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Paul Belcher, Mountain Crane Service

"The VPC technology reduces ground prep, which is an immediate savings for our customers."
Rick Mikut, ALL Erection & Crane Rental Corp.

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Speed is the key

It has been almost five years since our last feature looking at the mobile self-erecting tower crane market, and while there have been model upgrades from the two major manufacturers - Spierings and Liebherr - the single most important development has been the increased popularity and a growing realisation of the benefits of using this type of crane in countries other than the Netherlands where they have been well established for many years.

A chemical engineer by profession, Oudenbroek has spent a lot of her career on changes, as well as defining a new strategy for the future.

Many users consider the natural habitat of the mobile self-erecting tower crane to be the narrow streets of towns and cities, working between multi-storey buildings. Its quick set-up times make it ideal for refurbishment and maintenance duties, lifting and placing loads and materials such as air conditioning units and generators etc. However as the interview with Quinto Cranes on page 31 reveals, mobile tower cranes are also finding a place carrying out everyday lifts where All Terrains would previously have been used. The main reasons for this is the speed of setting up and faster work cycles, allowing more lifts to be carried out in a day - a real bonus on some jobs.

Benefits of a mobile tower crane include:

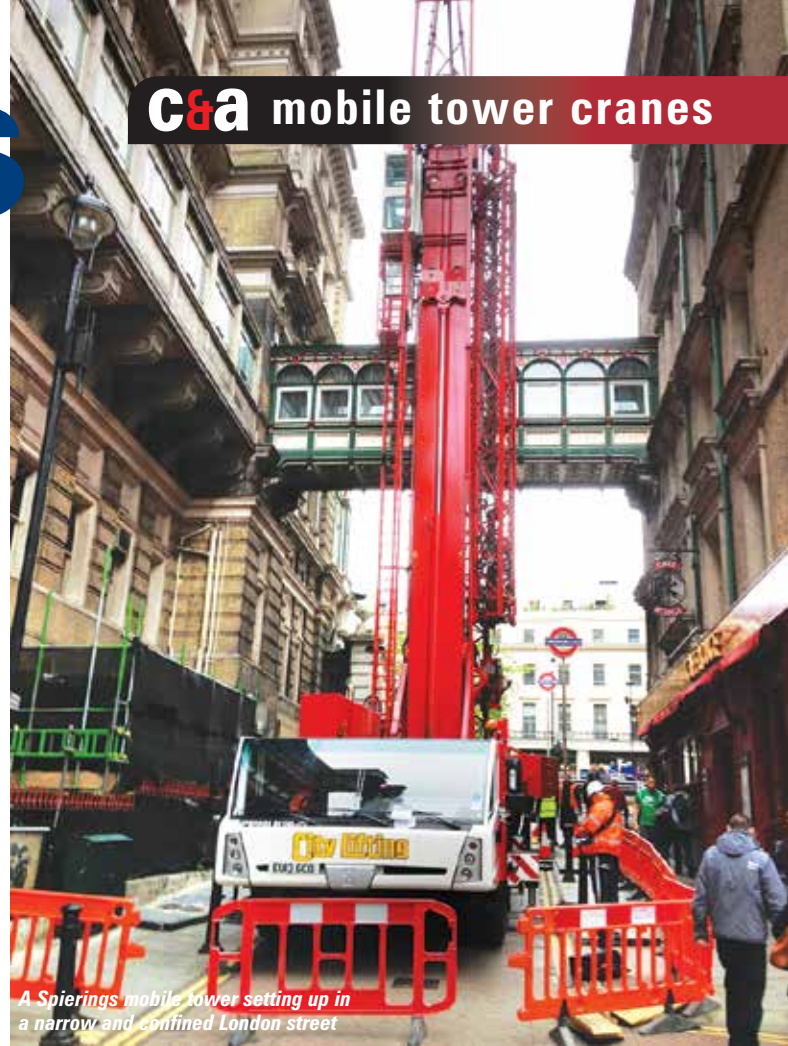
- Compact chassis capable of accessing tight spaces
- Maximum of 12 tonne axle loads coupled with high road speeds.
- Arrives on site fully self-contained
- Set up in less than 15 minutes by the operator using a remote control
- Variable raised cab height gives the operator improved visibility of the load and the site
- Compact outrigger footprint allows set-up in narrow spaces
- Fast work cycles
- Substantially more fuel efficient and therefore environmentally friendly
- One man can erect and operate - no additional transport required
- Quiet in operation and with built-in work lights on the booms allowing night lifts

Another reason why the mobile tower crane is becoming more popular with rental companies is the rate. Even with its newfound popularity the mobile tower crane is still a relatively rare beast but while a decade ago there were only a handful of companies with any units in their fleet, today many crane companies have at least one mobile tower crane. And at a time when rental rates are only just showing signs of rising from historic lows, the mobile tower commands a much better rate - perhaps double that of a similarly sized All Terrain crane.

True, a 50 tonne AT crane is substantially cheaper to purchase than say a four axle mobile tower (€700,000 compared to €500,000) but then day rates can be double - £1,000 compared to £500 in the UK - and utilisation is generally high, making it a better financial investment. Although the main point is that for many jobs - light to medium loads at long radius at height - a mobile tower crane will match a 200 tonner.

For the customer the benefit of using the mobile tower crane is its speed - the rapid set-up allows the crane to start work just minutes after arriving on site reducing the overall rental time and saving on the rate and disruption, not to mention the benefit of getting the job done faster. The mobile tower crane can also set up alongside tall buildings and is safer and more efficient with the operator setting up using a remote control carrying out the lift from the optimum viewpoint using the raised cab.

C&a mobile tower cranes



A Spierings mobile tower setting up in a narrow and confined London street

Lower capacity - smaller working radii

Being able to set-up and work adjacent to a multi-storey building allows the crane to work at a closer radius making the most of its relatively low maximum capacity - five to 10 tonnes compared to 50 to 200 tonne ATs. It also means the crane can often work in just one lane of a street cutting the cost, planning, delays and aggravation of a full road closure. When being used in confined city spaces, speed is of the utmost importance and the quick set up and stowage means road and pedestrian disruption is kept to a minimum. ATs can

struggle in city centre environments particularly when working on multi-storey buildings as they have to set up far enough away from the building to allow the main boom to reach well into the roof area, or to use the street to rig and de-rig a luffing jib. Setting up further away from the building means an increased lift radius which usually translates into a larger capacity crane - causing more problems with access and set-up - even when lifting a relatively light load (500 - 1,000kg).

Of course choosing the right crane depends on so many variables - weight of the load, height to be

The four axle, eight tonne capacity Liebherr MK 88





The mobile tower crane is able to set up and work between two multi storey buildings

lifted, accessibility (access, set up and road closures etc), and crane availability etc - but for many inner city lifts a mobile tower crane has the critical advantage of having a vertical main mast with a true up and over capability of at least 20 metres even on the smaller models. It is also the quickest to set up and carry out the lift.

Mobile tower v AT

With mobile tower cranes increasingly being used for general mobile crane work, we have compared typical three and four axle mobile towers - a three axle Spierings SK376-AT3 and a four axle Liebherr MK 88 - with a 50 tonne All Terrain crane (the Tadano ATF 50-G-3).

As the mobile towers can arrive on site ready to work we have compared them to the 'city crane' Tadano with its 12 tonne axle configuration - ie seven tonnes of on board counterweight, nine to 16 metre extension and blocks. In the UK where higher axle loads are allowed we have included specifications with maximum ballast of 10 tonnes but in our charts this only results in a slightly increased capacity at maximum radius (200kg) but does give better lifting ability through the load chart with the boom extended to 25 metres.

When limited to its on-board ballast the Tadano still has a maximum capacity of more than 38 tonnes, compared to the five and eight tonnes of the mobile towers and this capacity advantage continues when using its main boom up to a height of around 34 metres at a radius of



An excellent view from raised operators cab



Leo Spierings with his latest model - the SK 375-AT3



A three and four axle mobile tower crane compared to a 50 tonne AT

	Three axle mobile tower	Four axle mobile tower	50 tonne AT 12 tonnes per (7 tonne ballast)	50 tonne AT with maximum axle ballast (10 tonnes)
	Spierings SK376-AT3	Liebherr MK 88	Tadano ATF 50G-3	Tadano ATF 50G-3
Max capacity in road trim	5 tonnes @13.2m	8 tonnes @ 12.0m	38.4 tonnes @ 4.0m	50 tonnes @ 2.5m*
Capacity at max radius	1.9 tonnes @ 30.4m	2.2 tonnes @ 45.0m	0.5 tonnes @ 37.8m	0.7 tonnes @ 37.8m
Max lift height main boom/load	34.9m/1.9t	59.1m/1.85t	41.5m/7.5t (56.5m/2.3t with 16m jib)	41.5m/7.5t (56.5m/2.3t with 16m jib)
Axles	3	4	3	3
Overall length	12.8m	15.98m	11.37m	11.37m
Chassis length	9.21m	11.63m	9.39m	9.39m
Up and over height	20.5m	30m	N/A	N/A
Outrigger width	5.8/4.2m	7.0/5.75m	6.3/4.3m	6.3/4.3m
Width x height	2.6 x 4.0m	2.75 x 4.0m	2.66 x 3.73m	2.66 x 3.73m
Drive	6 x	8 x 6 x 8	6 x 6 x 6	6 x 6 x 6
Weight	36 tonnes	48 tonnes	36 tonnes	39 tonnes
Road speed	80 km/h	75 km/h	71 km/h	71 km/h

*With additional equipment

up to 12 metres. However as the radius and the lift height increases, the mobile tower cranes take over. Obviously the four axle Liebherr MK 88 is a much larger and stronger crane than the three axle Spierings SK376-AT3 with greater lift capacity, lift radius, lift height etc but of note is that the Spierings is very similar to the 50 tonne AT, being able to lift its maximum of five tonnes to a radius of 13.2 metres. At 20 metres radius it can lift over three tonnes, almost 2.4 tonnes at 25 metres and 1.9 tonnes at its maximum radius of 30.4 metres.

The problem for the All Terrain crane is that as the boom angle decreases it has to set up further away from the building - the offset extension helps reduce this, but can still only lift 2.9 tonnes at 20 metres radius and 46 metres height and 1.6 tonnes at 30 metres (at 48 metre lift height).

The physical dimensions of the three axle mobile tower and the three axle

All Terrain are very similar - the AT is slightly shorter but the mobile tower has a narrower outrigger width and a slightly higher road speed. The four axle mobile tower is obviously quite a bit longer (4.6 metres) and slightly wider than the AT but is competitive in all other dimensions and road speed. Its lifting performance particularly at the greater radii of up to 45 metres however, is way ahead of the All Terrain.

One of the major downsides of the mobile tower is that it is a very complicated crane that needs more care and maintenance. It also requires an experienced mobile tower crane operator which are becoming harder and harder to find.

New product launches

Liebherr MK 140

One of the major new product launches over the past few years has been Liebherr's largest capacity mobile tower crane - the MK 140. Unveiled at Bauma 2013 the completely new crane went into production last year. The five axle MK 140 heads its four model range with a maximum capacity of eight tonnes and can lift 1.7 tonnes at its maximum radius of 58.5 metres. In standard trolley jib mode both its range and its hook height have been significantly increased compared to the MK 100.

As well as its standard trolley

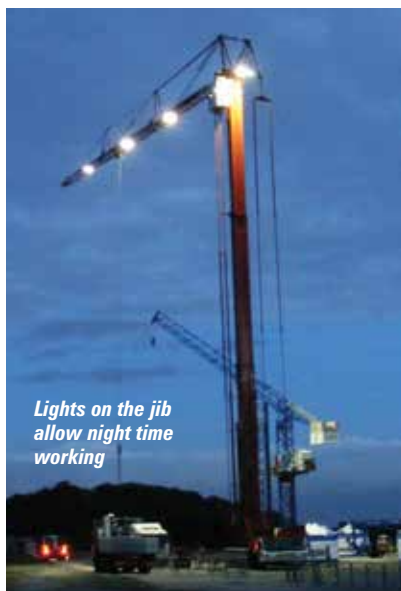
MK 140	
Max capacity	8 tonnes
No of axles	5
Max radius	58.3/65.0*
Max height	37.7 metres
Max cap jib end	1.8 tonnes
Max luffing height	74.3/94.8**
Max Luffing angle	70 degrees in special jib mode
Overall length	15.975 m
Front/rear chassis angle	12/13 degrees
Overall Height	4 metres
Overall Width	3 metres
Max/min outrigger spread	8.2/5.95 metres

*With additional 9 tonne ballast

** Special luffing jib model

jib mode, the MK 140 also has an 'adjustable jib mode' which allows the jib to be infinitely luffed from minus 20 to plus 70 degrees with a load on the hook. The maximum hook height at 70 degrees is 94.8 metres giving increased flexibility when working on site.

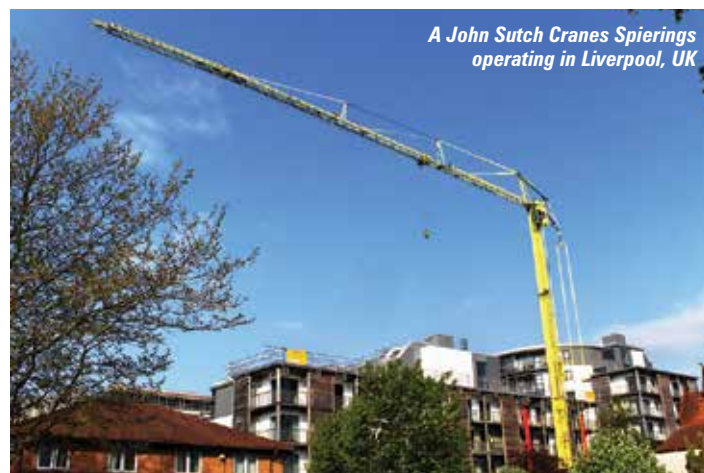
Various tip extensions are available for the MK 140's jib. With the one-piece additional tip, it takes the maximum radius to 62.4 metres. This tip can be left in place when the crane is driven on public roads. A second seven metre tip extension can extend the radius to 65 metres where it has a lift capacity of 1,000 kg.



Lights on the jib allow night time working



The Liebherr MK 140 at its Bauma launch



A John Sutch Cranes Spierings operating in Liverpool, UK



The Spierings hybrid drive City Boy - first seen at Bauma 2010 - will hopefully go into production later this year

New Spierings

Spierings - which has been manufacturing mobile tower cranes since 1987 has around 800 cranes working around the world - 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 has also developed the SK387-AT3 City Boy with electric hybrid drive - first seen at Bauma 2010 - however due to various reasons, including financial constraints, it was put on hold and is only expected to go into production later this year. Using the

main structural components from the SK365-AT3 the SK375 uses a new Tier IIIB engine, ZF Intarder transmission and a totally new hydraulic and electric system.

Its strongest crane is the seven axle SK2400-AT7 which is available in two versions - with maximum jib lengths of either 42 and 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 larger jibbed 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 at 30 degrees.

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Back to its roots

Last October UK crane rental company Quinto Cranes was acquired by farm contractor Oliver Arnold who has wasted no time in applying the philosophies and strategies that have served him so well in his contracting business. Mark Darwin visited the company at its head office in Norwich to find out more.

Oliver Arnold is totally new to cranes however having successfully progressed his agricultural contracting business, he was seeking a new challenge and decided on crane rental. Arnold heard Quinto was for sale and already having an interest in cranes, started talking to the directors about the sale.

Quinto is best known for its crane hire operations, with its fleet of around 60 mobile cranes. However the company also has a busy machinery moving arm. "Purchasing Quinto should have been a quick process, however for various reasons it took the best part of nine months," said Arnold. "The extended process enabled me to appoint Kevin Peake as general manager whose background began in cranes as a crane driver before working his way up to senior manager. This allowed us both to work with the Quinto directors to get to know and understand the company which made for a very smooth transition when the day finally arrived last October. Existing staff were able to see how we were going to operate and get used

to our style rather than having a new regime imposed on the day of purchase."

Farming business

While throwing himself into the crane business, Arnold still runs his successful agricultural business which he says is possible due to having good staff. "I don't micro manage - I pay someone a good wage and expect them to get on and do a good job. It works on the farm and that has given me the time to get involved here. This is how I want Quinto to run - by having really good training and knowing what is expected of them the crane business will also flourish."

Arnold started the farm contracting business in 2000 and now employs 30 full time staff which in farming terms is substantial. Its activities today encompass a wide variety of activities including running two biogas plants, feed and muck spreading, foraging and all other aspects of farming. It also has contracts for grass cutting and de-icing at Norwich airport. "There is a small cross-over between the two companies," say Arnold.



Oliver Arnold (L) and Kevin Peake

C&a mobile tower cranes



The 300 tonne Grove 6300L in London

"Many farm staff have been or are scheduled to be trained to work with the cranes and I am sure the numbers will increase as time goes on."

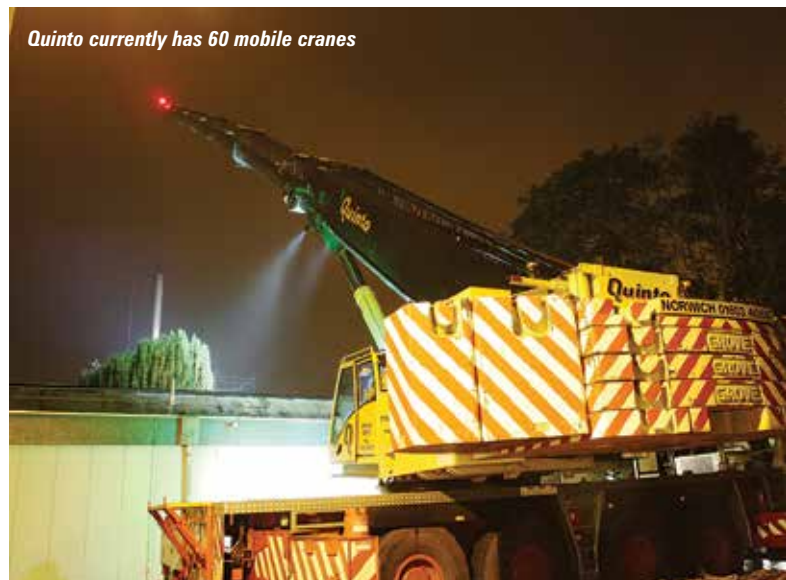
"The long-term plan is simple, the name Quinto will stay and eventually I will hand the company onto my children - now aged 12 and 10 - who both appear interested in cranes. In the past few years, staff confidence was low but now this long-term planning gives them confidence in a more secure

future. My management style of getting stuck in is a big change for Quinto. Previously there were five directors (including three members of the Kiddle family) so decisions - particularly during the 'for sale' period were a drawn out affair. Now it is almost instant. We want to grow sensibly and from good foundations which is the key to a long-term business.

Company numbers

Quinto currently employs 120 staff including 45 crane operators,

Quinto currently has 60 mobile cranes



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The new Grove GMK 6300L removing a tower crane in London



C&a mobile tower cranes

slingers, supervisors, APs, reps and office staff. The 60 cranes strong fleet is being streamlined with a comprehensive refurbishment and new acquisition programme in place. Around half the crane fleet are Liebherr, with the rest mostly made up of Grove and PPM/Terex. A lot of cranes were purchased between 2005 and 2007 and around one a year since then. In 2013 a 220 tonne Grove was added taking over as the flagship machine from two 120 tonners from 1997 and 1999. In the months running up to the completion date Arnold was able to add a new 300 tonne Grove GMK 6300L and then a 130 tonne Tadano 130G-5 just after the purchase was completed. A five axle Spierings self-erecting tower crane has recently returned from being fully refurbished in Holland.

Utilisation the key

"Crane rental rates are interesting but utilisation is the key to the business and this is an area where we will see improvement through centralisation, with all assets allocated from the Norwich head-office on a daily basis. Centralisation of bookings will allow us to meet customers needs more efficiently increasing customer service while at the same time we are keeping all of Quinto's depots with the assurance to customers of continued contact locally with staff," said Peake. "Bookings are all done electronically through a newly installed paperless system together with tracking system of all the cranes and operators so we can see exactly where everything is at any point in time."

New pay scales

After taking over the company Arnold and Peake met with the crane operators and instigated a new pay scheme 'paying them what they are worth and not what they drive'.

"Most of the industry works on

tonnage with the larger cranes working a single, planned job that may take several days however the smaller city crane may be running around doing five of six lifts over the same time period," said Arnold. "I think it is unfair to have a different pay scale based on the value of the job or size of crane. We are standardising pay and the structure includes increases for looking after the crane, good customer service and health and safety etc."

When Quinto first went up for sale a couple of years back, several operators left but many of them have now returned. "We understand it is all about the staff and want to look after them," says Peake. "We have great workshops but good crane drivers reduce the maintenance and repairs required. Appraisals are carried out every three months and these give good engagement with the operators. Communication within the whole company is the key - by talking to all the staff and not just a representative everyone has their say and is heard."

Not just cranes

For many years Quinto has operated a machinery moving business which includes Versalift fork trucks and four trucks with loader cranes as well as a six tonne Unic URW 706 spider crane. "No-one in the crane business knew about the machinery moving operations - it was run as a separate company as were the depots which worked independently. We are now integrating both divisions and the depots with the view of them working together. Quinto is also investing heavily in training, with the help of a new, dedicated site. Last month it added a new division with the introduction of Quinto Demolition & Dismantling.

Cranes are dinosaurs

Although half the cranes are Liebherr, Arnold looks for the best crane for the job. "You can go

The Grove GMK 6300L at the Norwich depot



Crane utilisation is the key to success," said Arnold

through the whole capacity range and the stand-out cranes will be from different manufacturers," he said, "a 500 tonner would be Liebherr, Grove for a 300 tonner and Tadano 130 tonner - different marques fit different slots." However what surprised Arnold with his farming background is how little cranes have developed over the past 10 to 15 years - they are really dinosaurs. "What annoys me are little things such as not having tyre pressure monitors as standard - a correctly inflated tyre is incredibly important. We are still relying on the crane driver to manually input

ballast weights etc. This should be automatic!"

"I would also like remote dashboards for each crane in head office so that we can see exactly what each crane is doing. We can do this with our agricultural machinery - I can have a machine going across a field and adjust the chop length and other variables from my laptop. From a technology point of view, cranes are a long way behind."

Spierings success

"Quinto did have two Spierings mobile tower cranes but for various



One of Quinto's smaller two axle cranes

reasons they were not popular," said Peake. "So we got rid of the older six axle crane and sent the five axle unit back to the manufacturer for refurbishment. Due to hire staff who understand the Spiering's capabilities and relay this to our customers plus the dedication of the driver, since it has been back in the fleet it has not stood one day. It is an amazing bit of kit produced and backed by a fantastic company that as a family business offers a level of care not found with the other manufacturers."

Arnold also announced that he has ordered a new Spierings four axle crane due for delivery later this year which does not have to be used for its usual city applications.

"We don't have many buildings in the area with more than eight storeys all our towns have low rise business parks on the outskirts so we don't need the height. The main advantage of the mobile tower crane is that it is very quick to set up and rapid in operation, helped by the operator having a great view from the elevated cab. We just did a job that any crane could have done, but chose the Spierings because of its speed - just 12 minutes to set up. It did more in a day than an 80 tonner did in a week! It is currently installing timber frames and again it was chosen for its working speed. The Spierings is booked solid for the next six months - no other crane on the fleet is that popular."

Other additions

Quinto has also sold the last of its small Kato truck cranes but still has three Kato 25 City cranes. "We are currently awaiting delivery of the Liebherr LTC 1045, which after dropping off the front box is as manoeuvrable as the Kato 25," said Peake. "We need to go both smaller and bigger. I really like the Unic six tonner and we may



New owner Oliver Arnold is keeping the Quinto name and is looking for long-term expansion



Quinto has one Unic 706 but hopes to add more small crawler cranes

well invest in more mini crawler cranes. Next on the list is the longer boomed 50 to 60 tonners and then 90 to 100 tonnes on four axles and ultimately a 500 to 750 tonner in a few years. We saw the new - yet to be announced - 750 tonne Tadano when we visited the factory and that looks an awesome bit of kit. We are working towards a business with around 55 to 60 busy cranes." Quinto is also looking to expand its geographic coverage. "The 300 tonner is doing a lot of work with

tower cranes in London and we generally cover Greater London when we are called upon. However Manchester and/or Leeds will be next with operations still controlled from head office in Norwich. Once operating from a hub you can bolt on depots very easily. Within 10 years we would like to be a nationwide company, with up to 20 depots across the UK." "The first target is to make the business sustainable, it has lost money year on year for the last five

years," said Arnold. "Turnover was around £7.5 million, we would like to increase that to £15 million within the next five years. Quinto will succeed. I have bought an absolute gem of a business. The original company was Quinto Crane & Plant, and by including the machinery moving and demolition businesses we are taking the company full circle to its Pointer roots where in their glory days included demolition and employed in the region of 1,000 people.