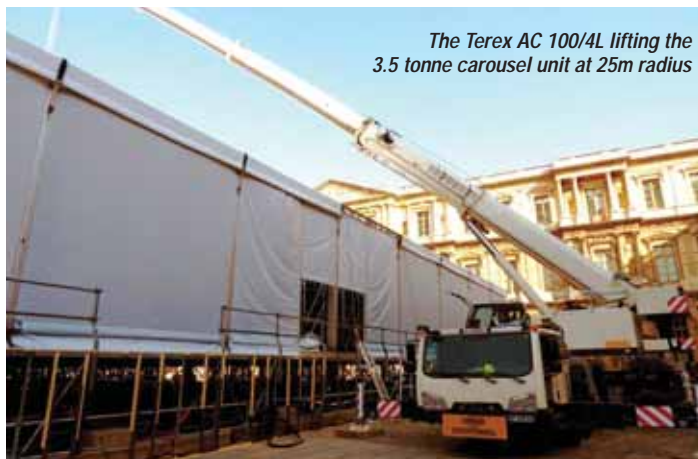
At the height of Fashion Week in Paris last year, local transport and crane rental company Cauvas had to find a crane compact enough to access the inner courtyard at the Louvre, yet with enough capacity to place the 3.5 tonne carousel drive unit - to power a rotating platform in the runway tent - at a radius of 25 metres.

Based on the outskirts of Paris, Cauvas selected its 100 tonne four axle Terex AC 100/4L to lift the drive unit through a very small opening in the top of the tent, because as well as handling the load it was also compact enough to pass through the museum's narrow entrance tunnel.

Company director Jean-Pierre Cauvas said: "We needed a self-contained crane that could do the job fast, with no need for other

equipment. It had to offer a combination of compact size and lifting performance and our AC 100/4L - at 2.55 metres wide - was the only crane that could pass through the 2.63 metre wide entrance and then lift the 3.5 tonne drive unit at a radius of 25 metres."

The load was placed parallel to the tent and was lifted to a height of about 10 metres. After slewing 90 degrees, the drive unit was positioned directly above a



*The Terex AC 100/4L lifting the 3.5 tonne carousel unit at 25m radius*



rectangular opening limited by the structural metal framework of the tent and barely wider than the load itself.

Rigging lines had been secured to the load beforehand, so that riggers positioned inside the tent could align the load with the opening before lowering the drive unit onto the carousel structure. The entire operation took only half an hour.

"We bought our AC 100/4L last June," said Cauvas. "It's a versatile crane - we can easily de rate it to 60 tonnes, and then gradually increase the configuration up to 100 tonnes. So, depending on the job, we don't have to use all of its counterweight. Its simplicity of operation also makes it easier to change operators, if necessary and it uses less fuel than the older 50 tonne capacity class crane."



*At 2.55m wide it was a tight squeeze through the 2.63m wide entrance*

# Carcassonne Old Town

Installing an air-conditioning system on the roof of a hotel in the famous old town of Carcassonne in the south of France called for the use of a mobile crane but only one that could pass under the low medieval gateways leading into the Old Town.

Local crane rental company Hugon decided to use its compact 45 tonne capacity Liebherr LTC 1045-3.1. The unit is only three metres high when on the road. While the LTC 1045-3.1 is a typical one-man taxi crane, Hugon sent along an extra man to help because in some places there was hardly space to put a hand between the crane and the ancient walls. The air conditioning unit only weighed two tonnes, but the area for setting up the crane was so restricted that the outrigger base had to be drastically reduced. Hugon has a fleet of 27 mobile cranes virtually all Liebherr - largest is the 350 tonne LTM 1350-6.1 - and also runs a fleet of aerial work platforms.



*A tight squeeze.*



*The area for setting up the crane was very restricted*