

Has the spider crane come of age?

C&A

spider cranes

In features over recent years we have marvelled at the spider crane's design and technical ability and then surmised its poor popularity was down to the general lack of end-user awareness of its capabilities. However, talking to several of the leading manufacturers and rental companies it would appear that the spider crane is finally beginning to break through into the mainstream European rental market.

The breakthrough does depend on which country you live in, as it is of course helped by the increased availability of the equipment as well as the realisation that its small size belies some decent lifting capacities. The spider crane can often provide the solution to a challenging lifting problem by being able to get close to the lift rather than using a much larger crane standing some distance off. They may also reduce site disruption and road closures as well as being more cost and time effective. However while applications such as glass installation and curtain walling, especially working from upper floors are now well developed, their use in general construction sector is also beginning to take off.

On page 39 we take a look at UK-based JT Crane Services which has a sizeable spider crane rental fleet and for the past 18 months has offered contract lifting as part of its expanding range of lifting services. Running its contract lifting division is Stuart Smith who has years of experience with mobile crane rentals, but until joining JT Crane Services, was a spider crane novice. "When I joined JT Cranes I saw pictures of a job I had priced at my previous company," he says. "We had just purchased a 350 tonne All Terrain and because it was the only one in the area, we were confident that it was the only crane able to do the job, and being local our price was very competitive. Imagine my surprise when I discovered that JT Cranes' six tonne Unic 706



Always strong in glass installation, spider cranes are becoming more popular in the general construction sector



A Reedyk C3412 Compactcrane working in a very tight space



Being narrow the spider crane can track to its set-up area

spider had carried out the work. The company had won the contract by being able to track the spider through a service tunnel and then using another mini crane, lifted it onto a roof to carry out the lift at a few metres radius. Our 350 tonner would have been positioned in the road and had to lift over the main buildings. Since joining JT Cranes I have a much greater appreciation for what the spider crane can do, and always look to see if a contract can be carried with them, which can

often result in time and cost savings as well as reduce site congestion. A couple of years ago I would not have looked twice at a spider crane, now I think they are brilliant."

An increasing number of end users are coming to the same conclusion, as are some experienced crane rental companies looking to find more cost effective ways of carrying out lifts, just as some are adopting aluminium trailer and truck mounted cranes to carry out certain lifts more cost effectively.

Japanese dominance

Two Japanese manufacturers - Unic and Maeda - account for the vast majority of spider crane sales around the world. Unic has a wide range with capacities from one to 10 tonnes while Maeda builds models from one to 3.83 tonnes, although it is rumoured that the company is developing a six tonne model to compete with the increasingly popular Unic URW-706. While there are several other spider crane manufacturers in Europe and Japan none come close in size of the market coverage to the two majors. The spider crane concept originated in Japan and has been around for more than 30 years although the idea did not arrive in Europe until the late 1990s when Kranlyft, the Kato dealer at the time, became the master dealer for Maeda and began to import them and promote the concept. In Japan there were four main manufacturers at one time - Maeda, Unic, Tadano and Toaha (now R&B Engineering). Tadano produced and sold mini cranes up until 2006 and they are not exported so now just three remain. Maeda has been dominant producer and claims to have around 65 percent of the home market. However in Europe Unic appears to have an equal share with Maeda and both must account for about 90 percent of the total global sales.

Over the past three years or so R&B Engineering - which trades under the Mighty Crane brand - has been making moves to promote its cranes outside of Japan by appointing dealers in North America and Europe however sales are still very modest. In 2011 it CE marked



Variable leg positions enable this spider crane to set up and complete the lift



A Hoefflon C605 helping install glass in a house extension

two cranes - the 2.8 tonne CR285D and the significantly larger CR335D which is rated at 2.98 tonnes. Later that year it appointed the German operation of France Elevateur as its sole distributor in Europe. In 2012 it appointed an agent for the USA - Kumu International Sales based in Idaho - to develop full product support. R&B is descended from the original spider crane pioneer, Toah, and is now owned by Sakamoto Sangyo, a major Kobelco distributor in Japan, which has significant rental operations both domestically and overseas.

Italian company Jekko/IMAI has also been in the market since 2006 and has rejigged its range introducing several new models at Bauma and Conexpo. These include its largest crane to date - the 7.5 tonne, 17.7 metre lift height SPX 1275 - as well as the 1,200kg capacity SPX 312 and its smallest SPB209 with a capacity of 900kg. Of the seven model range the five smallest have spider-type outriggers with the two largest - the four tonne SPX1040 and the 7.5 tonne SPX 1275 - having a cruciform-type traditional outriggers.

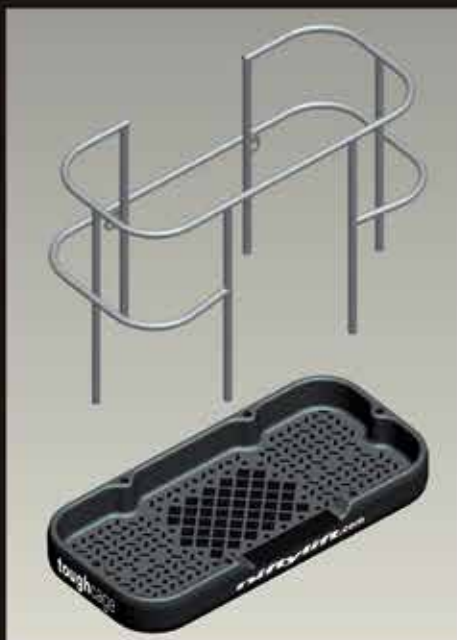
The Japanese products are ideal for rental applications, in that they are easy to use even by inexperienced operators. They also include most features seen on larger mobile cranes, such as a full safe load indicators, remote controls and slew limiters. They are powered by a variety of fuels including petrol, diesel, LPG and AC electric. Some rental companies told us that they could be improved by using some of the thinking going into All Terrain development such as easy removable counterweights and



A Jekko crane with jib erecting an indoor stage



Two Maeda MC-305s installing a large panel



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Double Dutch

The two Dutch manufacturers - Hoeflon and Reedyk - along with Italian company Kegiom manufacture mini cranes with variable, in and out and side-to-side outrigger positioning which allows the outriggers to be extended asymmetrically for the best fit. These cranes are more specialist machines and are finding a niche particularly where spider cranes cannot set-up. Jekko falls somewhere between the two concepts depending on the model. Given the growing interest and acceptance of the spider/mini crane it is not surprising that all manufacturers are pushing to expand, particularly in Europe, the Middle East, North America and Australia. Both Hoeflon and Reedyk have recently appointed UK dealers - JT Crane Services and Promax Access respectively. Promax says it has seen a lot of interest in the 4.25 tonne capacity Reedyk C3412 - launched at Vertikal Days - which

can handle 135kg at a 19.5 metre radius.

Promax's Shaun Day says that the Reedyk's infinitely variable outrigger positioning technology is a winner. "The outrigger positions are completely variable and not pre-determined by the manufacturer with a limited selection, so the machine can be driven into any location and the outriggers extended to where they best fit. The machine then automatically restricts the load chart to suit the specific set up," he said. "This allows the crane to be set up in the more inaccessible places, while providing the maximum working envelope over each individual stabiliser position. The C3412 is also compact, being only 2.9 metres long and 966mm wide and thanks to the articulated boom configuration it can extend vertically within its own footprint. It can also pick and carry a full tonne, has hybrid power and a maximum reach of 22.5 metres."

"The Japanese cranes do a great job where they can be set up," said Day, "but there is room for the specialist compact crane for the job when nothing else can do it."



A Maeda with vacuum lifter installing glass panels



The spider crane's ability to get close means it is an invaluable lifting tool

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Still eager to grow

UK-based GGR has consistently been one of the UK rental industry's top performers winning awards for both the company performance and for one of its founders, managing director Gill Riley. Mark Darwin visited its Buckinghamshire offices to find out more...

In these days of hi-tech websites, online promotion and social media, GGR Lifting Solutions - which uses them all - still has a printed catalogue and it is huge. More than 300 pages are crammed full of all types of lifting equipment, including vacuum lifters, robots and overhang beams and all manner of lifting solutions, some powered access equipment, hand cups, trolleys and A-frames, trailer cranes, pick and carry cranes, spider cranes along with a range of services such as training.



Gill Riley

In less than 20 years the brother and sister combination of Graeme and Gill Riley has formed and grown the company that now boasts revenues approaching £20 million and has expanded to the point where it needs to move its southern headquarters to larger premises, again.

The land for its growth has been found locally (a 5.6 acre site not far from the current facility - it also has operations in Manchester and Glasgow) and it is in the final stages

of negotiations to purchase the land and start building. If all progresses smoothly it could be all up and running by next summer. This is a very short time-scale but reflects the speed and determination of the Rileys who are constantly driving the company forward. During my tour of the Long Crendon facility it was clear to see what a slick, well-run and organised company it is, with all staff - from junior to senior - both knowledgeable and keen.

Humble beginnings

All this is a long way from its



A Unic URW-506 and Hydraulica 1000 lifter working on a rooftop

humble beginnings in 1995 when the pair started the rental business in Rochdale, Greater Manchester with a fleet of just four glass lifting machines.

"My father had a UK agency to maintain glass cutting tables and specialist glass washers," said Riley. "Both Graeme and I would attend exhibitions with him and this

is how we became more familiar with the industry. Over time we both noticed that the methods used to lift and install architectural glass were changing, so we pooled £5,000 between us and decided to try to rent and sell vacuum lifters. We went to the USA to find products and were able to put a small vacuum lifter fleet together as



A URW-376 at the Chelsea Flower Show



A spider crane on a barge to help with lock gate replacement

spider cranes



well as offering training as demand for the product and on-site safety increased."

The next stage was the addition of robots to install glass panels, the first was the Robotic Articulated Lifting Frame (RALF) in 1998 followed a year later by EMU (Ergonomic Manipulating Unit) - an innovative machine with a multi-rotational head able to glaze a building from the inside out when cranes or scaffolding is impractical. Riley found a company to manufacture the EMUs to its own designs and the range now consists of several different types with capacities from 300kg to 1,000kg. However it was the spider crane that probably had the greatest impact on the company.

Spotting the spiders

"It was at SED in 2001 that we first saw a spider crane (a Maeda) and immediately we could see its potential, initially in the glass installation sector," she said. "Over a period of time we purchased 10 as they were the only spider cranes available in the UK at that time. Always looking for cheaper and better alternatives we started to talk to Furukawa Unic in Japan. Unic did not want to supply the European market because of the effort to achieve CE compliance, but we said that we would sort that out and signed up as the UK distributor. With sales increasing this was expanded to being master dealer for the whole of Europe and the company grew from there. It is quite surreal when you think of how it started and where we are today."

Today GGR supplies new and rental spider cranes through a network of dealers in 27 countries across Europe. It sold its first crane in 2003 and three years later celebrated its 200th unit sold. Today it has more than 150 Unic cranes in its rental fleet and last year sold its 1,000th unit. All new spider cranes are



CPCS A66 training on a pick and carry crane

still brought into its Long Crendon facility where they undergo CE compliance checks - including the installation of a safe load indicator - before being shipped to customers via its dealer network.

GGR has also worked closely with the UK's Construction Plant Competency Schemes body (CPCS) and the CPA to develop the first industry-recognised qualification for mini crane operation - the A66 training course - GGR's CPCS qualified trainers provide training and testing at its training centres in Thame and Manchester.

Cranes in stock

The combination of the tsunami disaster of 2004, the economic downturn and the Tohoku earthquake has meant that many Japanese companies have struggled with production which added to the current upturn in demand is causing delivery times to become excessive. GGR aims to keep a large 'buffer' stock of Unic cranes on hand to overcome this. "We generally have a good stock of machines, this means that we can provide fast delivery, however there is a currently a shortage of the larger Unic cranes which have up to six months lead time due to their popularity," said Riley.

Further expansion

Not content to 'rest on its laurels' GGR has added yet more product lines to broaden its range adding Paus aluminium trailer cranes and Geko glass handling robots in 2006. In 2007 it made it into the Sunday Times top 100 fastest growing

companies which measures annual percentage growth over three years with a 59 percent increase as sales climbed from £1.9 million in 2003/4 to £7.9 million in 2006/7. A year later it made it onto the Top 100 list again, having posted an annual growth of almost 54 percent with revenues of £12.8 million. In 2008 it was appointed as the Galizia pick & carry crane distributor for the UK. "Galizia is a young fresh company with great ideas and this fits in perfectly with our business philosophy," said Riley.

This year expects to achieve revenues of almost £20 million - a mixture of sales and rental. GGR now trades under seven brand names - Unic Cranes Europe, GGR Glass, GGR Galizia, GGR AirLift, GGR Cladding, GGR Rail and GGR Gulf.

New crawler crane?

GGR is in advanced discussions about designing and producing a small tracked pick & carry crane with an eastern manufacturer in the near future. "We are getting more and more involved in the industrial market and currently have 25 pick and carry cranes in our fleet. Following customer demand we are looking seriously at the tracked pick and carry crane sector with a view to developing a new range. We have a few eight tonne Giraf Track 805 machines which have been out permanently on hire jobs and we plan to purchase more," she said.

Looking forward

"I think in general the industry has another two to five good years and long may it continue. We are going



Working on Kings Cross platform, London



A Galizia F200E pick and carry crane inside a factory

into so many different markets at the moment - Cross Rail is massive for us - and the range of equipment means that we work across many sectors. Powered access is an area of potential growth but at the moment we only supply existing customers and generally cross-hire the equipment. However we are looking to invest ourselves and may add some platforms to the fleet in the near future."



An older RALF (Robotic Articulated Lifting Frame) robot



One of the GGR transport trucks



An MCC805 mini crawler crane at a substation



"The MLC650 and MLC300 will be game changers in the crawler crane market."

Joe Vaccarello, MAXIM Crane Works

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Rick Mikut, ALL Erection & Crane Rental Corp.

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In spite of the increase in awareness and sales of the spider cranes, there are still only a handful of manufacturers producing dedicated spider cranes, although this is gradually increasing as their popularity grows. The following chart highlights some of the model available.

Manufacturer	Production base	Models	Capacity	Max hook height	Crane weight	Max working radius
Cormidi	Italy	GKB19-4	0.995t @ 4.2m	14.6m	2,700kg	9.5m
Cormidi	Italy	GKB22-4	0.995t @ 4.2m	17.0m	2,900kg	9.5m
Hoeflon	Holland	C05	620kg @ 1.0m	4.6m	620kg no ballast 980kg with	4.0m
Hoeflon	Holland	C4 without jib	1,950kg @2.0m	9.5m	1,740kg	8.0m
Hoeflon	Holland	C6	2,950kg @ 2.0m	11.5m	2,100kg - 2,640kg with cwt	10.0m
Hoeflon	Holland	C10	3,750kg @ 2.7m	16.5m	3,450kg - 4,900 w/cwt & jib	14.0m
Jekko	Italy	SPB209CP	900kg @ 2.0m	7.5m	1,450kg	6.5m
Jekko	Italy	SPX312CP	1,200kg @ 2.0m	10.7m	1,800kg	9.5m
Jekko	Italy	SPD360CDH	1,800kg @ 1.5m	13.0m	2,300kg	10.5m
Jekko	Italy	SPX424CDH	2,400kg @ 1.0m	13.5m	2,300kg	10.5m
Jekko	Italy	SPX527CDH	2,700kg @ 1.0m	17.5m	3,600kg	11.0m
Jekko	Italy	SPX1040CDH	4,000kg @ 2.0m	23.5m	5,600kg	13.2m
Jekko	Italy	SPX1275CDH	7,500kg @ 1.0m	26.7m	6,800kg	16.2m
Kegiom	Italy	200 E3 Spider	1,600kg @1.26m	8.0m	1,000kg	6.2m
Kegiom	Italy	350 E4 Spider	2,050kg @1.9m	10.0	1,380kg	8.0m
Kegiom	Italy	4000 E3 Spider	1,830kg @ 2.0m	13.5m	2,200kg	11.5m
Maeda	Japan	MC104CER	0.995t @ 1.1m	5.5m	1,050kg	5.1m
Maeda	Japan	MC 174CRM	1.72t @1.0m	5.5m	1,290kg	5.5m
Maeda	Japan	MC 285C-2	2.82t @1.4m	8.7m	1,960kg	8.21m
Maeda	Japan	MC 305-2	2.98t @2.5m	12.52m	3,900kg	12.16m
Maeda	Japan	MC 405	3.83t @2.7m	16.8m	5,600kg	16.0m
R&B	Japan	CR 174G	1.7t @ 1.2m	5.3m	1,170kg	5.06m
R&B	Japan	CR 23GL	2.3t @ 1.0m	7.3m	1,570kg	7.25m
R&B	Japan	CR285D	2.8t @ 1.5m	8.7m	1,750kg	8.5m
R&B	Japan	CR335D	2.98t @2.5m	12.55m	3,760kg	12.18m
Reedyk	Holland	C3410	3.84t @ 2.0m	16.0m	5,900kg	13.7m
Reedyk	Holland	C3412	4.25t @ 2.0m	21.5m	6,750kg	19.5m
Riebsamen	Germany	Type 260	1.82t @ 1.4m	6.0m	1,330kg	5.8m
Riebsamen	Germany	Type 380	2.3 t @ 1.5m	8.0m	1,600kg	6.0m
Riebsamen	Germany	Type 510	2.9t @ 1.7m	10.0m	2,900kg	6.75m
Unic	Japan	UR-W094C	0.995t @ 1.5m	5.6m	1,000kg	5.17m
Unic	Japan	UR-W295C	2.93t @1.4m	8.8m	1,850kg	8.41m
Unic	Japan	UR-W376C	3.03t @2.5m	14.9m	3,860kg	14.9m
Unic	Japan	UR-W546C	4.05t @2.5m	16.0m	4,920kg	15.52m
Unic	Japan	UR-W706C	6.05t @3.0m	19.5m	7,980kg	18.6m
Unic	Japan	UR-W1006C	10.14t @ 3.0m	22.8m	13,800kg	21.93m

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Working on new ideas

Over the past few years, Bedfordshire-based J T Cranes Services has steadily expanded its range of services and is now looking to grow further. The family company - formed in 1981 by John Taylor - is now run by son and daughter Russ and Julie, who have steered the company from roadside repair and servicing into a business that encompasses accident recovery with major repairs/rebuilds, routine servicing, testing, test weight and spider crane rental and most recently, contract lifting.

This year it was a first time exhibitor at Vertikal Days where it highlighted its UK distributorship for Hoefflon mini cranes and tracked carriers, as well as promoting its contract lifting division, launched just over a year ago.

JT Cranes is also adding more spider cranes to its rental fleet, following an initial investment in 12 Unic spider cranes in 2007. Now it is looking to replace a few of the older units, while expanding the fleet to 14 spider cranes, with the addition of three 2.9 tonne Unic URW-295s. JT Cranes also has two small Kato city type mobile cranes with 7.5 and 10 tonne capacity.

Unic or Maeda?

"We looked long and hard at 'easy to use' rental equipment in the three tonne capacity sector - for us that essentially meant the Unic 295 or the Maeda 285," said Julie Marshall. "While we really like the

larger capacity Maeda machines, the 285 is slightly wider at 750mm compared to the Unic's 600mm. The Unic also has a small advantage in capacity and lift height. When we look to replace and expand the larger capacity spider cranes, we will look at the Maeda product but because of the size advantage and the fact that we are geared up with transport trailers etc we will stick with Unic for the smaller units."

New pick & carry solution

"We don't have any pick & carry cranes in our fleet at the moment, but the spider crane combined with the Hoefflon tracked carriers is the perfect modern replacement for a traditional pick & carry crane," said Russ Taylor. "Both the spider and platform are very portable and can track over rough terrain. We are experiencing huge demand for the tracked carrier - it is the ideal solution to loading/unloading, moving equipment as well as moving materials needed for the spider to lift."

J T Cranes is already working on a larger capacity tracked crawler to his own design, as well as developing a range of accessories to allow the unit to self-unload, different carrier options, extendible tracks and possibly removable power packs. The carrier is also able to tow and development work is being done to allow them to be used in tandem or multiple units using one remote control allowing much larger and heavier items to be carried extending their use even further.



J T Cranes showing off its small tracked carrier at Vertikal Days

"There is huge potential with these carriers, we currently have six in the fleet and will probably double this number by the end of the year," he adds. "Hopefully when we exhibit at next year's Vertikal Days we will be able to show a new 1.4 metre wide unit with a capacity of three to four tonnes."

Contract lifting

About a year ago, JT Cranes decided to form a new CPA Contract Lift service taking on three experienced crane rental personnel from local mobile crane rental company PCH. Headed up by Stuart Smith with Darren Lee and Mark Weston, the division uses both the spider crane fleet and larger mobiles - all cross hired - to offer the most cost effective solution to a lifting problem, managing the whole lifting operation from start to finish.

Like so many conventional crane people, Smith was oblivious to the benefits of the spider crane.



Stuart Smith



A three tonne capacity Unic URW 376 on a car park at Welwyn Garden City

It was only when he realised that his previous company was beaten to a major lift by one of JT Crane's Unic 706s over his 350 tonne All Terrain that he started to appreciate their benefits. "It is the ability of the spider crane to get close to the lift that gives it its main advantage," he said. "The 706 was able to track through service tunnels and was then lifted onto an internal roof to carry out the lift which was clearly

preferable to the large crane set up in the road and lifting over the roof of the main building. I now check every lift to see if it can be carried out with a spider crane - I am truly converted!"

Spiders can be used for a wide variety of lifting tasks - here it is installing a chimney



J T Cranes has two small Kato city-type cranes - a 7.5 tonne and a 10 tonne capacity - in its fleet

