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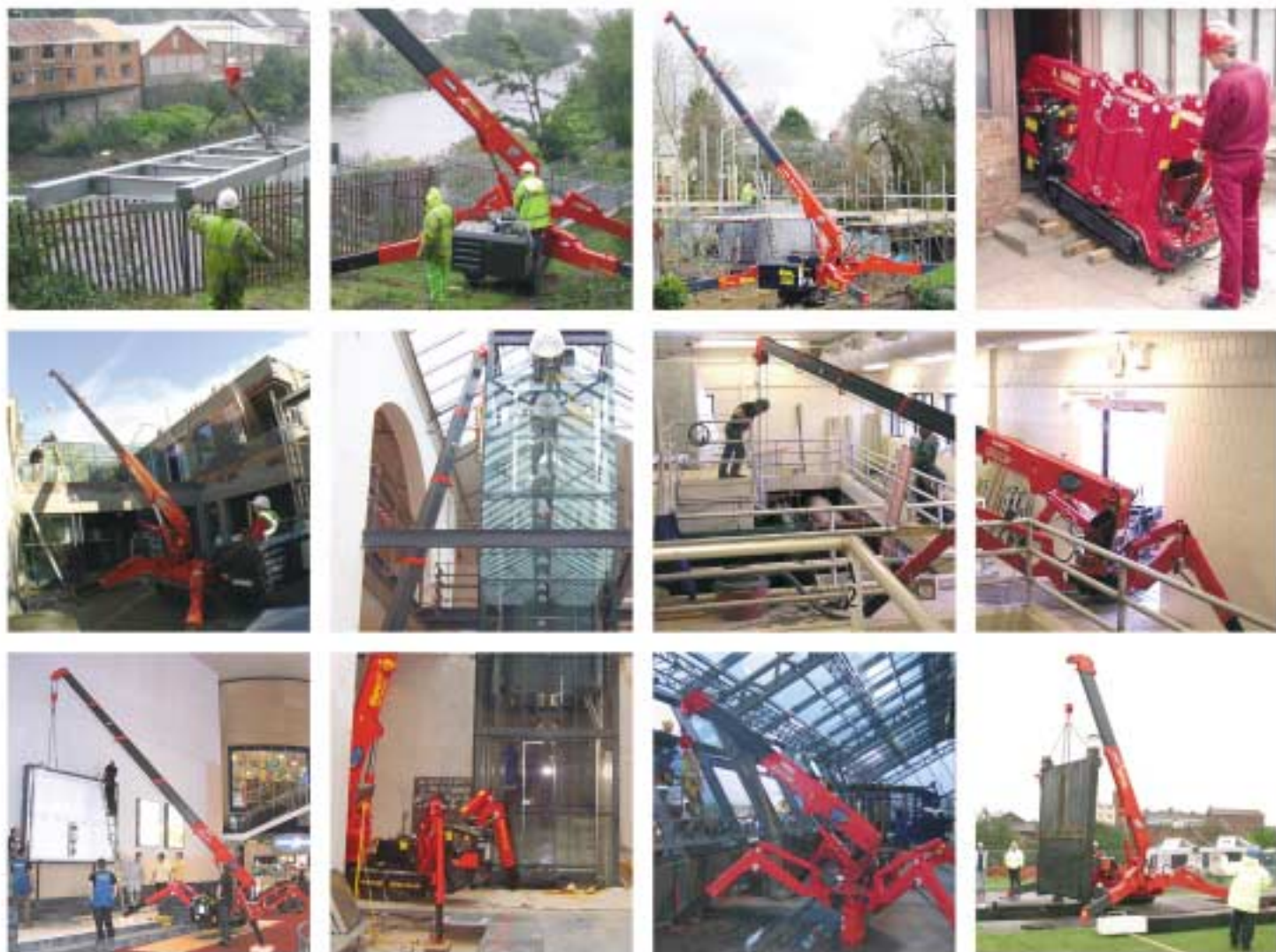


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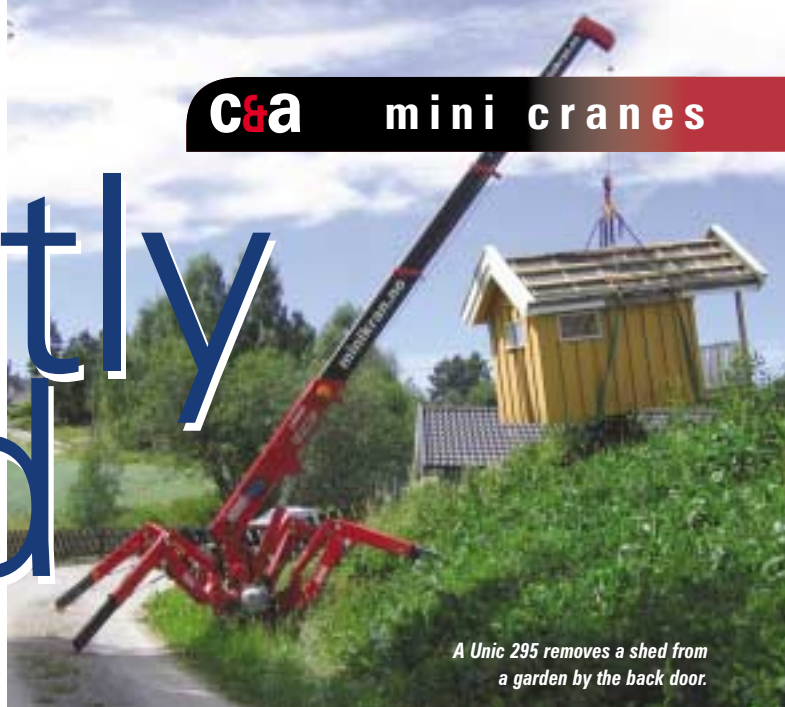
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mini cranes

Not so long ago if you had asked a dozen crane people about mini cranes, you would have attracted a blank or puzzled look from at least 11 of them. "What are you talking about? Model cranes? Or something more exotic?" Ask that same question today and at least everyone will know roughly what you are talking about.

We say "Roughly", because the precise definition of a Mini crane is proving a challenge to those who need to be specific. The CPA is currently working with mini crane manufacturers, hirers and dealers to define what is and what is not, a mini crane, in order to establish an operator training programme for them. To many crane people a mini crane is a small tracked crane with spider type outriggers, perhaps they should be called Spider cranes? Some consider the term should only apply to pedestrian controlled crawler cranes. While others apply it to any crawler crane with less than eight, 10 or even 12 tonnes lift capacity.

No matter how you define mini cranes, the concept, as with most compact equipment, originated in Japan, where mini cranes are widely used for all manner of work. The most popular application for "Spider" cranes is handling large glass panels. The ability of these little cranes to work inside, even on upper levels of new or existing buildings, makes them ideal for such tasks. Rubber tracks spread the cranes low overall weight over a wide area, so they are gentle on sensitive flooring such as marble tiles. Some can even climb stairs. Once in place and using appropriate outrigger mats, significant point loadings can be eliminated.



A Unic 295 removes a shed from a garden by the back door.

The spider design of the outriggers offers incredible flexibility, allowing them to set up in places that look impossible to reach, let alone set up a crane. This includes slopes, stairs, corridors and even over voids, generally if you can squeeze a man into a location, then these tiniest of mini cranes will also fit.

"We've had cranes used to place altar stones within a church, lift antique garden ornaments, placing gas and sceptic tanks in back gardens and for more prosaic jobs such as lifting blocks, imagination is the only limit for the use of these mini cranes", says Paul Rosevere of Kranlyft.

Who rents them?

In the UK and Ireland only a few crane hirers have added mini cranes to their fleets. A number of "real crane men" regard these things as toys and a distraction from the real job of renting out "proper cranes", "quiche and real men" springs to mind. The few companies that do run them, have found that once end users are aware of and what they can do and a local market developed, mini cranes are far more profitable than mobiles. All of the manufacturers we spoke to said that traditional crane hirers do not generally have the customer base or marketing skills to succeed with mini cranes. It requires a hire company that is used to introducing new concepts to its customers, for this reason access rental companies have often been more successful. In the long term Lift and Shift and general rental companies are likely to move into this market. They have a wide customer base and with their catalogues, shop fronts and other marketing tools, are well placed to introduce the concept to the wider market. Mini cranes are also well suited to the delivery vehicles that most general hirers run. On top of this they are used to bare lease rentals.

The Spider cranes

The most dynamic market in recent years has been that of the smallest rubber tracked cranes with outriggers, since it began importing Maeda mini cranes, Kranlyft has steadily created a market. The biggest users of these cranes are glass contractors, one such contractor, GGR Glass, bought units for its own use and rented them out between jobs. Appreciating the wider potential of these tiny cranes, and feeling there was room in the market for another supplier. GGR approached UNIC cranes, a division of Furukawa, Japan.



A Unic 500C proves ideal for placing curved beams in a tight indoor location in Norway.



An Imai 260C holds a glass panel steady.

Reluctant to invest in the European market and CE approvals they were not initially interested. GGR purchased some units, had them tested and CE certified and agreed a master distributor agreement for the European region. This included establishing UNIC Cranes Europe, as a division of GGR glass.

The company threw itself into a dynamic marketing campaign which built on the progress Kranlyft had already made, its efforts have helped double the European market for these cranes in less than three years.

The success of these two leaders has encouraged a number of Italian companies to enter the market including Imai,



Heila is launching a new one tonne crane, the HRC 999, in the summer. The company is still testing and refining the product, which will offer a full power boom with nine metres hook height and a maximum working radius of seven metres. It weighs 1,800kgs, with a 700mm overall width and compares to the Maeda 285, Unic 095 or Imai 260C.

Spider cranes generally fall into three categories: One tonne Gross Vehicle Weight units, such as the Maeda MC104 and the Unic A094C. The 1,750 to 1,850kg GVW models, which includes the Maeda MC285, Unic A295, Imai SLM650 and the new Heila. This is the most popular size for this type of crane.

And finally the giants of the sector, the 3.5 to 4.5 tonne GVW cranes, they have chunky booms and very substantial

which produces both standard and custom built models, Benelli Gru which puts standard loader cranes on tracked chassis with very long outriggers, Kegiom which does much the same and the latest company to enter the market, Heila, a sister business to Italmec.



The most regular work for the spider cranes like this Maeda 104, is placing glass in confined areas.



The spider outriggers offer excellent versatility such as setting up on steps.

drop down outriggers. The top of the range in terms of lifting ability is the Unic A506CL with three tonnes capacity at three metres, a full tonne at eight metres and a hook height of almost 16 metres.

Mini or Midi?

At the top end of the mini crane market are compact versions of larger telescopic crawler cranes, complete with operators cabs, capacities of between three and 12 tonnes and the ability to pick and carry loads. Some use outriggers to provide decent top end lifting capacities with a narrower travel width and lighter weight. Manufacturers, include, Maeda, Hitachi, Starlifter and Valla.

The pioneer in the UK, if not Europe as a whole, has been AGD which entered the business some 30 years ago as the IHI distributor and is now based in Stratford on Avon. It has operated a mini crane fleet of around 50 units for

some time, and is still the largest in the UK. Sadly its supplier, IHI has stopped making its three and five tonne mini cranes as part its product line rationalisation. Robert Law of AGD said that the challenge from the beginning has been selling them. AGD made a significant commitment to IHI when it developed its five tonner, and ordered a large quantity for stock, hoping to sell a good number. The vast



Mini cranes are ideal for roof applications, here a custom built rail mounted Imai is used to place windows below.

majority of users though prefer to rent rather than buy, and as few rental companies have been willing to dip their toes into this market, AGD simply expanded its own fleet.

1,000kg Gross Weight cranes

Make	Model	Weight	Hook Ht	O/A width	Max capacity	outrigger Type	outrigger spread	3m	Lift capacities at radius		
								5m	6m	8m	
Imai	SPD160C	900kg	5.4m	780mm	900kg-2m	drop down	2,040mm	500kg	N-D	N-D	N-D
Unic	A094CR	1,000kg	5.6m	595mm	995kg-1.5m	Spider	3,210mm	530kg	210kg	n/a	n/a
Maeda	MC-104C	1,050kg	5.5m	600mm	995kg-1.1m	Spider	3,330mm	500kg	200kg	n/a	n/a

1,700-1,900kgs Gross Weight cranes

Make	Model	Weight	Hook Ht	O/A width	Max capacity	outrigger Type	outrigger spread	3m	Lift capacities at radius		
								5m	6m	8m	
Imai	SPD260C	1700kg	7.0m	800mm	1,200kg-2.2m	dropdown	3,650mm	800kg	480kg	380kg	na
Maeda	MC-285	1,720kg	8.7m	750mm	2,800kg-1.4m	Spider	4,530mm	1,220kg	530kg	380kg	150kg
Unic	A095CR	1,850kg	8.8m	600mm	995kg-3.5m	Spider	3,935mm	995kg	520kg	360kg	150kg
Unic	A295CR	1,850kg	8.8m	600mm	2,900kg-1.4m	Spider	3,935mm	1,300kg	520kg	360kg	150kg
Imai	SLM650C	1,950kg	7.0m	1.53m	2,050kg-1.59m	Drop down	4,000mm	1150kg	600kg	500kg	n/a
Heila	HRC999	1,980kg	9.0m	780mm	999kgs	drop down	2,700mm	N/d	n/d	n/d	n/d
Imai	SPD500C	2,800kg	11.0m	1.1m	1,600kg	Spider	3,800mm	1,700kg	N-D	N-D	N-D

3,500 to 5,000kgs Gross Weight cranes

Make	Model	Weight	Hook Ht	O/A width	Max capacity	outrigger Type	outrigger spread	3m	Lift capacities at radius		
								5m	6m	8m	
Unic	A376CL	3,530kg	14.4m	1.3m	2,900kg-2.4m	drop down	4,440mm	2,250kg	1,220kg	800kg	500kg
Kegiom	8700E	N/d	11.47m	1.6m	2,880kg-2.5m	drop down	5,300mm	2,500kg	1,330kg	1,100kg	800kg
Maeda	MC-305	3,700kg	12.66m	1.28m	2,930kg-2.5m	drop down	4,504mm	2,350kg	1,300kg	855kg	540kg
Unic	A506CL	4,660kg	15.8m	1.4m	3,000kg-3.3m	drop down	5,940mm	3,000kg	1,850kg	1,550kg	1,000kg
Imai	SLM1000C	4,700kg	13.4m	1.4m	2,000kg-4.5m	drop down	4,000mm	2,000kg	1,850kg	1,400kg	1,000kg

N/D= not disclosed n/a = not applicable



Certainly not the prettiest mini on the beach, the Linamac was though, an excellent performer.

Make	Model	Weight	Hook Ht	O/A width	Max capacity	outrigger Type	outrigger spread	Lift capacities at radius			
								3m	5m	6m	8m
Valla	20TRX/E	2.0t - 1.3m	1,900kg	4.0m	950mm	None	n/a	450kg	n/a	n/a	n/a
Starlifter	3X-CT	3.0t - 1.07m	3,480kg	6.05m	1.89m	None	n/a	1,079kg	570kg	n/a	n/a
Valla	35DSC	3.5t - 1.75m	4,000kg	7.0m	1.4-1.8m	None	n/a	1,250kg	500kg	350kg	na
Valla	40DTRX	4.0t - 1.5m	5,000kg	8.0m	1.6-2.0m	None	n/a	1,900kg	680kg	560kg	n/a
Maeda	LC755-3	4.9t - 2.1m	9,600kg	16.35m	2.32m	None	n/a	2,980kg	1,400kg	1,030kg	680kg
Valla	55TRX	5.5t - 1.5m	5,650kg	8.0m	1.7m	None	n/a	1,600kg	800kg	n/a	n/a
Starlifter	8X-CT	8.0t - 2.0m	9,100kg	12.5m	2.35m	drop down	3,480kg	5,000kg	2,500kg	1,750kg	1,000kg
Hitachi	160LCT	8.0t - 2.5m	15,400kg	13.7m	2.49m	None	n/a	7,000kg	3,650kg	2,820kg	1,820kg
Valla	120D	12t - 2.5m	12,000kg	13m	2.2m	drop down	3.4m	8,000kg	4,900kg	3,500kg	2,000kg

Cranes and access at work installing pipework



Heavy going for manufacturers

This part of the market has proved tough for manufacturers, few have remained in it for long. IHI, Kato, Linamac and Sanderson, with its Starlifter range, have all pulled out. The Starlifter, while offering reasonable capacities and compact dimensions, was quite basic compared to the offerings from Japan. Sanderson sold the designs and inventory to UK crane hirer, Sparrows in Bristol, and concentrated on its lighting tower business. Since the sale a few units have been assembled, from residual inventory and some new ones produced by a German sub-contractor for specific orders. Linmac built the LCC29 in Perth, Australia, along with its tractor cranes, it is no longer in business. Owners have told us that the LCC 29 was the best in its class, it certainly wasn't the most attractive mini crane on the market. But with a tip height of almost 17 metres, and pick & carry or on-outrigger load charts, it was clearly a useful tool.

So who is continuing to produce this type of crane? It seems that Maeda, Hitachi and Valla are the only companies with regular serial production. Maeda make one unit, the 785, a very slick crane, with compact dimensions, a lift capacity of 4.9 tonnes and maximum under hook height of 16.35 metres from a five section main boom. Valla build five models, including the 3.5 tonne 35DSC, the 40D a four tonne 360 degree slew unit, the 55TRX 5.5 tonne

A perfect application for the lighter duty mini cranes. Several manufacturers install Hiab cranes on self propelled crawler chassis.



fixed boom and the top of the sector 120 D, a 12 tonner equipped with outriggers. Starlifter build two models the CX-3T three tonner with two section

six metre boom and the CX8T, an eight tonner with outriggers, 12.6 metre four section boom and five metre jib.

The smallest Valla, the 20TRX and the largest the 120D



Hitachi currently builds one model, the Zaxis 160LCT an eight tonner with four section boom, offering up to 14 metres under hook height and excellent capacities. It offers all of the trappings of its larger cousins, including an air-conditioned cab. According to Rod Abbot of NRC, the UK distributor, it easily justifies a 10 tonne rating. It is though, heavier than those that use outriggers, but then it has the advantages of a compact working footprint and full pick and carry duties - a real crane for a real man. We understand that Hitachi is working on a new five tonne model to replace its EX60G, expect to see this at SED 2007.

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The SS Great Britain

The SS Great Britain, was launched from Bristol's Great Western docks in 1843, she was the largest ship in the world, over 100 feet longer than her rivals, and the first screw propelled, iron ship. She was designed for the Trans-Atlantic luxury passenger trade, and could carry 252 passengers and 130 crew. The ship was conceived as a paddle steamer, but switched during construction to a 16ft propeller.

From 1845-6 she operated as a luxury passenger ship between Bristol and New York but attracted fewer passengers than anticipated. Her career was cut short when she ran aground on the sands of Dundrum Bay in Ireland in 1846. The hull was not badly damaged, but her engines were ruined, and the expense of refloating and repairs too much for her owners.

1852 - 1876 Emigrant Clipper

New owners, Gibbs-Bright, used the ship to exploit the increase in emigration to Australia spurred by the gold rush. It rebuilt the ship as a fast, luxurious emigrant carrier. A 300 foot-long deck house was added and a new 500 h.p. Penn engine installed. It could now accommodate 750 passengers in three classes. The ship sat lower in the water and featured a much larger superstructure, twin funnels and four masts, later reduced to three. Over the next 24 years she made 32 voyages to Australia, making stops in Cape Town and St Helena and taking around 60 days, extremely fast for the time. In addition to over 15,000 emigrants, she took the first English cricket team to tour Australia in 1861.

Troop Ship

Between 1855 and 1856 the SS Great Britain was chartered to carry over 44,000 troops to the Crimean War. She also carried the 17th Lancers and 8th Hussars to the Indian Mutiny.

1882 - 1886 Windjammer

By the late 1870's the ship was showing her age and maintaining a full passenger vessel registration was difficult. The sleek hull made for an easy conversion into a three-masted sailing ship. Her engines were removed and the hull clad with pitch pine.

1886 - 1970 Coal Hulk

40 years after her launch, she was used to transport Welsh coal to San Francisco around Cape Horn. On her third trip, she ran into trouble around

The Maeda 285, from AKS, has proved ideal for general lifting work on the SS Great Britain restoration.

Mini cranes big ship

In 1970, Isambard Kingdom Brunel's great ship, the SS Great Britain, returned to Bristol, from Sparrow cove in the Falkland Islands. In the 36 years since, restoration work has been an on-going process. The ships hull, already showing signs of weakness in the 1880's, was threatened with total collapse from rust.

The challenge was to keep the hull away from any moisture, while maintaining the illusion of the ship in water. The solution, developed with help from scientists at Cardiff University, was to seal the ship's hull into a glass roof on her dry dock at waterline level using horizontal 21.5mm thick glass plates. Dehumidifiers remove virtually all of the moisture from the air in the gallery under the glass, making it as dry as Death Valley. Above the glass a 50mm layer of water provides the illusion of a floating ship whilst keeping the glass clean.

Maeda 285 and 305 mini cranes were used to construct the steel and glass ceiling around the ship, the 305 was needed at the rear where its 12.8m boom allowed it to work at up to 12 metre radius, with sufficient capacity to handle the individual components. The 285 was ideal for placing the steel and glass around the bow of the ship, where its low boom pivot height, allowed the contractor to work under overhanging parts of the ship.

The mini cranes, which have also been used for numerous lifting duties around the dock, were supplied by crane hirer AKS. Conventional cranes were already on site, but were unable to get close enough to the ship, due to weight restrictions on Bristol docks, a heritage site in its own right. All of the Maeda cranes are well under four tonnes gross weight, meeting the weight restrictions while the rubber tracks minimise ground bearing pressures.

The cranes compact dimensions made it easier to create isolated work areas, ensuring visitor safety, can move easily around the site and take up very little space when not actually working.

Remote controls proved invaluable

The cranes remote control option has proved a major advantage on the project, allowing the operator to stay close to the load, working directly with the banks man, ideal during the placement of the glass panels which formed the ceiling of the dry dock.

The Maeda 305 was used at the rear of the ship for lifts at up to 12m radius.



The 4.9 tonne Maeda 735C



Spectacularly matched to the job

The IHI CCH30T 2.9 tonne capacity mini crane from AGD, proved invaluable to the Belgrade Theatre for setting up lighting towers for the outdoor production of 'Roots - The Spectacular' inside the ruins of the old Coventry Cathedral. The rubber tracks, 4 tonnes weight and 1.7 metre width allowed the crane to enter through the arched doorway and work on the stone floor. The 10 metre telescopic boom was ideal for erecting the vertical columns to carry the large number of spotlights used in the production.

the Cape, and took shelter in the Falkland Islands. The repair costs were too high and she was sold as a coal and wool storage hulk in Port Stanley.

During the First World War, her coal fueled battle ships, including HMS Inflexible and Invincible for the battle of the Falkland Islands on 7 December 1914, in which the German cruisers Gneisenau, Scharnhorst, Nurnberg and Leipzig were sunk. By 1937 the hull was no longer watertight, and was towed a short distance to Sparrow Cove, where she was scuttled and abandoned to the elements. Attempts to rescue her in the late 30's failed.

TH SS Great Britain

- Length Overall: 98.15 metres (321.80 feet)
- Gross Tonnage: 3,443
- Net Tonnage: 1,016



The new Heila HRC 999 will be launched this summer



The Valla 20TRX has increased efficiency by 700%



so any efficiency increases in streetlight removal are hugely important," says John Harland, Street Lighting Operations Manager for Hull City Council. "Each team has gone from removing around three posts a day to anything up to 21, and by doing away with sawing and manual handling, it is considerably safer too."

Morrison Construction used an IHI CCH50T mini crane and air piling hammer from AGD to install light section sheet piles along the canal in Wolverhampton. Access to the site was so restricted that the crane had to be positioned in a narrow space alongside the towpath and the boom extended over the boundary hedge.



Mini crane lights up the alleyways for less

Hull City Council has made substantial savings in its streetlight improvement programme in residential areas of the town thanks to a Valla 20 TRX mini crane, the two tonne crane has increased efficiency in the lifting and removal of unsafe concrete lamp posts from pedestrian footpaths and alleyways by 700 percent.

Once extracted from the ground, each post, weighing up to 275kg, is carried by the crane to a removal vehicle for disposal. In the past an access tower was erected around the post, to allow employees to cut them into manageable sections, which were then dragged by hand to the truck.

The ability of the 20TRX to pick and carry posts, makes light work of removal in a single operation. The crane proved to be ideally suited to this task, thanks to its rough terrain tracks and compact - 950mm wide chassis.

In addition to being able to negotiate kerbs and narrow footpaths, the unit's remote controls helps operators to accurately manoeuvre the self propelled crane from a safe distance.

"I'm absolutely delighted with the Valla - we're responsible for over 37,000 lighting columns in and around Hull,

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