

Where is it all going?



The tower crane was originally a Franco German concept, gathering pace in both France and Germany after the Second World War and then spreading to Italy and Spain and then gradually further afield. It is only relatively recently that the UK and Ireland or even the USA has seen a significant trend towards this type of lifting equipment. With every spare space in urban areas being developed we can expect this trend to gather pace with tower cranes replacing a good deal of the work previously carried out by mobile cranes on these shores.

With this late but enthusiastic adoption of the tower crane, buyers and users are faced with a wide and ever increasing choice of products, from traditional saddle jibs, to flat tops, luffers, climbers, folding or telescopic self erectors, city cranes and mobile truck mounted models. Add to this the intense focus on tower cranes that a few high profile accidents has caused and it is hard to sort the trend from the aberration.

Regulation

One thing is for sure - a very strong trend is the increasing move towards tighter regulation, which if not handled sensibly could make this very efficient and fundamentally safe form of lifting, bureaucratic and expensive. Being so visible, tower cranes tend to be one of the few items of construction plant that

'Joe Public' can easily identify. With every city skyline dominated by the equipment, it is hard not to notice them. For many they are seen as an economic indicator, the sign of a good economy and a buoyant construction industry.

But all is not sweetness and light for tower cranes - not just in the UK but also in North America. The main problem is the increased - or



Small self-erectors such as this Vanson VC15 are ideal on single or double unit houses and small factory buildings

perceived increase - frequency of tower crane accidents. Unfortunately, when a tower crane has a significant accident, it tends to be spectacularly visible and very messy.

Statistics if available, would probably show that pro rata, there are no more accidents than previously - there are just that many more cranes currently in operation. Add this to 'instant global news', a very visible and therefore newsworthy item such as a tower crane and the recent spate of accidents looks like an epidemic. This has led to an almost vigilante style persecution to totally eradicate accidents.

But why are there any accidents when there is so much HSE and industry interest in them? Paul Phillips of Tower Crane Specialists and currently chair of the CPA tower crane interest group, believes that there is more than enough information covering the safe erection, use, maintenance and dismantling of cranes, but no-one appears bothered to either read it or take note of what it says.

"Too many people think driving and erecting a tower crane is a doddle," he says.

Perhaps contractors and hirers are too busy, under impossible deadlines to complete the work to let staff have time off attend on training courses. This is certainly backed by the undersubscribed CITB courses.

With the public, HSE and government seriously looking at the tower crane sector, it needs to get its own house in order sooner rather than later. Or we might end up like Miami-Dade County, Florida in the USA where sweeping new rules may soon govern the use of cranes, mast climbers and hoists. And failure to comply could result in revoking the building permit and shutting down the entire site.

This 'extreme' state of affairs was brought about following 14 crane-related fatalities in South Florida in the first five months of 2006, matching the total of the whole of 2005.

The proposed rules cover operator certification, the appointment of independent inspectors for cranes and hoists, the mandatory testing of the equipment as often as every 90 days and an approval process prior to such equipment being erected. No half measures here then and perhaps surprising given that they



City Lifting has a wide range of tower cranes. Here its new seven axle Spierings helps erect a Comansa tower crane

were drawn up by a committee is largely made up of employees from major contractors and crane rental companies. These stringent proposals leave the crane owner/user with very little room to manoeuvre and facing enormously increased costs.

Spurious parts

Another worrying trend is the reported increase in counterfeit tower crane replacement parts, which may have reduced tensile strength, impact toughness and inadequate weld joints. Until recently, most spurious tower crane components have been produced in Asia - mainly China and Korea - but with counterfeit parts production growing in Europe, the potential for a problem is growing.

"Some counterfeit components are easy to spot but some even the manufacturer has difficulty identifying," says Christoph Schneider, tower crane project manager for Liebherr. "We believe that using these parts may result in the collapse of a tower crane." Liebherr is one manufacturer that has carried out extensive tests on counterfeit components using university and material test labs. It found that most components are dimensionally and visually quite accurate however the lesser quality of the material did not meet the minimum static safety requirements.

"Yield points in tensile tests are significantly below what is required and the low temperature tests showed many unsuitable for work in cold weather becoming very brittle," adds Schneider.

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Chinese manufacturers are making inroads into Europe and the UK

Weld quality was another area of concern. Weld joints, particularly on transverse connections were found not to be up to standard and in some cases only 50 percent of the transfer cross-section was present.

"When the crane is in operation, the crane torque causes high levels of stress which in poor quality components can lead to cracks. If this was to go unnoticed for too



Any tower crane accident is instantly global news

long, it could result in the complete destruction of the transverse connections and cause the crane to overturn." Great - all the industry needs at this point in time.

Another trend is towards additional electronic aids, particularly anti-collision devices. Mandatory in France they may be helpful on busy, multi-crane sites, when tower cranes overlap but would not have prevented most of the recent 'high-profile' accidents. They might though save what is believed to be a high number of near misses which might otherwise cause the 'next accident'.

Finding people

With such demand for tower cranes, finding good, experienced operators and fitters is a major headache and perhaps at the root of the safety problems?

Tower crane manufacturers have helped by designing cranes that are easier to erect and operate. But the growing range of equipment - needed to cope with all types of construction - from all over the world means that most fleets are very mixed.

City, flat top tower, saddle jib, luffing jib, self erecting, mini and truck mounted - all have their own particular use required by differing markets. Speed of construction is of the essence and with more and more developments using congested, brown-field sites, contractors over the last five to seven years have been seriously looking at small self erecting tower cranes. This is partly due to a change in attitude to how we build, helped by the HSE's wish to reduce site traffic and therefore accidents from equipment such as telehandlers. Remote controls allow the operator to stay

with the load, positioning it with more precision and therefore safety. It also allows materials to be centralised resulting in easier and safer site deliveries.

Their popularity is also increasing because they are becoming easier to source with a huge increase in the number of companies offering them for hire, the realisation that the right crane can save a significant amount of time and money through increased productivity and cost a lot less per month than bringing a mobile crane in every week. The crane is also always on hand when needed. Unlike builders in Germany

or France most users in the UK and Ireland rent a self erector rather than own it and will not attempt to erect the crane themselves. Electric supply to the crane is also a major consideration but generators are increasingly used which simplifies the problem.

Self erector or compact city

Given that almost all self erectors are set up by the rental company, there is an increasing trend towards the small city crane for small sites. Companies such as City Lifting offer a fixed price to put up one of its small Comansa top slewers thanks to their easy transport and ability to erect them with a 50 to 70 tonne mobile crane. Manitowoc UK also confirms that sales of these smaller top slewers is one of its fastest growing products. The advantage is not only a simpler crane, but in the case where the developer has not taken the interference of tall trees into consideration, an extra tower section will usually solve the problem where a folding self erector cannot be adapted. In the case where poor planning results in the crane becoming blocked in by the new building it is not an issue for a city crane, while making this mistake with a one-piece self erector will be costly.

This same trend has seen a rapid adoption of the Jost hydraulic luffing tower cranes thanks to their easy erection and simple set up, not to mention easier jib stowage to prevent oversailing. This trespassing into the air space of an adjoining property is a significant issue in the UK and a problem on some sites for the larger self erectors. The number of cranes that have been severely

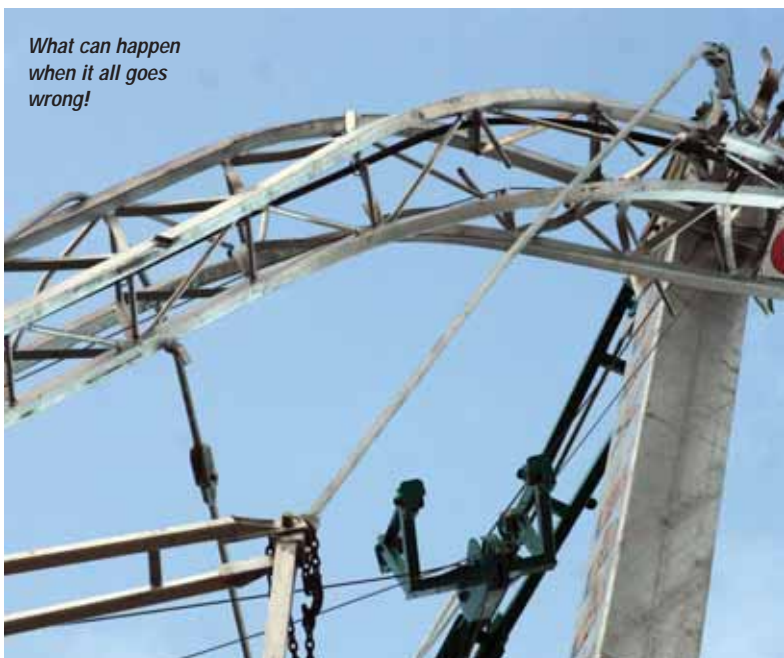
There has been a rapid adoption of Jost hydraulic luffing tower cranes



damaged through an operator folding the jib when the wind is too high or when the hoist trolley is not in the correct position is exceptionally high in the UK. The HSE says that most of its regions have now investigated one or more such accidents, fortunately few if any have resulted in serious injuries.

At the smaller end self erectors such as the Vanson Cranes VC15 are proving ideal for placing roof slates, trusses, tiles and blocks single or double unit houses or small factory buildings. With a capacity of 1.5 tonnes at a radius of seven metres or 600kg to 15 metres, both at 15 metres high they are growing in popularity. Gone are guys climbing up and down ladders carrying materials.

What can happen when it all goes wrong!



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