Good problems & bad problems?

As if the current economic climate isn't hard enough to deal with, self erecting tower crane rental companies (particularly those with small fleets) have a variety of other problems to deal with. Cranes & Access takes a closer look at this and at the pros and cons of using small tower cranes rather than telehandlers for on-site material handling.

When a customer wants to extend the hire of your self erector or top slewing city crane, you would initially think that the extra revenue would be welcome. It can, however, cause a major headache for the smaller rental company, particularly if the crane is already booked on another long-term contract - which it often is. If the crane remains on site - even for a few more months - it may mean loosing the other contract which could be for a year or more. Passing the work on through a cross-hire deal rarely works in this market, and even if it does, the company then has the challenge to find a similar contract for its own crane when it comes free a month or two later. A tricky situation in the current environment, but one that smaller companies relying on full utilisation have to deal with on a regular basis.

However, there is a growing trend for the opposite to happen but with a very similar end result. Feedback from crane rental companies suggest some customers are increasingly negotiating 'long term' hires (50 weeks plus) to obtain a very good rate but then off-hire the crane well before the end of the hire contract, often after just 30 weeks or so. Again a tricky situation.

It the rental company enforces the original contract period and goes looking for the money through the legal system, most hirers said that they were concerned that they would not obtain work from that customer again so this route is rarely followed. The practice is all the more galling if as many think the customer 'over estimated' the rental period for financial gain. The problem is further compounded if the crane was purchased specifically for the long-term contract with financing/purchase/cash flow arranged around the length of the hire.

Occasionally there are instances where contracts actually end early, possibly because the tower crane - in this instance its own worst enemy - has enabled the contractor to save time during the construction and complete the work much quicker than envisaged. The use of a self erector or small city crane is - despite having first arrived in the UK more than 40 years ago - still in its infancy in this country and the speed and efficiency of the equipment compared to more traditional plant and equipment can be a surprise to new users. However, the general sentiment of the tower crane rental companies we spoke to thought there is a definite trend for the original rental period 'exaggerated' just to get a lower rental rate. Perhaps this is an area where the industry ought to agree strict contract terms or better still rental companies maintain their pricing but making the last month or two free of charge. For the genuine contractor he still benefits from the keen contract price, while the fraudster doesn't.

So what are the benefits of using a self erector or small city crane rather than its main competition, the telehandler?

Self erecting crane v telehandler

Benefit	Self erecting crane	Telehandler
Reach across entire site?	Yes	No
Lift into/out of smallest spaces?	Yes	No
Quiet operation?	Yes	No
Immediate mobility?	No	Yes
Precision movement?	Yes	Varies
Superior visibility	Yes	No
Position material inside covered structures?	No	Yes
Widespread availability?	No	Yes
Minimal environmental impact?	Yes	No
Radio control?	Yes	No
Electric power?	Yes	No
Reduced manpower?	Yes	No

Taken from a Manitowoc 'The Advantages of self erecting cranes' presentation

The above table (with an addition and 'tweak' or two) was taken from a Manitowoc presentation on 'The Advantages of self erecting cranes' aimed at convincing users in North America of the benefits of the self-erector.

Ignoring the obvious manufacturer bias, the article highlights the self erector's advantages which are still applicable and which more and more customers in the UK and North America are now realising.

The combination of superior reach, safer operating techniques and quieter operation means self-erecting cranes can outperform telehandlers on many projects. The cranes can be used in areas not accessible by a telehandler and reach across the entire jobsite instead of one area, place materials exactly where they are needed - and not on the edge of the building requiring further handling - improving safety and speeding up the construction process.

Radio remote controls have really boosted the efficiency and safety of the self erector, by allowing operators to place themselves in a location with the best visibility to handle the lift. Users also benefit from the crane's ability to work on environmentally sensitive sites or in residential areas with electric power, even when generated, being quieter and cleaner than mobile diesels. A final advantage is the ground is not cut-up by heavy machinery moving around the work site and site traffic is significantly reduced.

Many users also claim that self erecting cranes save on manpower with one company stating that on average, it has six to eight fewer workers on site when using compact tower cranes.

Key attributes

Whatever the manufacturer, all self erectors have the same key attributes. They are easy to set-up - if you know what you are doing - have a small on-site footprint and good lifting characteristics. The site power supply can be used, if available, although most cranes have a standard or optional generator to obtain power.

Self erectors can be positioned in some of the tightest, most inaccessible areas of a site. There are occasions however where this is not possible, purely because the positioning/towing vehicle - usually a telehandler - cannot position the crane without blocking itself in or it cannot physically get into the space. Even this problem has now been solved with a motorised mobile power pack such as the Italian-built Gapo, available in the UK from Ladybird Crane Hire.

Bigger is better

Sales of self erector tower cranes in the UK or Ireland have never been large, although in Ireland contractors have been far more willing to adopt the technology than in the UK. The current economic climate has seen a drop from those low levels. The reduction in the smaller residential and retail/office developments means that utilisation among the larger crane rental fleets has fallen significantly, to the point where Belgian-based Arcomet has shipped a portion of its UK inventory to other markets.

However it seems that it is common for many users to 'overspec' the crane, selecting a model with more reach and capacity than necessary, even if it costs slightly more. Hence the demand for the smaller radii self erector is not as great as for the larger cranes, particularly 40 metre working radius cranes.

San Marco 45N

Liebherr 26K.1

Small city or self erector?

Let's suppose you are one of the enlightened, and have decided on a small tower crane for your project, what do you go for, a large self erector or small city crane? From a rental point of view, the city crane will be cheaper, the complicated self erector being more expensive to purchase (possibly twice the price in the case of a large crane) and therefore also to rent. Both need a similar pre-prepared base although size for size, the self erector is heavier and therefore tends to have the higher foot loading.

But the three main criteria that will decide one way or another are: the under hook height, maximum jib radius and space to position the crane on site.

Generally higher under hook heights and risk of lower level obstructions, tend to suit a city crane. Most self erectors have fixed mast heights and jib lengths whereas a city crane can add sections up to its maximum. There are exceptions, of course, with a self erector such as the Potain Igo T85 and the San Marco 45N, both launched last year.

The Igo T85 has a lattice mast that can offer working heights of between 20 metres and 35 metres either by telescoping or adding sections. With its jib luffed to maximum it has a maximum tip height of 51 metres and an on-site footprint of 4.5 metres square. With the jib fully extended to 45 metres the crane can lift 1,250kg, or with the jibfolded to 33.8 metres the crane picks 2,350kg at jib tip.

San Marco's 45N has a maximum capacity of 1,500kg at 45 metre radius and is the first model in a new series that can add up to four, 2.5 metre tower sections, giving various under hook heights from 26.5 - 36.5 metres.

The 45N has a maximum lift capacity of 6,000kg and final testing and certification should now have taken place with production scheduled to start this year.

City cranes tend to have greater working radii and the base takes up less space on the site. The downside is that the self erector is easier and cheaper to erect (about half the price) so for contracts under about 20 weeks or so it is the obvious choice given that it fits the other criteria.

Dunham Cranes, the Ramsbottom/Bury-based developer and distributor for Italian-built FB Gru self erectors, is one company that sees the benefits. It did a job last year with one of its self erectors that reduced the build time by three months. This alone saved the client £50,000 in finance costs without even counting any of the other financial savings through having a crane permanently on site.

Why the UK construction industry has not yet realised the benefits of small tower cranes is a mystery. True, the popularity of the machines in mainland Europe is probably as much related to contractors owning their own cranes as anything else. In the UK the tendency to rent equipment, means that contractors rely on what rental companies have available and most are still unsure or unwilling to invest in self erectors which are less versatile than mobile cranes.

Using a self erecting tower crane does mean organising the site differently and changing some of the existing working practises. But with significant time and cost savings to be had, it can't be too long, before they are more widely adopted, can it?

Mantis looks overseas

Irish self erecting crane manufacturer Mantis, launched its new four tonne capacity 36.10 at Intermat and plans to expand is export markets further. The new model supersedes the 35.10 and has been designed to utilise ballast weights from the Mantis 32.10 thereby providing a cost saving to owners who may have both models. The 36.10 also shares the same hoist and trolley motors and other components.

Mantis 36.10 prototype

Fabrication of crane base

One of the key features of the 36.10 is the relocation of the trolley motor to the bottom of the tower which simplifies maintenance work, and allows adjustment of the trolley brake, without need to dismantle the crane.

The new crane can set up with jib lengths of 36, 32, 28 and 14 metres, giving a maximum hook height with jib fully luffed of 27 metres or 22 metres with a horizontal jib. The crane can also operate in winds of up to 72 km per hour depending on load dimensions.

A new radio remote control unit is used which, apart from operating the crane, also displays a variety of information, including the weight on the hook, trolley distance, hook height and wind speed. As an alternative the crane can be operated using a cable control, while few operators will choose this option, it is useful as a backup in the event of the radio remote control unit being damaged.

The 36.10 requires a 400V, 50Hz mains electricity supply or a 30 to 40kVa generator. Just two trucks are required for transportation - a low-loader for the folded crane itself and a flat-bed for the ballast. With its own wheeled chassis it can be quickly dismantled and moved around on site to different positions using a site vehicle equipped with tow hitch or a powered tug such as the Gapo.

If required, Mantis can supply an axle kit with brakes, incorporating lights and other features to comply with road regulations, allowing the crane to be towed behind a truck on its own wheels - common in mainland Europe but seldom used in the UK or Ireland.

The new model is the largest in a growing, range of six self-erecting tower cranes manufactured by Mantis at its facilities in Ireland. Its current line-up comprises the 23.09, 30.10, 32.10, 35.10, 36.10 and the TC 25. Apart from manufacturing, the company also has a fleet of self-erecting tower cranes for hire throughout the UK and Ireland.

General manager Robert Rowlette says:"We are trying to educate contractors and builders of the economics that self-erecting tower cranes provide, their ease of use, flexibility and adaptability. We have also designed our own range of self-erecting tower cranes to meet the specific requirements of the construction industry in the UK, namely the Mantis TC 25 which has its own on-board generator and can be transported with its full complement of ballast enabling the crane to be erected for work in less than 30 minutes from delivery."

"We are now looking to expand into other countries," he adds. "Although we are initially focusing on Poland, CIS, Czech Republic and the Baltic States we are prepared to talk to dealers anywhere. We have already sold cranes directly into mainland Europe, Africa and the USA.
I believe that now is a good time to start working with dealers who can deliver the required level of customer service. Being small has its advantages, we can react to customer needs quickly and efficiently."

Mantis TC25 being towed by a Tractor

Back in production

Raimondi's recent problems - six months out of production - are now in the past, with the company - under new owners Ramco Group of Qatar and exhibiting at the recent Intermat show.

A review of costs meant about one third of its staff were let go, but the new company is back in the market and selling cranes under the Raimondi Cranes S.p.A banner and has already sold 14 new cranes to its new owners. The range has been reduced to six models although there are plans for a new 70 metre, seven tonne capacity crane to slot between the MRT126 and the MRT294.

Easy does it

Manitowoc's latest self erector, the Igo 30, is available in two versions: a 30 metre jib version that has a tip capacity of 900kg and a 28 metre jib version that can handle 1,000kg.

Maximum capacity for both versions is 2.2 tonnes, which the crane can take to 14.6 metres radius. Height under hook is 21 metres and the jib can luff to either eight or 20 degrees. With a total weight of less than 26 tonnes, it can be transported on a single truck in most markets, reducing transportation costs.

The crane also features the SmartCom system that incorporates special sensors and an on-board computer to improve efficiency and bring additional safety to folding and unfolding operations. For ease of set-up, it has side ballast, which means the counterweight does not need to be moved during erection and dismantling. This is especially useful on job sites where 'free slew' is not possible or where there are strict rules regarding the position of the jib during out-of-service operation. All of the mechanisms are frequency controlled and radio remote control is included.

"The emphasis on the Igo range is to make everything about the job as easy as possible," says Vincent Milan, Manitowoc's senior product manager for self-erecting cranes. "When designing the cranes, we focus on transporting it to the site, rigging, maintaining, operating on site and then moving on to the next job."

Looking for something bigger

Dunham Cranes, the Ramsbottom/ Bury-based distributor for FB Gru self erectors which introduced its largest machine, the 1,000kg at 36 metre radius GA136 last year, has seen the demand for the longer radius self erecting cranes increase in the UK. Unfortunately its request for a larger FB crane has so far gone unheeded, so it has entered into an agreement with Benazzato to distribute its 40 metre self erector.

Dunham director, Alan Dunham said: "We now have an arrangement with Benazzato and its UK dealer to take the 40 metre crane should we need it. We have been asking FB for a while to produce a larger self erecting crane but this does not look like happening in the near future."

Dunham also thinks that the small city tower crane has great potential in the UK.

"FB Gru's new GHS 401 is much lighter and needs a much smaller base than a self erector - 2.8 metres by 2.8 metres compared with about 4.5 metres square," he says. Dunham took delivery of the first GHS 401 in the UK last year. Designed in six metre modules, the unit can be easily handled and transported to site on one truck. The units can also increase its height with the addition of more tower sections, unlike the fixed height self erector.

New four axle MK

While the UK has something of a blind spot for self erectors, it does like the mobile version which can offer many of the advantages of a regular self erector while retaining the mobility of an All Terrain crane. Liebherr has recently introduced its four axle MK88 mobile tower crane, the successor to the MK80 of which sold nearly 150 units.

Like the three axle MK63 and five axle MK100 models in the Liebherr's range, the new MK88 is an extremely compact, manoeuvrable design and therefore ideal for use in town centres where space between buildings is limited.

Transport dimensions are similar to the MK80 but the crane superstructure is distinctly larger allowing a maximum hook height with the jib in the 45 degree 'super steep-angle' position to increase to more than 57 metres and the maximum working radius to more than 44 metres.

The completely new design, the two-section lattice-construction telescopic tower is said to be exceptionally rigid and has three standard steep-angle jib settings: 15, 30 and 45 degrees.

The electric power supply for crane erecting and operation can be taken either from the standard compact 48-kVA generator on the superstructure or by connecting to an outside source. The generator allows the crane to be erected and operated where no suitable outside power supply is available - a major bonus in town centres and noise protection areas.

The cranes radio remote control includes a full display of the essential load and operational information, including actual working radius, hook height, lifting speeds and the load on the hook.