

From London to the world?

Hydraulic luffing jib tower cranes, like jellied eels, exorbitantly priced beer, and tutting at outsiders for standing on the wrong side of the escalator, are a distinctly London tradition. So why, Will North asks, are so many manufacturers entering the market and introducing more models?

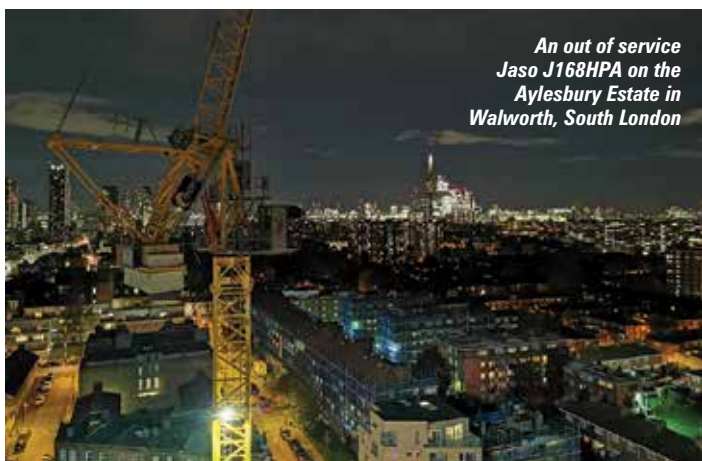
None of these traditions sprung up without reason. The eels were a cheap source of protein in the poverty of the Victorian East End, the beer prices are pushed up by sky high commercial rents and business rates, the escalator etiquette comes from being one of the world's first and busiest commuter cities. All are in some way rooted in this being the world's original global city, tucked into a corner of a small, densely populated, island.

So, what is it about the city that made the hydraulic luffer such a peculiarly London crane type? The simple answer is oversailing rights. In the UK, property rights extend up from the ground to the sky. If you want your crane to over sail a building or plot of land, you'll likely

need to pay the owner. During the working day the operator can ensure the crane stays within the job site's air space. But overnight, as it weathervanes, there is no such control. Instead, you must choose a crane with the smallest possible out of service radius, so that it cannot intrude on the neighbour's air space.

Tight fit

Hydraulic luffers offer significantly reduced radius. Norfolk based Falcon Cranes has a wide range of PA rope and HPA hydraulic luffers from Spain's Jaso. Nick Hurrell, associate technical director, says: "The J168HPA, with a 50 metre jib, parks up with a nine metres radius. The J180PA, a similar sized rope luffer, has 18 metres. So, you're saving 10 metres for a similar jib length."



An out of service Jaso J168HPA on the Aylesbury Estate in Walworth, South London



Setting up one of the first MRH 175s in Nottingham, using a rope luffer. Once the superstructure is in place, the jib can, if needed, be erected one section at a time.

Jib length is important on all luffers. But, as Edward Seager of Bennetts' explains, in the early days of rope luffers, this was primarily for reaching up, not out: "The normal thing that you use luffers for is for building super tall buildings. Oversailing limits are virtually unknown outside of the UK. If you've got a 100 metre high building and you need three cranes, rather than having one with a 110 metre tower height, one with 120, and one at 130, you can have all three with 60 metre towers with the rest coming from the elevated jib angle."



Hydraulic luffers like this Raimondi LRH 174 can work and park at very tight radii

Traditional luffers competed with saddle jib tower cranes and climbing derricks on skyscraper construction, not for maximum radius, but for their ability to reach high, without needing a very high tower or frequent climbing.

Seager continues: "It was very difficult to find small or medium sized luffers, they are used to build high rise buildings with quite heavy cores. So, the world market for luffers was typically 400 to 600 tonne/metre machines. They offer decent free standing heights, good climbing systems, and long jibs for the extra height, and usually lift 16 to 24 tonnes or more at short radii, few cared what they lifted further out, because they were rarely, if ever, used at 50 or 60 metres radius.

"Once people became aware of the oversailing issue, demand jumped for 60, 100, and 160 tonne/metre luffers. There is little or no market elsewhere in the world, except maybe a little in Australia. Why would a worldwide manufacturer like Liebherr or Terex make hydraulic luffers? It didn't make sense for them.

"When Franc Jost launched his hydraulic luffer range, he went from being nowhere to being the bestselling tower crane brand in the UK in six months. Hundreds were sold, because they were precisely aimed at the UK market."



While London is their main market, customers in Australia also appreciate luffers. Clarks Crane installs an LRH 174 in Melbourne

With the development of these smaller hydraulic luffers, which offered limited radius and tail swing, new opportunities opened up for tight sites. In the past couple of years Northampton based Radius has brought Potain's two new hydraulic luffers, the MRH 125 and

MRH 175 to the UK. It has two working on a site in Nottingham, which is constrained on one side by a neighbouring pub.

Operations director Teddy Holt said: "In Nottingham, it wasn't just the case that we were struggling with oversailing, we also needed the

luffers because the site was a bit of a 'postage stamp'. They wanted two hooks because of the nature of how tight the site was, without having to go to a massive crane, which would have slowed down the build. So, the MRH 175 with its reduced out of service radius, was



Kranlyft
Group

NEW MODEL UPDATES FROM THE MARKET LEADER

EU STAGE V ENGINES

- SINGLE FALL HOOK (1.5t)
- SEARCHER HOOK (2t)
- FLY-JIB (430kg & 820kg)
- BLADE & RUBBER PADS
- REAR VIEW CAMERA
- + MANY MORE FEATURES

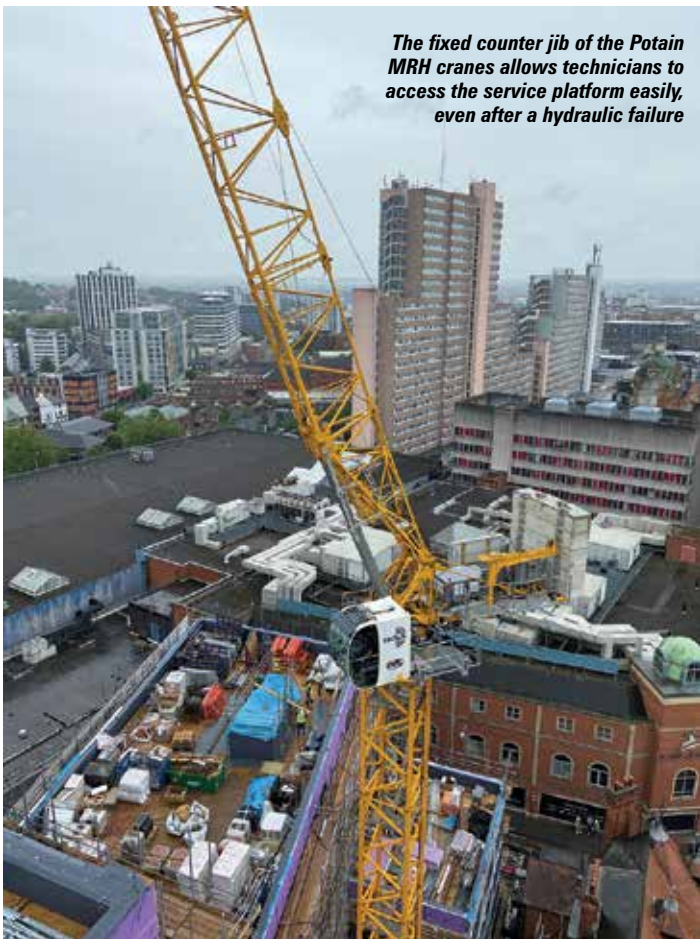
Max. capacity: 4.9t & 6.0t
 Max. lifting height 16.5m & 16.7m
 (with fly-jib: 20.2m & 22.0m)
 Pick & Carry capacity: 2000kg



Vertical
days

www.kranlyft.com | +44 117 982 6661 | info@kranlyft.co.uk

STANDS: 608-609



The fixed counter jib of the Potain MRH cranes allows technicians to access the service platform easily, even after a hydraulic failure

ideal, they could push the crane right up to the boundary next to the pub. And each crane could interface with the other without fouling it."

Laying down in medieval lanes

Many larger cities are built to an organised plan. Often, because of their history of war and revolution. In the US, a wave of Enlightenment era settlers built cities to a rational grid formation, on land they considered empty. In Paris, Haussmann designed wide boulevards, in part to prevent the erection of barricades after a series of uprisings from 1830 to 1848. And, a hundred years later, planners across mainland Europe and Japan had to rebuild after the devastation of wartime bombing.

London avoided this, the last revolution ended in 1660, and capital was last destroyed in the 1666 Great Fire. Wren's post-fire vision of a hub and spoke city was never implemented, and while some areas of the East End were devastated in the Blitz, most of the city core made it through World War II unscathed.

That has left some of London's most commercially important areas laid out on narrow lanes, unchanged since the Middle Ages. While that may be charming, it is a nightmare

when trying to find a spot for a long jibbed tower crane.

Falcon's Nick Hurrell explains: "With traditional rope luffers, you don't have to erect the whole jib in one go, but you do have to lift the first 25 to 30 metres at once, because that's where the pendants supporting the jib during erection are attached. With a hydraulic luffer you have more options. You can erect the jib section by section, from heel to jib tip."

That means that, rather than having to find perhaps 30 metres of unused ground close to the crane, you only need find 10 metres, or you can even pick and place the jib sections direct from the delivery truck. Whether you're working in Soho or the Square Mile, it's always going to be hard to find a clear 30 metre stretch of ground, without road closures.

Electricity city

London has long pioneered new approaches to energy use. In Brixton, Electric Avenue, built in the 1880s, was the first street market in the world to be lit purely by electric streetlamps. In the 2010s, pollution levels on nearby Brixton Hill would regularly breach annual limits within the first few days of the year. In response to the slow poisoning of Londoners, the Mayor, Sadiq Khan,

has begun rolling out ultra-low and zero emission zones across the city. As discussed in a previous issue (C&A Feb/March 2021, p35), regulations like this are beginning to push demand for fully electric cranes and construction equipment.

A rope luffer needs electric power both for hoisting and luffing. Bennetts' Seager says: "A traditional rope luffer has two and a half times the surge power on start up, compared to a saddle jib. That's because you have something like a 22kW hoist motor, but you also need a 30 or 40kW motor for luffing which has to cope with the load and the jib. As you pull the two levers to hoist and luff simultaneously, you get a nasty power spike."

Falcon managing director Andy Brown adds: "One benefit our customers like about the hydraulic luffers is the lower power requirements. You normally need 150 or 200kV of power for a traditional crane, which requires a generator, but that can drop to 100kV, or less, with hydraulic luffers."

Other solutions may be found to replace generator use with rope luffers. Hydraulic luffers are generally limited to 200 tonne/ metres, so it's hard to see the 750 tonne/metre rope luffers used on big skyscrapers, nuclear power stations, or bridge pylons, being replaced by hydraulic models anytime soon. Perhaps improvements in battery power and price may become practical solutions to cushion power spikes from luffing motors?

But on the lower end, hydraulic luffers have a clear head start to being truly emission free.

Residual value

The unique nature of the London tower crane market poses one serious challenge to fleet owners. Normally, if you buy a crane for a specific local niche application, and demand dries up locally, you can always find a buyer elsewhere in the world, where demand for that type of crane is buoyant. But if construction slows in London, where will you sell your hydraulic luffer? Not locally where everyone is facing the same downturn as you. All of those I spoke with for this article agreed that the only other market for these cranes is

on the other side of the world, in Australia. While fleet sales may be possible locally in the good times, when things slow down the residual value of your crane is significantly impaired.

New in town

There are some strong reasons to believe that hydraulic luffers may one day move beyond being a peculiar London taste, like those lumps of eel flesh wobbling in congealed aspic, to become a global phenomenon. The benefits clearly go well beyond the small out of service radius. They are easier to erect, with minimal space requirements, use less power and can be set up closer together, allowing contractors on big sites to plan their work around maybe a dozen hooks, without worrying about interference while working, or needing to make space for weather vaning.

A flurry of recent launches by manufacturers new to the world of hydraulic luffing suggests that at least a few are making a bet on a new global market for these cranes. And, for now, with construction performing well in London and the UK, any bet made on these cranes is unlikely to turn out too badly.

Manitowoc/Potain has made two recent forays into the hydraulic luffing market with the MRH 125 and MRH 175. The smaller crane lifts a maximum of eight tonnes, with a 50 metre jib and two tonnes at maximum radius. Its big sister lifts 10 tonnes, with a 55 metre jib, and has a 1.5 tonne tip capacity. One thing that Falcon's operations director Teddy Holt particularly likes about these cranes is the fixed counter jib, rather than the more usual dynamic counter jib. In normal operations, counter jib design may not make much difference but when something goes wrong, you see the difference, he says.

On other crane designs, the counter jib and jib are a single structure with the counterweight moving down and in as the jib elevates. Holt says: "I've previously seen a hydraulic failure cause the jib to automatically go all the way up. That stops the jib entering a dangerous position, unattended, but with the counter jib, and service platform, all the way down fixing a fault can be a problem. With a

static counter jib, the counterweight is not mobile so that cannot occur, so the technicians always have a horizontal platform from which to work on the pump set, even if the jib is up in the air."

Raimondi's first hydraulic luffer is the LRH174. This 10 tonne crane has a tip load of 2,225kg in 'ultra-lift' mode with two falls. The crane can also be utilised with a single fall, which allows for a maximum capacity of five tonnes and a tip load of 2,476kg.

It's these reeving options that Bennetts' Seager highlights. "It's one fall/two fall whereas many others are two fall/four fall. A one fall/two fall crane is automatically twice as fast. That's a major benefit and has more chance of retaining a residual value because it is going to be good for high rise work, where most of the rest of the world uses them."

Jaso's HPA hydraulic luffers join an existing range of 11 traditional rope luffers, from the 80 tonne/metre J80PA, through to the giant J780PA.64 with a maximum capacity of 64 tonnes. The new hydraulic cranes, the J118HPA and J168PA have a six tonne maximum capacity, with 45 and 50 metre jibs and 1.6 and 2.5 tonne jib tip capacities respectively.

Andy Brown points out one interesting option on these cranes of using a 1.2 metre tower on the J118HPA. "You do have rope luffers on 1.2 metre towers, but, for the UK market a narrow tower on a hydraulic is quite significant, in that you can get them comfortably into a lift shaft. They have really thought about keeping the tower sections as small as possible in order to fit them into places that other cranes might not be able to."

Falcon works closely with Jaso on its new cranes. The Spanish manufacturer has a proven track record building very large rope luffers. One thing Brown is hoping for right now - and no doubt talking to Jaso's designers about - is a larger hydraulic model. He says: "We would like a larger capacity with a longer jib to really take the market away from rope luffers at a 200 tonne/metre and below capacity range.

"We are also looking at ways to reduce that parked radius further, even though the 118 and a 168 have very good out of service radii,

Cosmo Cranes setting up a new Terex CTLH 192-12 in Australia



but we are pushing, not just Jaso but other manufacturers, to do even better than that. We are looking for a 118 size hydraulic luffer with a very, very small out of service radius. And we're hoping that we'll see something in the market by the end of the year with an under four metre out of service radius and 40 metre jib radius."

Terex's entrant to the market is the CTLH 192-12. With a maximum capacity of 12 tonnes, this 55 metre jib crane lifts more and reaches further than many of the other hydraulic luffers we've looked at. It still keeps to an in-service radius of three metres, and out of service radius of eight metres. Terex's Luca Grisenti, engineering director, points out the ease of erection of these cranes. He says: "The hydraulic ram is already in place when the cabin mast is erected, as well as the power pack, which is built into the cabin platform. It's enough to connect the two with hydraulic hoses once everything is in place and it's done." Select Plant

Hire, along with a variety of other customers, have already put a number of these cranes to work in the UK.

It's hard to go far in central London without seeing the red towers of a group of Wolff cranes. The company has also been building its business across the Atlantic, with its rope luffers used on prestige projects like the World Trade Center, where Federated Crane puts its first giant Wolff 700 B US to work.

It continues this transatlantic approach with its hydraulic luffer, the 160 tonne/metre class 166 B, which offers a 12 tonnes maximum capacity and 1.8 tonnes at maximum radius with 55 metre jib. Launched in Europe in 2012 the company has finally launched an American version pointing to a degree of confidence in the growing global appeal of these cranes.

Four Wolff 166 B hydraulic luffers have been working alongside a Wolff 180 B rope luffer on a residential development in Nine Elms, in South London. Telford Homes is building two



The launch of the Terex CTLH 192-12 near Fontanafredda

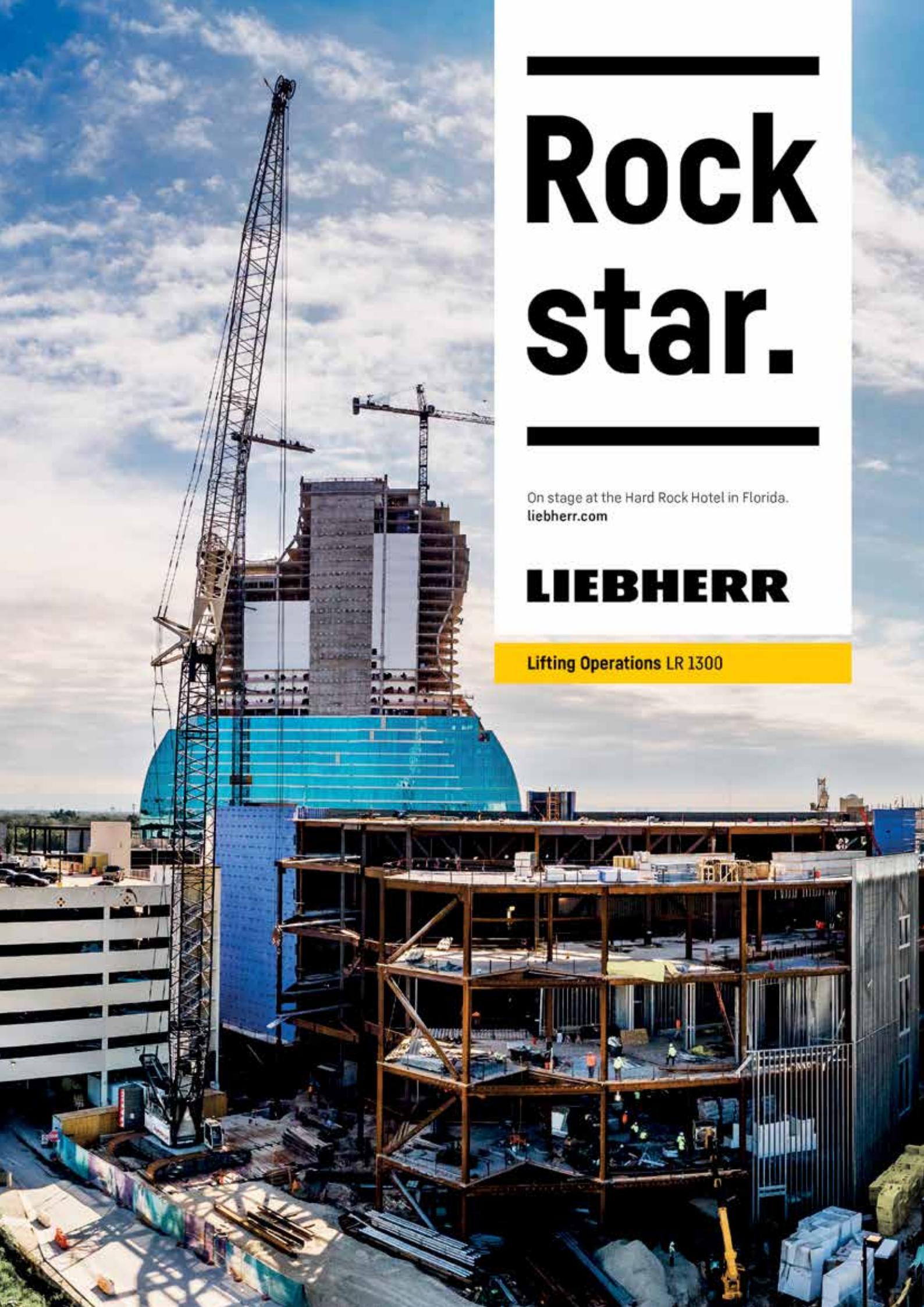


Rock star.

On stage at the Hard Rock Hotel in Florida.
liebherr.com

LIEBHERR

Lifting Operations LR 1300



phases with construction continuing as residents move into the first block. By using the larger rope luffer and two hydraulics, disruption to residents will be reduced as the hydraulics will be taken down by the larger tower, reducing the need for mobile cranes at the end of the project.

Saez has an established position in the hydraulic luffer market, with three models in its range, alongside five rope luffers. The hydraulic luffers range from the five tonne SLH 80 through the six tonne SLH 110 and 10 tonne SLH 205. The two smaller models have a 45 metre jibs, while the larger model has 55 metres. The cranes have tip

loads of 1.1, two and 2.6 tonnes respectively.

A recent job by Clark Cranes in Australia, shows the versatility of these cranes, with a mains powered SLH 80 installed on a gantry in a narrow Melbourne Street, allowing traffic to pass below. The crane is mounted on 1.2 metre tower sections and has an out of service radius of less than 10 metres.

Luffing up

The market for hydraulic luffers has clearly been gathering steam in recent years, with demand increasing for larger models and smaller out of service radii. The UK has already seen hydraulics being



The Wolff 166 B hydraulic luffers work alongside a Wolff 180 B, which will later be used to dismantle the smaller cranes



As well as having a tight out of service radius, the Jaso J118HPA can be mounted on narrow 1.2m tower sections, ideal for elevator shafts

used in smaller, less crowded, cities beyond the capital. As crane owners elsewhere try these cranes, we might see higher residual prices kicking off a virtuous cycle of uptake.

One major tower crane manufacturer notable for its absence in this article is Liebherr. Might we expect to see the German giant enter this market too soon? Who knows what the next bauma might bring?

Low radius, on a rope luffer

The Moritsch family has played a leading role in tower crane development, with Ferruccio Moritsch founding Comedil - now Terex - with a series of innovations. He passed away in 2011, but son Mariano launched a new business in 2015, under the family name, to continue this tradition of innovation.

The latest product from the company is the RTL 195-16 with sales director, Mauro Masetti, stating: "The only product not available in our range was a hydraulic luffer". The company was put off by concerns over hydraulic leaks and adding complexity to a crane. It considered alternatives, such as electric cylinders, but took the view that with demand increasing for larger luffers for precast work, a traditional approach was better. With an eye on the UK hydraulic luffer market he set to work. The resulting 16 tonne capacity crane retains traditional rope luffing but uses a patented locking mechanism to keep the boom in a narrow out of service radius, which allows the crane to hold its boom safely at an angle of 82 degrees.

The company is now working on introducing the concept on both larger and smaller models.



NEW MDT 489

HIGH CAPACITY LOW OPERATING COST

POTAIN®
by **Manitowoc**

- > The new MDT 489 offers the lowest operating cost for a high-capacity crane in its class
- > Designed for simple logistics and optimized transport in just 9 containers
- > Fastest erection for a crane in this category : 2 days maximum
- > Equipped with CCS control system and CraneSTAR Diag
- > All the advantages of a topless crane that fits perfectly into a multi-crane construction site
- > NEW powerful 110 HPL™ hoist winch

Can be equipped with the Potain Cab-IN internal mast operator lift



2 versions: **20 t and 25 t**
80 m jib - Up to 3.5 t at 80 m
Up to 85 m free standing height

Contact your Potain
dealer today

www.manitowoc.com

CraneSTAR
Diag

A big vision for narrow spaces

City Lifting has established a dominant position in the market for cranes in spaces too constricted even for hydraulic luffers. Managing director Trevor Jepson shared with Cranes & Access how he has worked with his manufacturing supplier, Artic Cranes, to develop cranes that fit into any nook or cranny.

It has been 10 years since the first Raptor articulated crane was delivered by Artic Crane, a smaller specialist manufacturer based in Sweden, which is open to exploring new ideas and technologies.

"The Raptor articulated jib cranes have been built with high specification and quality in mind. And they have been around for a long time, mainly in dockyards around the world. Tornborgs and Kroll manufactured these types in the past but have not done so for a very long time now," says Jepson.

City Lifting currently has around 30 Raptor articulated jib cranes, which have quite a few surprising advantages over conventional luffers. Unlike luffers, which have to weathervane to maintain stability and to prevent a collapse in extreme winds, articulated cranes can be left with the slew brake on as the structure and base are designed to

withstand storm force winds from any direction. This allows them to achieve an out of service radius of only four metres in complete safety. The short counter jib means tailswing is constant, allowing the crane to be sited close to the site boundary without the counter jib oversailing.

The Raptor operates like a trolley jib crane with the load moving in a horizontal plane as the working radius changes. As the jib tip is lower to achieve a given radius, a shorter rope length can be used, making the crane quicker and easier to operate. Powerful floodlights attached to the jib illuminate the working area while a camera is mounted next to the floodlights.

Jepson says that they are also better for operating near airports when there are oversailing issues, and that, for a given maximum radius, the total crane height can be up to 20 metres less than a regular luffing crane.

The first City Lifting Artic Raptor 85 at work in Harley Street, London. The site is only eight metres wide but the crane does not oversail either side thanks to an out of service radius of just 3.9m

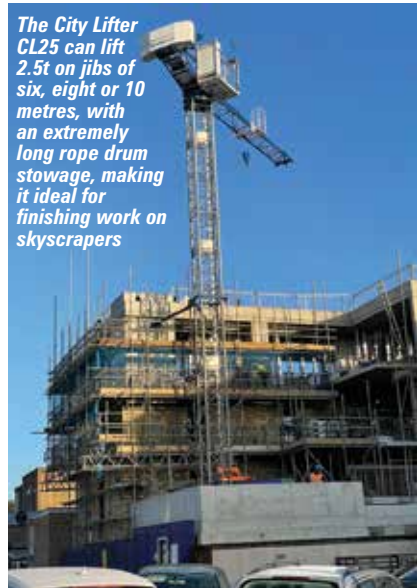


"Raptor cranes have always had a small hook block designed to avoid snagging on structures when hoisting/lowering. The latest Raptors have a one fall rope set up, which makes the hook block even smaller, while avoiding the risk of twisting. They are also equipped with regenerative systems generating energy when lowering the jib or hook as well as slew braking. This power can be used elsewhere on site or to power other crane motions that are under load. We are also exploring options with battery storage on the crane to greatly reduce the size of power supply and main cable, but still get the same performance from the crane," he says.

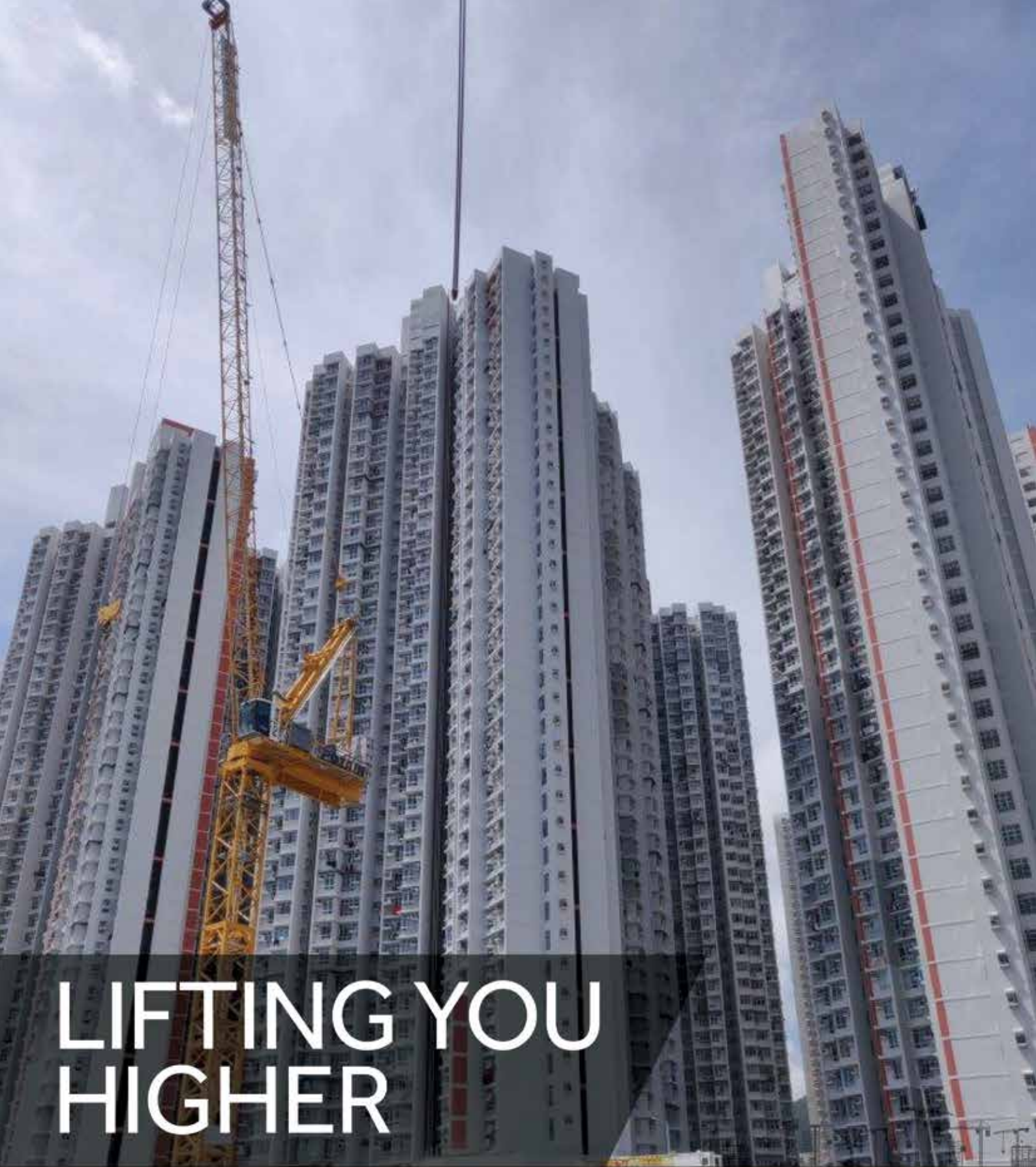
"To give an insight to the types of jobs that suit a Raptor crane, we successfully managed to site a crane in between the lines at Ilford railway station in East London. The main contractor was able to complete the whole station rebuild with only two railway possessions/road closures. This saved time and minimised the impact of the rebuild for all parties involved."

"Up until now all these cranes have been delivered to the UK, but we currently have one crane on hire in Stockholm city centre and the first Raptor 85 has been sold to a Swedish customer for a difficult railway job in Varberg."

The City Lifter CL25 can lift 2.5t on jibs of six, eight or 10 metres, with an extremely long rope drum stowage, making it ideal for finishing work on skyscrapers



Aside from the Raptor, Artic Crane also manufactures the City Lifter CL25, a mini saddle jib tower crane with a large hoist drum for working at great heights if required. It can be rigged with jib lengths of six, eight or 10 metres and has a maximum capacity of 2.5 tonnes. The crane is radio remote controlled and can be used to unload trucks standing in the road, placing materials directly onto loading platforms on different levels. They are said to be ideal for finishing larger projects after the main tower crane is dismantled, or just providing an extra hook to speed up a project by freeing up the main crane.



LIFTING YOU HIGHER

Named #1 tower crane supplier worldwide for 3 years consecutively
2,000 tower cranes available in stock mixed between used and brand new
All tower crane types available ranging from 1T to 80T
500 construction hoists available immediately
Shipping to any destination worldwide

www.nftcrane.com

nftuae@nftcrane.com

