

The Buyer's Guide

to tower crane procurement

Practical advice, tips and case studies to help you procure the right tower crane for your construction projects

- **The best crane for the job**
- **Operations and regulations**
- **Getting the best quote**

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How to hire a tower crane

Hiring a tower crane might be something you do regularly, and it's a pretty simple process of gathering quotes and picking the best, right?

But could your procurement have had better or lower priced results?

Have you felt on occasions the crane you have been supplied wasn't the best choice?

By arming yourself with a bit of extra crane knowledge and asking the right questions of your crane hire company, you can ensure you receive the most practical, cost-effective tower crane (or cranes) for your project. **The right crane can make a huge difference to the outcomes of a project, the build time and the final costs** – and as we know budget is critical!

At Bennetts Cranes we have decades of experience hiring tower cranes, and we have built our company reputation on our specialist knowledge and team of experts. Now, **we're sharing the inside knowledge on all things heavy lifting in this Buyer's Guide.**



The best crane for the job

In this section, we provide a general overview of the best tower cranes for a range of scenarios, and we provide knowledge and tips on ensuring you get the right tower crane for your project. Every project has its own specifications, but largely these tips hold true for the majority of sites.

Tower cranes for large sites

If your loads are greater than two tonnes at 30 metres, and your project will take 20 weeks or more then a tower crane may well be best suited to your needs. Tower cranes have a lower weekly hire cost than mobile cranes but have a higher set-up and removal cost. Saddle jib or flat top cranes are available in a wide range of height and jib configurations which make them extremely versatile and cheaper to hire than mobile cranes with a similar lifting capacity. The low base loadings and power requirements for the hoist and slew motors make saddle jib cranes the mainstay of the global tower crane market.



Tower cranes for small sites

If you have a low intensity site with a limited number of workers, for example, 12-15 workers and a required lift capacity of up to two tonnes, then a small tower crane operated with a remote-control is likely to be the most cost-effective choice.

Crane drivers and larger tower cranes cost more to hire. If you can use a remote-controlled model, with one worker to load the hook and operate the crane controls, you can significantly reduce your operating costs. You can also train several site staff to do this job, maximising flexibility in your site personnel.



Tower cranes for urban sites

Whilst globally saddle jib cranes are the biggest market for tower cranes, the UK construction industry is unique, because in the UK property owners own the airspace above their land and building, so a crane jib travelling outside the site boundaries may be trespassing. This explains why luffing jib cranes comprise typically less than five per cent of the tower cranes used in most countries but make up more than half of the tower cranes used in the UK.

Luffing jib cranes are particularly popular in urban areas, such as London, where there is a greater risk of oversailing nearby properties on cramped sites, or on very busy or small construction sites where several cranes need to work simultaneously without colliding.

The steeper jib angle means the base loadings are higher so they are more expensive typically than saddle jibs, but hydraulic luffers can often be positioned in lift shafts or light wells inside a building which provides good site coverage and allows a smaller out-of-service radius, a smaller tower and lower power requirements. For larger capacity on bigger sites a conventional rope-operated luffer may well be the best solution.

Luxury apartment development Kensington

Between 2018 and 2020, Bennetts Cranes provided four tower cranes for a luxury apartment development in Kensington. Two were large capacity Raimondi LR330 luffing jib cranes and two were small Raimondi LR174 hydraulic luffing jib cranes. All four cranes were situated within the footprint of the building and needed to operate at the same time. With four cranes in close proximity and all working on a busy development, a safe system of work was needed to ensure there was no risk of the cranes colliding. By using the LR330s at the front of the development for the large lifts and the more agile hydraulic cranes behind was an excellent use of the crane models – ensuring all could work without colliding and without downtime – which resulted in an efficient build.



Tower cranes for tall buildings

Taller buildings need taller tower cranes. Traditionally they are erected by tying the tower crane to the building as it gets higher for stability and to keep the base loadings relatively low – gradually ‘climbing’ the crane by adding in more tower sections to increase the height as the building gets taller.

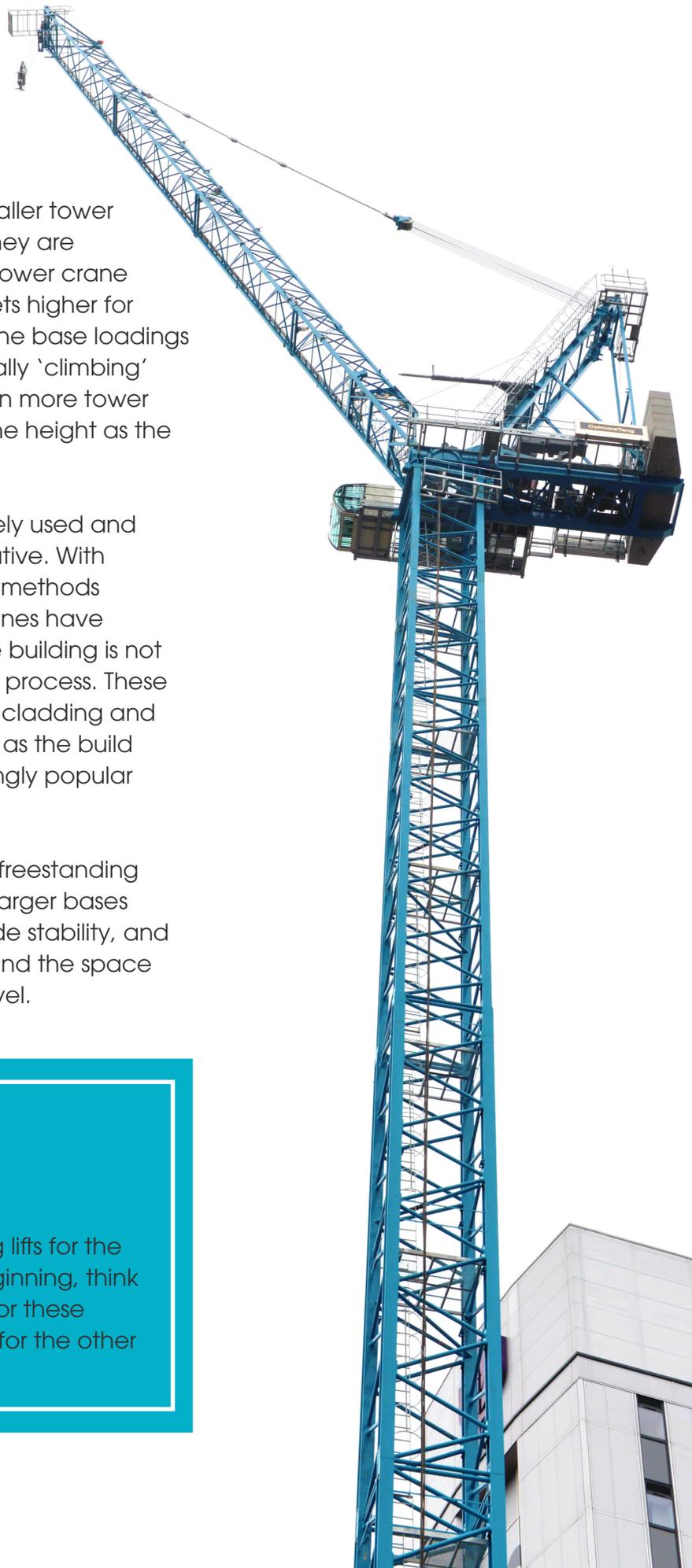
This method is still widely used and is the cheaper alternative. With evolving construction methods taller freestanding cranes have been drafted in so the building is not disturbed by the tying process. These are ideal for applying cladding and pre-cast components as the build goes up – an increasingly popular build method.

Bear in mind that tall, freestanding tower cranes require larger bases concreted in to provide stability, and this adds to the cost and the space required at ground level.

MONEY SAVING TIP

Mix it up

If you have only two or three big lifts for the duration of the job or at the beginning, think about hiring in a mobile crane for these and then hire your tower crane for the other lighter/typical daily lifts.





Tower cranes for off-site construction methods

Precast panels and off-site building methods are growing in popularity. Buildings can be built in modules (or pods) off-site, fully glazed and even with first fix electrics and paint included, and brought to site to install. This is an efficient building method, but it does require tower cranes with much bigger lifting capacities as the precast panels and pods are much heavier than traditional build materials. You will require a crane with a large load capacity, and should specify when getting the quote the types of pre-cast materials and weights, as well as the number of heavy lifts.

Weigh it up

Remember the total lifting weight needs to include any boom and tackle, C-hooks and so on, all of which can add a significant amount to the load.



Building with pre-cast panels flagship Birmingham development

Bennetts Cranes provided heavy lifting for a flagship luxury apartment development in the centre of Birmingham, linked to the Park Regis Hotel, from 2019 to 2020. The construction company, Colmore Tang, built the apartments using pre-cast panels that were fully glazed. This is an efficient building method, but it does involve lifting heavy panels – much heavier than standard building materials – to the height of the building. We supplied two specific cranes for the job, both SL 450s, a model built by Spanish manufacturer Saez. The cranes could lift 24 tonnes and were freestanding. This enabled an efficient and smooth build process.

Operations and regulations

Health and safety is a priority for any business which involves the dangers of working at height. On top of the simple hire of the crane, you may want to consider additional extras to improve site safety. You will also need to think about additional aspects such as power requirements, and the maintenance of the crane.

Health and safety extras

At Bennetts our highest priority is the health and safety of our staff and the people on the sites we work on. Safety of tower cranes has consistently improved over the years, as crane models have modernised. However new technology is taking that further. At Bennetts we use BlokCam, a crane hook camera that sends a live feed through to the crane cab to improve visibility, reduce blind spots and avoid collisions. This isn't a standard addition as yet, but many construction companies are choosing to add cameras as an additional extra to ensure the highest safety standards for their sites. These cameras are particularly useful on busy urban sites, and sites with several cranes in operation – ensuring the best visibility for each crane driver.



H&S optional extras include hook cameras

BlokCam

Maintenance and repairs

Do make sure that wherever you are hiring your crane from, you have access to maintenance and repairs on the crane. Tower cranes are very specialised and require regular maintenance and checks to ensure they comply with health and safety best practice. A breakdown could be very costly and you need to ensure you have access to a quick repairs service to get up and running again.

MONEY SAVING TIP

Power requirements

Generally on sites, construction managers hire a generator for the power required by tower cranes, however cranes can run off mains power as well. If mains power is being installed at the beginning of the job, or the crane is positioned inside the building or in a lift shaft you may be able to connect to the mains power – this would save significant costs of generator hire.

How high do you need to go?

Providing more detailed site plans at the quoting stage can save significant costs. In this example, additional information about heights led to a much lower quote as well as associated base and power savings and less time winded off (the higher the crane the more often it will be winded off).

Often, jobs are only quoted on the basis of paperwork that simply includes overall heights and weights, and nothing else. As much information as possible, along with drawings, helps identify the best lifting solution.

A fully detailed site plan can time and again prove the key to reducing costs and providing a better lifting solution. An example is the buildings in figures 1 and 2. Here, the quote requested was for two cranes for two buildings of about 55 metres high. The cranes quoted for were a 60-metre and a 72-metre tower crane (Figure 1); the lower crane to clear the top of the building height given plus any scaffolding or workers on the roof, and the 72-metre crane specified to clear the jib of the lower crane.

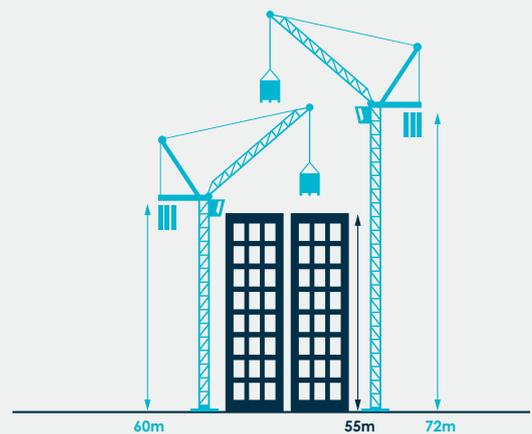


Figure 1

On inspecting the detailed drawings provided after the initial quote it was discovered that the buildings were of differing heights, and were sloped on one side. In fact, smaller cranes were able to do exactly the same job – one of 33 metres and one of 60 metres (Figure 2), significantly reducing the price.

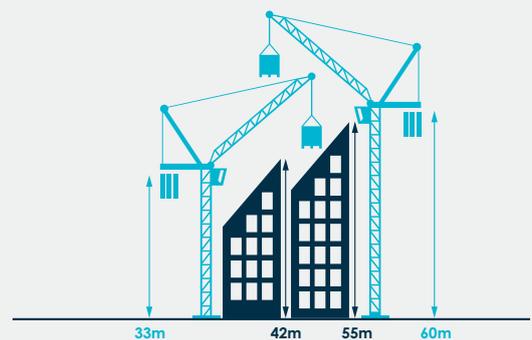


Figure 2

The height of a crane has a big impact on costs – and not only on the price of the hire itself. The taller the crane, the larger and stronger the base needs to be to withstand the forces, and this requires a lot more concrete and steel.

Taller cranes also need a larger power requirement and produce more carbon emissions. Therefore, reducing the height needed for your lifting requirements, even by a small amount, can make a difference to your overall costs.

Getting the best quote

It is well worth investing time in putting together a detailed brief for the quote to enable crane providers to offer the best possible solution at the best price.

The more information you can supply, the better we can understand the requirements and suggest the right model(s). Booking the wrong type of crane can cost you a great deal in the long run. Here are some hints and tips on what to submit when you require a quote to hire a crane:



Detailed building measurements

This means the heights of each building on site and design notes eg. sloping tops.



Detailed site plan drawings

Ensure your plans and drawings include where you intend to place your materials store as this has a huge impact on the crane positioning.



Be clear on dates and timescales

If you heavily underestimate the timescales of the project you will likely end up with crane hire costs over your estimates because they are provided for a weekly or monthly hire rate. Be realistic.



Crane operators

Will you require crane drivers or will you be supplying your own drivers and banksmen?



Stipulate usage

What are you going to be lifting? What is the weight of the materials? Typical building materials or large pre-cast pods? Just one or two large heavy lifts with the remaining being lighter? Describe as much as you can.



Number of lifts per day

How many lifts are going to be taking place each day? Estimate as near as possible.

Buy vs hire

Buying a tower crane can sometimes be cheaper than hiring one. If you have a very large and long project where the crane is needed for three years or more, it's worth speaking to a specialist crane company like Bennetts to work out the most cost-efficient option. At Bennetts we have packages available which include maintenance, repair, dismantle and even storage for your crane when not in use.



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UK tower crane specialists.

Extensive, modern fleet of luffing jib,
saddle jib and remote-controlled cranes.

We have a solution for any commercial or
residential construction site.

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