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The long and winding road...

C&a

mini cranes

Although mini crane awareness continues to grow, there is still a lot of work to be done to spread the word - informing and educating potential users. Apart from Japan, the market even in Europe is still in its infancy. We take a look at the sector that as yet, has not achieved anywhere near its full potential.

The attitude towards the mini crane - spider and small crawler - varies around the world. Originating in Japan more than 30 years ago, the product there is an accepted part of the lifting equipment sector with about 10,000 units working in a country with a population of around 130 million. Australia - being relatively close - picked up on the concept relatively early and looked at one time as if it would foster its own manufacturer, but the vast majority of units at work there come from Japan - but in relatively small numbers.

Europe was first introduced to the mini crane about 10 years ago through Maeda master dealer Kranlyft but it still took several years before the equipment started making any inroads (see Christer Dijnér interview page 21). Even now with the addition of companies such as GGR with the Unic product and smaller manufacturers such as Jekko, the total number of units in Europe is thought to be in the region of 3,000, with the best annual sales (in 2008) of about 700 units.

Given these figures, it is hard to accept comments that the market for the mini or spider crane is



A Jekko 527 with searcher hook working on a glass installation project

saturated. The relative per capita calculations would suggest totally the opposite, however perhaps this just highlights the mini's main problem - the limitations imposed on it by 'traditional' lifting users. To make the most of the 'Swiss army knife' type product, you sometimes need to think 'outside the box' or even inside the building or underground with access gained via lifts, stairs and service tunnels. One factor working in its favour are the recent changes to the manual handling regulations that have created a problem often solved by a small mini crane. Many labour-intensive lifting operations have been made easier, quicker and safer particularly glass and cladding installation which initially helped to establish the spider crane use in the UK. But over the years, those carrying out tricky - traditionally manual - lifting operations, such as grave stone moving and placement and the installation of escalators, have increasingly adopted the equipment. And where space really is a premium, the mini crane is one of the few items of equipment that might just squeeze in.

Most internal rigging and lifting operations can be achieved using

the 'old school' method of erecting a gantry and using block and tackle. However the time taken to set up such a solution, together with the manpower needed, cannot compete with the speed of set-up and lifting efficiency of a mini crane. Even the smallest spider cranes have a lifting capacity of nearly a tonne and a maximum lift height of five metres - and this from a crane weighing around a tonne and measuring just 600mm wide and 1,300mm high - small and manoeuvrable enough to track through a standard doorway. However manual lifting restrictions are only helping in countries that take note and try to enforce them.



Mini cranes can get into the most unusual positions



Even stairs are not a problem



A Maeda lifting a church altar stone

In many otherwise sophisticated markets such as Russia, and the Far East for example, labour is both cheap and regulations lax, with workers allowed to lift whatever they can manage, severely limiting the speed of adoption of mechanised lifting solutions. Cost of the crane may also play a part in it not being rapidly adopted, but in most cases the smaller minis are similar in cost to a medium luxury car and there are plenty of those in these markets.

While even the largest spider crane - Unic's URW 706 which has a maximum capacity of six tonnes - cannot compete with small All or Rough Terrain cranes for some types of lift, such as heavier loads or lifting to greater heights, they can be used for a multitude of tasks, often able to get closer to the load and lift it at a shortened radius. Finding the right way to market has been a challenge. Mobile crane rental companies have generally proved to be unable to sell the concept of spider or mini cranes to their customers. One factor is that a small capacity mobile has a chance of carrying out two or three contract minimums in a day - which can help make up for current cut-throat rates - or perhaps proliferate them? A mini crane is rarely in and out within a day, and is more typically rented by the week, often on longer more complicated contracts and cannot generate multiple 'minimums'. Crane rental companies would appear to be the ideal starting point for a mini crane salesman, as they have extensive knowledge of the lifting sector and vast experience of carrying out tricky lifts, but it is not the case. Access rental companies have in fact proved to be more adept at promoting spider cranes, having the ability to sell a new concept or alternative method for doing particular work.



Lock gate renewal made easier with a Unic URW706



A mini crane can often find a way into lifting position

GGR Unic

In the UK, glass lifting was one of the first major applications for the mini crane, a sector dominated by GGR - the Unic master distributor for Europe. GGR glass services started hiring vacuum lifting equipment in 1998. Founded by Gill and Graeme Riley - now managing director and chief executive - the brother and sister double act got together after several years working in sales (Gill) and electronics/telecoms and motor racing (Graeme). The business was formed using Graeme's competition prize money with the pair sort of following their father's footsteps who had a business selling glass cutting and processing machinery. Gill went to America and secured the dealership for vacuum equipment manufacturer Woods Power Group and the company was

on its way. There was a demand for hiring glass handling/installation equipment and this led to selling further equipment and tying in with several manufacturers. Business funding allowed it to manufacture the robotic glass manipulators and being small it grew rapidly, helped by being able to respond rapidly to customer's manufacturing requests. "We initially saw a Maeda mini crane at an exhibition and were particularly interested because we were looking to put our robotic head on the end," said Graeme Riley.

it ended up with the whole of Europe as its sales territory. Unic also recognised that GGR was an ambitious young company that got things done quickly - often difficult to achieve within a Japanese company structure. GGR securing the Unic distributorship worked out well for the market and Kranlyft with the double effort to sell the concept and the increased marketing and equipment in the market. GGR currently has close to 130 spider cranes in the hire fleet - all Unics - as well as 22 small Galizia pick & carry cranes and Zone One powered air cranes which are based on the Unic models.

Sale and hire?

"In this young market there are many benefits of combining a rental fleet with new sales in that we will often sell a crane on the back of a hire," says Riley. "GGR glass handling is primarily a supplier of glass handling equipment so most of our hires are in this sector - we are not on the look-out for general mini hires."

This is still the case for GGR although it has expanded into other areas, particularly those that have continued to gain government funding. Over the last year, this has included supplying rail specification mini cranes for working on the renovation of crossings and this can mean working close to 'live tracks'. In order to be cleared to do this cranes must have encoders and work area and slew limiters, restricting both height and boom angles. Before being allowed to work for Network Rail a long drawn out process must be completed - it took GGR three years before it gained approval.

"We usually mounted them on the end of loader crane booms but they never had enough reach. We purchased a Maeda and put our manipulator head on the end but it was not very popular. However, we did have an enquiry to hire the crane and this is how our mini crane hire business started. In the first year we had 10 Maeda cranes (later known as Kranlyft) but soon realised that we were doing a lot of marketing and promotion of the cranes with no real benefits."

During its first year GGR started looking for alternative mini cranes identifying the second largest Japanese mini crane manufacturer Unic, but communication was a problem. "In the end it took a friend's friend who lived in Australia who could speak Japanese to make contact with the Japanese embassy and eventually I flew over for a meeting. It can be challenging dealing direct with Japanese companies."

Initially Unic did not want to bother with Europe because of the required investment in CE marking. However a deal was agreed that included GGR carrying out the CE compliance - fitting the safe load indicators and some other required safety systems - and this was the main reason why



Even the smallest spider can lift one tonne and have a five metre lift height



A Jekko on glass handling duties

"When working on a railway line with a four hour closure, there is a fine of £100,000 for every hour the line is not open so any equipment that is more efficient and saves time is actively sought out," he says.

Globally Maeda and Unic are the dominant manufacturers. In Japan Maeda is the dominant spider crane manufacturer with about 65 percent of the market over the past four years. Tadano produced and sold mini cranes up to 2006 leaving Unic with about 25 percent and R&B (the old Toah) making up the final 10 percent generally producing specialist machines for the home market.

In the crawler mini crane sector, Maeda is even more dominant with almost 90 percent of the market, the remainder being split between Hitachi and Kobelco.

Even at its peak in 2008, global sales were well short of the numbers that would interest a mainline manufacturer - although several have been linked with producing a mini crane.

Extendable Jekko

Of the rest of the mini crane manufacturers, Italian manufacturer Imai is probably the next largest, introducing its Jekko

line of mini cranes in 2006. It has expanded its range to include five models with capacities up to four tonnes.

The company's latest variation is based on its largest mini - the SPX1040 - but now includes extendable tracks. This machine will be seen for the first time at Conexpo later this month. One useful feature of this and a few other spider cranes is that it can perform pick & carry lifting on a 360 degree basis when the tracks are fully extended from 1,450mm to 2,050mm. Overall retracted undercarriage dimensions of the crane are very similar to the non-extendable version (although there is a slight increase in height to just over two metres). With 650kg of counterweight the SPX1040 weighs in at almost seven tonnes, 700kg heavier than the standard version.

Maximum pick & carry capacity is two tonnes with 1.5 tonnes at three metre radius, while capacity at its maximum radius of seven metres is 150kg. Maximum lift height is 10 metres at which it can handle 500kg. The crane is also equipped with a lattice extension with stinger that allows a maximum tip height of 22.5 metres.



An Jekko SPX1040 working in a multiplex conversion. The crane has been used for the lifting of all construction materials including scaffolding and concrete and was specified because its boom fly jib and capacity which allowed it to reach every corner of the room



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Other manufacturers?

A few other companies manufacture mini cranes in small numbers including two Dutch companies - Reedyk and Hoeflon - and Italian producer Kegiom.

Reedyk currently produces just one model - the 10 tonne/metre C3410 which is light enough to be driven on the back of a truck with a B license. The company only made six units last year but hopes to increase production into double figures this

year. Last year at Verticaldaagen in Holland it introduced a manual jib and it plans to add a hydraulic jib this Spring and then hopes to introduce a larger capacity but physically similar sized machine.

Hoeflon Compactkranen began manufacturing mini cranes in 2005 and has tripled in size producing a range of four machines from four tonne/metre to 10 tonne/metre. Its latest and largest capacity machine - the C610 - uses an Amco Veba

superstructure and has a negative angle fly jib and movable ballast. Total weight is 4,700kg.

Kegiom is based in Ovada, north west Italy and offers two spider cranes - the two tonne capacity 350-E4 which weighs just 1,380kg - and the much larger (2,700kg capacity) unusual double articulated 8700-E4. Two more models are scheduled for this year, the 2000-E3 which weighs in at less than one tonne and at the other end of the range, the 5000 Cobra which has a lift capacity of five tonnes and a 16 metre boom with hydraulic jib.

So while there is increasing specialist interest in the product, it is Maeda and Unic that are leading the way. The big question is whether a major crane manufacturer will decide to add a model of its own or take the short route to market and make an acquisition.



Reedyk's 10 tonne/metre C3410



Hoeflon C610

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