



*A lower purchase price, and cheaper to run, maintain and deploy than an All Terrain are major benefits of the 'aluminium' crane*

# EVOLVING SLOWLY

When we looked at truck mounted cranes last year, we delved into the history of the sector and how, having created the taxi crane market, it eventually lost out to the All Terrain crane - at least in Europe. We also looked at the heavy duty units with swing out stabilisers with capacities up to 180 tonnes built by Italian manufacturers such as Marchetti, Locatelli, Idrogru and Ormig. In this issue we focus on truck mounted cranes on standard commercial chassis.

## GROWING MARKET SECTOR

The sector for truck mounted cranes on standard commercial chassis is relatively small but is definitely growing and spreading. It includes the 40 to 70 tonne models from Liebherr, Tadano, Marchetti and Locatelli, along with several Chinese manufacturers including Sany and Zoomlion as well as the 'aluminium' truck cranes from German manufacturers Böcker and Klaas, which although different, encroach on the same market.

The aluminium truck crane is becoming a slight misnomer in recent years, as only one of the two manufacturers in the sector - Klaas - continues to use aluminium booms on their truck mounts.

*The 50t Sany SPC500E*



*Zoomlion produces a wide range of 2-4 axle truck mounted cranes*



Böcker has moved towards lightweight, high tensile steel which, according to the company, allows a larger profile boom which can 'better accommodate the hydraulic and electrical hoses and wires internally, providing protection and a cleaner boom'. Aluminium is lighter but needs to be thicker making it more difficult on a boom to fit everything within.

With this in mind, the C&A feature in 2023 suggested a new, more appropriate title for this type of crane - the lightweight quick lifter - which doesn't seem to have gained much traction but better describes the quick set up of the two and three axle commercial chassis units primarily designed to lift light loads to heights and radii of much larger All Terrain cranes.

The secret of this type of truck crane lies in the lightweight boom system, substituting the structure required for high nominal and close radius capacities for long booms and good capacity at height and reach. This also allows



*Böcker has moved towards lightweight, high tensile steel for its booms rather than aluminium*

them to be mounted on smaller standard two and three axle chassis which give the crane several benefits.

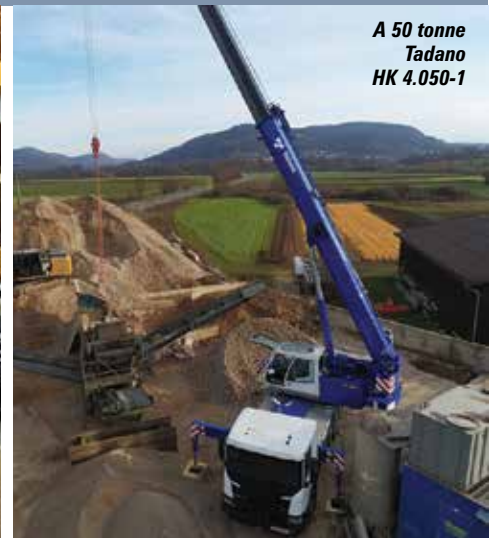
The main one is a lower price and by using a bog standard commercial chassis they are cheaper to run, maintain and deploy than All Terrains. While nominal capacity is sacrificed, as with mobile self-erecting tower cranes, they can perform well when lifting lighter loads which often make up a sizeable proportion of day to day lifting jobs. These features and benefits mean that there has been a healthy stream of customers primarily in Germany, Belgium, the UK and France, although sales are also on the up in North America, Australia and New Zealand.

We should also not forget the truck mounted cranes on commercial chassis such as the LTF range from Liebherr and Tadano's HK machines, both made in Germany and the 40 and 60 tonne Marchetti MTK's and the 40 and 50 tonne Locatelli TCL cranes from Italy. Also in this category is Sany's 50 tonne four axle SPC500E and Zoomlion's largest truck mounted crane appears to be 50 tonnes.

These cranes have booms similar to All Terrain or Rough Terrain cranes providing higher nominal and short radius capacities. Being heavier they are mounted on larger three and four axle commercial chassis. While the cost is roughly the same as an All Terrain, running costs are generally lower, important if the crane is racking up high road mileage each year. Also, most of these cranes, particularly the larger capacity - 50 tonnes and more - have swing out stabilisers. Only Tadano features the classic 'H' format beam



Marchetti's 60 tonne MTK 60



A 50 tonne  
Tadano  
HK 4.050-1

and jack outriggers of classic carrier mounted cranes. All the others utilise swing out 'X' type format outriggers.

Apart from the smaller Marchetti and Locatelli mentioned above the rest of the Italian built truck cranes are the heavy duty models we covered last year, with much higher capacities - up to about 180 tonnes - with short booms and wide outrigger spreads. They are typically mounted on four and five axle commercial truck chassis with swing out outriggers which are an integral part of the crane superstructure rather than part of the truck chassis which enable the higher capacities. Most are aimed at heavy recovery work, or lifting very heavy loads such as prefabricated modules, shipping containers and production machinery etc to relatively low heights and short radii.

**MORE TRUCK CRANES THAN THE REST COMBINED**

When talking global sales figures, truck cranes are still by far the most popular cranes in the world, mainly due to the many thousands of small, usually no more than 25 tonners, produced in China for the domestic or regional market. With the slowdown in the Chinese economy production has certainly fallen and dealer stocks remain high, but they still outsell anything else, apart perhaps from loader cranes. To put that into some perspective, Liebherr - the largest crane producer in Europe - for example produced just over 2,000 All Terrains in 2023, the majority with four axles or more.

**PRODUCT DEVELOPMENTS**

Both of the 'aluminium' truck mounted crane



An artists impression of Böcker's new facility

manufacturers have introduced new products over the past year or so. Böcker started on the second phase of its ongoing production facility expansion, the largest construction project in its history. The company began upgrading its Lippestrasse facility in Werne, north of Dortmund in late 2021 and it now includes new production areas with lean manufacturing processes, larger logistics zones and modern offices.

The new phase will include a service area, final inspection hall, a 3,800 square metre 'logistics centre' with an adjoining 1,700 square metre warehouse for storing long and bulky items. The new building includes a mezzanine in the warehouse plus three office floors above, along with an 840 square metre social area/canteen and entrance lobby. Completion is due by the end of March 2026.

**MORE SUSTAINABLE**

Böcker is also investing in a new, more sustainable energy and heat supply for its buildings, all of which have been or will be equipped with solar panels, which already

generate around 1,067 MWh of electricity a year, saving 531 tonnes of CO2 emissions. In addition, the solar panels are powering air heat pumps to heat the buildings. The company says the additions will significantly improve efficiency and help provide shorter delivery times, a factor that has been an issue in recent years.

**NEW LIFTPLANNER**

The company has also launched 'LiftPlanner' software allowing crane operations to be fully planned in advance, while simulating various configurations, helping verify and plan crane setup before leaving the yard.

The configuration options include various outrigger positions, boom length, elevation angle and slew position along with the weight of the load. Buildings or obstacles can easily be added in and displayed, as can the dimensions of the load and lifting gear dimensions and weight. With the planned parameters entered, LiftPlanner shows the crane's permissible working range and uses colour codes to warn of challenging or impossible configurations. It also calculates the



Locatelli TCL 40.35



Liebherr produced its first truck mounted crane in 1979



*The new LiftPlanner software*

expected ground pressure for each outrigger. Simulation results can be saved for each project and exported as a PDF which includes all planned parameters and can also be used for authorisation.

The LiftPlanner is integrated as an additional module within the BöckerConnect portal and is available for both the latest truck and trailer cranes using the same data, load charts and range diagrams as the crane's live control system.

## NEW CRANES

Böcker's latest cranes include the six tonne AK 42, the three tonne AK 48 and the compact two tonne AK 36. Features include a new boom profile, a more powerful hydraulic system for faster work speeds, a boom that elevates to a full 90 degrees offering a 'tower crane' like function and the ability to have a straight, in-line boom and jib configuration. The AK 42 features a three section main boom plus a three section telescopic jib with a tip height of 42 metres and a maximum radius of 35 metres. It can handle its maximum capacity at 8.2 metres or take 1.5 tonnes to a height of 24 metres with an 18 metre radius. The three tonne AK 48 is rated at 15.5 metres and has a hook height of 33 metres. The six tonne version is rated at 8.5 metres with a height of 18.5 metres.

The AK 36 is the most compact in the series with a 4.16 metre wheelbase. In standard form the crane has a two tonne nominal capacity, but this can be increased to four tonnes. Boom lengths of up to 36 metres with the option of 37.9 metres



*Böcker's latest cranes include the six tonne AK 42*

allow it to handle everyday lifting operations achieving a 22 metre radius at a height of 20 metres. 500kg can be lifted to a maximum of 29 metres and the 10.8 metre hydraulic luffing jib can handle 800kg when fully extended, even at a right angle to the boom in the tower crane function. All three cranes can be fitted with a work platform which on the AK 36 has a platform capacity of 300kg.

At the top end of the Böcker range is the 12 tonne AK 52. Mounted on a four axle chassis, the AK 52 features a four section main boom plus a three section telescopic luffing jib for a 52 metre tip height. Its optional three metre extension takes the maximum tip height to 55 metres. It has a maximum radius of 45 metres and can

take three tonnes to a 17 metre radius with a height of 31 metres. Other features include wireless colour remote control with automatic levelling, and variable positioning of the individual outrigger beams.

## ELECTRIC BÖCKER

Böcker launched its 230 volt battery electric truck crane - the four tonne capacity AK 37e - in 2022. Its previous electric powered cranes required a 400 volt power source, not always available when working on a residential job site, as is often the case with this type of crane.

In order to provide the power required Böcker adopted a similar technology to the latest mobile self-erecting tower cranes which employ a battery pack between the main input and the



*A Böcker AK52*



*Böcker's four tonne battery electric AK37e*



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# TRUCK MOUNTED CRANES



*The Klaas K2500 has a three section hydraulic folding jib for a 59 metre maximum tip height*



*The K2300 can take 4.5 tonnes on its fully extended boom to a height of 32 metres to a radius of 10 metres*

crane's drive line. Designed to be more energy efficient than its high voltage predecessor, when combined with the unit's lithium-ion battery pack it provides continuous operation with the charger topping up the batteries as rapidly as the crane draws power. The crane can also be operated from the diesel chassis via the usual Power Take Off system.

As with the regular AK37 the electric model features a 36 metre maximum tip height at which point it can lift 250kg on its four section boom topped by a three section hydraulic luffing jib/upper boom. The crane can also be converted into a truck mounted lift, thanks to its Easy-Lock platform attachment system and fully integrated work platform option which offers a working height of just over 30 metres, with a maximum outreach of 24 metres with 100kg in the platform or almost 22 metres with the maximum capacity of 250kg.

Variable outrigger levelling and set up with automatic monitoring and load chart selection is standard, as is the radio remote controller, which displays all operations on the full graphic display in just one operating level.

## KLAAS ALUMINIUM

The Klaas booms continue to be made entirely from high-strength aluminium manufactured as box sections using the friction stir welding process. Klaas says that this process provides a particularly high strength structure. Attachments are mainly milled from the solid material and then fastened with locking ring bolts. The boom sections have cut outs providing the typical Klaas boom pattern, while reducing wind-sail area and saving weight. The base boom is elevated by twin lift cylinders.

The latest cranes in its range include the three tonne K2500 - which replaces the K1100 - and the 4.5 tonne K2300. The K2500 features a three section hydraulic folding jib for a 59 metre maximum tip height. The maximum outrigger spread is seven metres, while the maximum

*Dutch rental company Scheepsma Logistiek recently took a six tonne K1003*



*The K2300*

radius is an impressive 45.5 metres at a height of 20 metres with a load of 500kg. It can also take three tonnes out to 17.5 metres at a height of 29.5 metres. The work platform attachment offers a maximum working height of 53 metres and an outreach of more than 42 metres with 200kg in the platform. When mounted on the usual three axle chassis the Gross Vehicle Weight is 26 tonnes.

The K2300 can take 4.5 tonnes on its fully extended boom to a height of 32 metres to a radius of 10 metres. Nine tonnes maximum lift capacity is possible on the bottom section of the main boom up to a maximum height of 11.8 metres and a maximum radius of seven metres. Maximum hook height is 48 metres, and it can take 1,000kg out to 34 metres at a height of 21 metres and 500kg out to 42.5 metres at a height of 10 metres.

Although launched a few years ago the six tonne K1003 is still a popular model. Last year Dutch rental company Scheepsma Logistiek took delivery of one mounted on a Volvo FMX 4x6 chassis. The crane features a four section 31 metre main boom and a four section 18.5 metre jib/upper boom for a maximum tip height of 54 metres. It can handle three tonnes at a radius of

11 metres, one tonne at 30 metres and 250kg at its maximum 44 metre radius. Features include a maximum outrigger spread of less than six metres and an electric hybrid drive.

## COMMERCIAL TRUCK MOUNTED CRANES

We have already mentioned the Liebherr LTF and Tadano HK truck mounted crane models, both of which were introduced several years ago and apart from a few minor updates and tweaks have remained much the same since. The LTF range features two cranes - a 45 and 60 tonner - with Tadano offering a 50 and 70 tonner. While not huge sellers they have a growing following as more companies recognise the lower fuel and maintenance costs especially when doing high annual mileages.

## TOP END COMPARISONS

A comparison of the three 60 and 70 tonne truck cranes in this category can be seen below. It clearly highlights the differences and similarities between the three. One noticeable fact is that the Tadano has substantially more counterweight than the others, most of which it cannot carry within the desirable - less than 10 tonne - axle loads. But it does offer a two axle trailer which it can tow behind so that it remains self-

## 60-70 tonne truck mounts comparison chart

Make	Model	Max capacity	Main boom	Max extension	Max tip ht	Outrigger footprint	Capacity full boom	Capacity @ max tip ht	Capacity @10m radius	Capacity max radius	Max cwt
Tadano	HK4.070-1	70t @2.5m	41m	15.8m	61m	5.72 x 6.94m	10.7t @8m	3.1t @18m	19.8t on 13.9m	1.8t @38m	15.2t
Liebherr	LTF 1060-4.1	60t @2.5m	40m	16m	59.8m	6.85 x 6.96m	10.4 @ 6m	3.1t @10m	15.8t on 13.6m	1.6t @36m	10.2t
Marchetti	MTK 60	60t @2.5m	40m	14.5m	58m	7.1 x 7.35m	8.1t@ 10m	3.9t @ 8.1m	16.6t on 17m	0.7t @36m	6.0t



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**Liebherr's 60 tonne LTF 1060-4.1**



**Anker Kran und Arbeitsbühnen's Tadano HK 4.050-1**



contained. The benefit can be seen in some of the capacities.

## LIEBHERR LTF

Liebherr mounted its first telescopic boom on a standard truck chassis in 1979. Currently the range includes the 45 tonne LTF 1045-4.1 and the 60 tonne LTF 1060-4.1. The 45 tonner features a 35 metre main boom and 9.5 metre extension for a 48 metre tip height and 42 metre maximum radius. The LTF 1060 features a four section 40 metre main boom and a 16 metre bi-fold swingaway extension, providing a maximum tip height of 56 metres and a maximum radius of 48 metres. When mounted on a four axle Volvo truck chassis, the LTF 1060-4.1 can travel with its full 10.2 tonnes of counterweight - nine tonnes on the front axle and 12 tonnes on the rear - while remaining under a total of 42 tonnes. The chassis can also include a sleeper cab and a number of other features which the company says makes it ideal for long distances.

## TADANO

Tadano's 40 tonne HK 4.050-1 has been more popular than expected, given that there is a 70 tonne alternative for not that much more money. Is it perhaps down to the fact that the 40 tonner is more self-contained than its big counterweight relative?

An example of one customer's experience and rationale comes from German crane and access rental company Anker Kran und Arbeitsbühnen, which recently acquired an HK 4.050-1 crane on a four axle DAF commercial chassis. The crane can travel on public roads with its maximum 8.5 tonnes of counterweight on board, while maintaining axle loads of less than 9.5 tonnes, and can achieve eight tonne axle loads with 4.5 tonnes on board. The crane features a 35.2 metre four section boom, topped by a 9.3 metre swingaway extension which takes the maximum tip height to almost 48 metres.

Operations manager Hartmut Ballerstädt said: "With its tridem rear axle including steered trailing axle and two driven axles, the HK 4.050-1 has an ingenious chassis concept that gives it unparalleled manoeuvrability and makes it suitable for use on even the tightest construction sites. The crane is a bread and butter machine which any trained crane operator can operate safely straight away."

## THE MARCHETTI ALTERNATIVE

When looking at this type of crane many buyers overlook the Italians, and yet they are pretty solid products. The 60 tonne Marchetti does not quite compare to the huskier Germans in terms of capacity, understandably given its smaller counterweight. With absolutely everything possible on board it has an all up weight of 41 tonnes - with almost 23.5 tonnes on the rear tandem - roughly 11.75 tonnes an axle. It can meet the 10 tonne criteria with two tonnes on board. However, in terms of reach and mid-range capacity it measures up fairly well all things considered.

The other Italian manufacturer, Locatelli, offers two models. The smaller is the three axle 35 tonne TCL 40.35 with a 32.1 metre main boom and an overall weight of 26 tonnes. When compared to the lightweight models from Klaas and Böcker, the question is do you want stronger close in and mid-range capacity or the reach and decent capacities

further out. Locatelli also offers the 50 tonne TCL 55.50 with a 37.2 metre main boom, which has a 90kph maximum road speed, Euro 6 engine and overall weight of just 32 tonnes.

## CHINESE OPTIONS

A couple of Chinese manufacturers have added similar commercially mounted truck cranes to their product lines, aimed squarely at the European market. Sany's 50 tonne SPC500E is typically mounted on a four axle Scania chassis which offers an 85kph maximum road speed. It features a four section 35 metre 'U' profile main boom and eight metre jib giving a 46 metre maximum tip height. Maximum counterweight is 7.8 tonnes. This crane is probably a result of the Palfinger Sany joint venture which ran from 2012 to 2021 which helped the company broaden its product line to compete in the more sophisticated Western European markets.

Zoomlion offers numerous smaller capacity models mounted on commercial chassis with capacities ranging from 12 to 50 tonnes. These start with the 12 tonne ZTC121V461 which offers a 39 metre maximum tip height up to the 25 tonne ZTC252E562-2 with a 53 metre tip height and the 25 tonne ZTF250V42, with a 44 metre maximum tip height. Biggest is the 50 tonne ZTC500A562 with a 45 metre maximum lift height. ■



**The TCL 55.50 is Locatelli's largest truck mounted crane**



**A 50 tonne Zoomlion truck mounted crane**



**Marchetti MTK 60**



**Sany's 50 tonne SPC500E is typically mounted on a four axle Scania chassis**

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