Less can be more...

There are many different ways of carrying out a particular lift depending on the weight, load, radius and working area. Traditionally crane rental companies supplied a crane based on its nominal capacity, the higher the capacity the longer its boom and the more it could lift. However in recent years this rough rule of thumb method has been turned on its head, as crane manufacturers developed new technology and deviated from the old ratios between nominal capacity, boom length and overall load chart performance. However a factor that has played a far more significant role in changing the rules is the arrival of a range of new crane types that simply do not conform to the old guidelines. They include spider cranes which can get in close and carry out lifts that might otherwise require a much larger crane, or mobile self-erecting tower cranes which can outlift cranes with nominal capacities 10 times greater and finally aluminium boomed truck mounted or trailer cranes, the subject of this article.

These new crane types require an open mind to spot their potential, and an ability to educate regular cranes users that there is a better… or different way. Not everyone is able to convince a regular customer that calls for a 50 tonner, to try a three tonne spider crane or a four tonne aluminium crane in its place. It is counter-intuitive.

If 10 years ago you had tried to sell a four tonne truck crane to most crane buyers - except in Germany where the abilities of small self-erecting tower crane were already appreciated - you would probably have been laughed at? The thought that a crane with such a small nominal capacity could be compared to All Terrain cranes of 40 tonnes or more was totally alien. However the aluminium crane is more about reach than nominal capacity with most being able to take 500kg to a radius of around 25 metres, while the larger models will take a tonne to more than 30 metres. This makes them ideal for jobs such as lifting and placing roof joists, air conditioning units, prefabricated chimney stacks etc… anything that is not too heavy but needs a good reach. The fact they are considerably lighter can also allow them to get closer to the work.

The aluminium crane has several other advantages though. Being mounted on a commercial chassis it has excellent road speeds and is significantly less costly to repair and maintain compared to an All Terrain crane. It is quick to set up, has no separate counterweight, and can go anywhere a regular truck can go, allowing it to carry out multiple lifts each day with a bit of good scheduling. But perhaps most importantly, it carries a significantly lower purchase price than a small All Terrain crane that would be used to perform similar lifts.

Most trailer cranes have a GVW of less than 3.5 tonnes

Aluminium cranes are ideal for lifting and placing roof joists

So why are they not more popular? The first aluminium truck crane was introduced 30 years ago by Böcker in Germany and this remains its main market. However over the past five years sales have grown in other countries, such as France and the UK. There are now two major aluminium crane producers - Böcker and Klaas - both based in Germany.

The first Böckers were mounted on a 7.5 tonne chassis - allowing the crane to be driven on a standard car licence - and could lift 650kg to a height of 25 metres. Developments over the past five years however have been dramatic, with the larger models now able to lift a maximum of three tonnes to a height of 35 metres, while the largest model has a 12 tonne capacity with a maximum tip height of more than 50 metres and the ability to take one tonne to 34 metres radius.

Aluminium booms are not solely mounted on trucks - they have always been available as trailer cranes. Weighing less than 3.5 tonnes they can be towed reasonably easily however with lengths of over seven metres they may need a vehicle weighing more than 3.5 tonnes in some countries. Another application is the inclined material lift or hoist

A Böcker furniture lift working in Gorinchem, the Netherlands

The K1003 RSX is the largest capacity Klaas truck crane available

The largest capacity aluminium crane - the Bocker AK52

for lifting large items of furniture or building materials through upper floor windows. And more recently the boom has been mounted on a tracked undercarriage.

The other major aluminium truck crane manufacturer is Klaas, founded in 1933 by Theodor Klaas it is a family run company based in Ascheberg just north of Dortmund and close to Böcker's base in Werne. It developed the inclined material lift in the late 1940s, but it wasn't until the 1970s and 1980s that son Ludger Klaas saw the benefits of aluminium, producing the first aluminium crane in 1993. Mounted on a 7.5 tonne truck it had a capacity of 500kg. This proved a turning point in the company's history and the basis for developing other equipment, including firefighting equipment, partnering with Iveco Magirus in 2000 and now producing three ranges of fire fighting and rescue machines. In 2005 it developed the new TS aluminium boom profile still used today, which reduces weight while increasing strength and stability.

Sales of its cranes have increased steadily over the years as their benefits became more widely appreciated in Germany and increasingly elsewhere. Klaas took 20 years to produce its 1,000th unit, six years for its 2,000th unit and just three years to supply its 3,000th in 2013. Production currently runs around six cranes a week. In the same year it started using the stir welding method for the aluminium booms - an innovative welding process that fuses the two elements of a boom section without adding additional material, resulting in zero distortion, increased strength and improved stability. There are apparently just four stir welding machines in the world, with Klaas operating two of them.

Over the years Klaas also expanded its product range, with the launch of the 25 metre Theo 25 truck mounted platforms on a 3.5 tonne chassis. In 2016 the company launched a new range of four aluminium cranes - three with telescopic jibs. It also added the K850 RS, with a maximum five tonnes capacity and a hook height of nearly 37 metres. There is also the option of an electric three phase motor for the larger machines.

Export markets

Germany is still the largest market - particularly for the smallest cranes on 7.5 tonne trucks. However over the past seven years or so, the UK has become one of its best export markets - coming after many years struggling to sell its trailer cranes. A key factor in the UK becoming its best export market was the appointment of Kranlyft UK as distributor in early 2013. As the European master distributor for Maeda spider cranes Kranlyft had extensive experience of selling a new concept, and new brands, having been responsible for launching Kato in Europe in the 1970s, and later introducing Spierings self-erecting mobile tower cranes.

Prior to Kranlyft's appointment, Böcker was represented by several companies that were simply not geared to selling and supporting the product. The appointment of an experienced crane distributor with parts and service support made all the difference. It also coincided with a period where small All Terrain cranes had become economically unviable. Why spend upwards of £350,000 on a piece of equipment that can achieve day rates of about £300 including the driver?

Using a commercial chassis, the cranes were quick on the road, reliable, had cheaper replacement parts and were substantially less expensive than an All Terrain. Under Kranlyft sales of Böcker cranes really took off, however the situation changed dramatically last year when the manufacturer decided to open a 'company store', setting up Böcker UK - in Dudley, West Midlands. The operation is headed by Alan Peck, who had been responsible for Böcker sales at Kranlyft. The decision apparently came as a surprise to Kranlyft but using the experience it had developed in the aluminium crane market, it did the obvious and became the distributor for Klaas cranes, not only for the UK

A 3.5 metre wide hydraulically extending platform for Böcker cranes

and Ireland but also Sweden and Denmark.

Products

Klaas has a six model range on chassis ranging from 7.5 to over 26 tonnes, with capacities from 1.5 to six tonnes. Böcker's six models are mounted on similar chassis with maximum capacities from three tonnes up to the 12 tonne AK 52 - the largest aluminium crane currently available. Mounted on a three axle 26 tonne truck with rear axle steering for extra manoeuvrability, the AK 52 features a four section main boom plus three section luffing jib giving a 52 metre maximum tip height with the option of 55 metres.

Basic lift capacity in single line is three tonnes to 17 metres, with a single sheave hook block it takes

Aluminium cranes can be fitted with a work platform

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A Böcker RK36/2400 tracked crane

How the largest Böcker and Klaas cranes compare?

	Böcker AK 52	Klaas K1003 RSX
Max capacity single fall	3 tonnes	3 tonnes
Max capacity double fall	6 tonnes	6 tonnes
Max capacity four fall	12 tonnes	-
Max boom length	52m/55m option	54m
Jib length	6.28 / 10.28 / 14.28m	6.61/15.4m
3t @ radius to height	3t @17m to 31m	3t @ 11m to 32m
2t @ radius to height	2t @ 22m to 33m	2t @ 18.5m to 27.5m
1t @ radius to height	1t @ 34m to 30m	1t @ 30m to 30m
0.5t @ radius to height	500kg at 40m to 25m	500kg @ 40m to 23.5m
Slew	360 degree continuous	360 degree continuous

A Böcker spider crane working at Leicester City Football Club

four tonnes to 13 metres and six tonnes to 10 metres. Its maximum lift of 12 tonnes at five metres is available when reeved with four parts of line. The crane has a maximum radius of 45 metres and can take 1,000kg to a 34 metre radius at a height of 30 metres.

Another advantage of the aluminium crane is that it can easily be converted into an aerial work platform. Böcker uses the Easy-Lock system which allows the 3.5 metre wide, hydraulically extending platform to be added quickly giving a maximum working height of 51 metres with a 100kg unrestricted platform capacity or a maximum capacity of 600kg. Thanks to its compact design and minimal tail swing, the AK 52 is well suited to working in tight spaces.

The largest Klaas machine is the updated K1000 RSX which has significantly better performance in the form of the current K1003 RSX. It may on paper have slightly less performance to the AK 52 but is apparently substantially less expensive to purchase.

There are also several differences between the Klaas and Böcker machines. All Klaas cranes have 360 degree continuous slew and feature a superstructure engine. The advantages are similar to those All Terrain manufacturers using two engines rather than opting for the carrier engine to power the superstructure as well.

Klaas says that by using two engines fuel consumption is better and noise is reduced. It argues that single carrier engines fitted with a

A Klaas K750 RS on a DAF chassis.

A Klaas K21-30-TSR trailer crane.

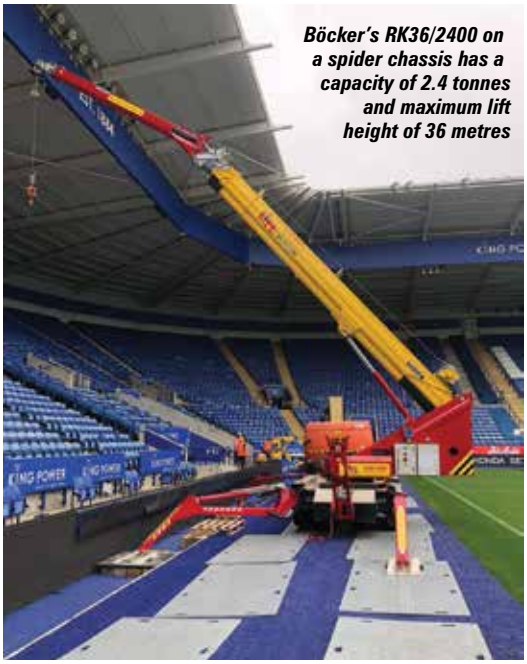
Diesel Particulate Filter can have problems when the engine is ticking over for extended periods. Klaas also claims superior smoothness of operation. We have already mentioned the stir welding method for the aluminium boom but Klaas also employs dual slew motors, twin lift cylinders and twin luffing cylinders on the jib. Main boom telescope uses cables rather than multiple or multi-stage cylinders, saving weight.

Andy Crane of Kranlyft said: "Customers appreciate the rigidity of the Klaas booms, and can choose their preferred carrier from MAN, Mercedes, DAF, Scania or Volvo. For the 7.5 tonne K750 the most popular chassis is the Mitsubishi Fuso which is a big crane on a small chassis, with either a two or four tonne capacity, 36.4 metre hook height and capable of lifting 500kg to 21 metre radius and a height of 26.2 metres and can take 250kg to 30.5 metres radius."

Both Klaas and Böcker mount cranes on trailers with overall weights of less than 3.5 tonnes. Another German manufacturer - Paus - also produces a trailer model - the Sky Worker PTK 31 - which can lift 1,600kg and has a maximum lift height of 31 metres.

Klaas offers four trailer crane models, with capacities from 800kg to 3,000kg and hook heights from 24 to 33 metres. Böcker which launched the first trailer crane in 1997 also has a four model range from 1.5 to 2.4 tonnes capacity and 27 to 36 metres lift height. However the company went one step further at Bauma in 2016, when it mounted its largest model on a tracked spider chassis to create the RK36/2400 with a capacity of 2.4 tonnes and maximum lift height of 36 metres. With twin drive speeds of 2.4 and 4.5kph, the crane can pick & carry up to 250kg. With a total weight of 4,500kg it needs a larger truck to move it around. It can also be supplied with an electric motor for reduced noise, emissions and indoor applications. A fully integrated work platform can also be added.

Böcker AK52



Böcker's RK36/2400 on a spider chassis has a capacity of 2.4 tonnes and maximum lift height of 36 metres