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# Little and large



The tracked or wheeled JCB Teleskid

As the popularity of both super compact, heavy weight and 360 degree telehandlers continues to grow, manufacturers are devising new models with the ability to cover an increasing variety of applications.

Since the start of the year, there have been several exciting new model launches widening the scope of work over and above the 'normal' everyday construction site telehandler. We take a closer look at the largest 360 degree telehandler currently available - the 46 metre Magni RTH 6.46 - and the new JCB Teleskid which claims to be the first skid steer/compact track loader with a telescopic boom to see how they compare against other equipment in their respective sectors.

## Telehandler v Rough Terrain crane

Italian manufacturer Magni Telehandlers has come a long way since setting up the company in late 2012 and unveiling its first machines at Bauma 2013. From the beginning the company made a conscious decision to concentrate on the more niche product sectors

with two main product lines - 360 degree and ultra heavy-duty telehandlers. The company also produces other speciality machines - variations on the material handling theme - including the five tonne capacity boat-carrying Boat Eagle and the Rickilift which is used to help cultivate and harvest dates from palm trees up to heights of 18 metres.

The variety and ingenuity of these products make sense when you realise that company founder, managing director and chief designer is engineer Riccardo Magni - originally the man behind the Manitou 360 degree telehandlers. Magni is also expanding his engineering prowess working in partnership with Dingli in China designing a range of innovative boom lifts specifically for the European market.

Magni went to the top of the 360 degree telehandler market early on with the launch of the 35 metre, five tonne RTH 5.35S in late 2014. Early last year it added the world's highest reaching telehandler - the 39 metre RTH 5.39S - that many



The 46 metre Magni RTH 6.46



The five tonne capacity boat-carrying Magni Boat Eagle

The Magni Rickilift used to help cultivate and harvest dates from palm trees up to heights of 18 metres



thought would or should be the maximum height for a telehandler. However at Conexpo in March it quietly unveiled an even higher model, in the form of the record breaking 46 metre RTH 6.46 SH.

But are these massive machines really telehandlers as originally conceived? Probably not. Very large 360 degree telehandlers - over 30 metres - tend to be used as a replacement for and operated like a crane when on site carrying out individual lifts or setting up centrally and making use of its large reach and slew to distribute and place materials.



*Are the larger 360 degree telehandlers a crane, access platform or telehandler?*

These large 360 degree telehandlers are not generally used for their pick & carry abilities but with a capacity of up to six tonnes the RTH 6.46 SH can also carry out these tasks. However its sheer size, weight and cost means that there are more cost-effective ways of carry out that sort of work. Most regular fixed frame telehandlers offer capacities of up to six tonnes, with most being in the four to five tonne bracket. When more capacity is needed Magni - and an increasing number of other companies - has its range of ultra heavy-duty versions, the largest being the 45 tonne HTH 45.14.

The 46 metre telehandler will probably spend most of its time on duties previously carried out by 25 tonne truck cranes or more normally these days by a small capacity All Terrain, telescopic crawler or Rough Terrain crane. Unlike most modern All Terrains the Magni can pick & carry its six tonnes capacity. But why use a very large 360 degree telehandler when there are lots of cranes that are specifically designed to lift suspended loads?

Rightly or wrongly, large 360 degree telehandlers are increasingly taking over some of the lighter work duties from these smaller mobile cranes.

They have carried out the work much to the indignation of the crane rental fraternity which maintains that while a large telehandler can do certain lifting tasks it is not necessarily the best equipment for the job. They are also often put to work without going through the same planning disciplines - Contract lift or straight Crane Hire - increasingly required of cranes.

**Versatility**

Telehandlers are one of the most popular and most versatile of all the items of construction equipment currently available, particularly with the wide range of attachments now offered. Given their growth in capacity and reach they are muscling in on other equipment in addition to mobile and self-erecting tower cranes, such as high-reach self-propelled or mid-range truck mounted aerial work platforms primarily because they are increasingly easy to source, relatively cheap to rent and able to carry out a wide range of tasks - unloading, pick and carrying, lifting and as a work platform. They are often rented for longer durations and thus available daily on site, saving on manpower, supervision and associated 'red-tape' costs over a crane. Having a site telehandler carry out suspended lifting duties has upset many crane rental companies who often lose out on certain routine building site activities such as installing



*The tracked and wheeled versions of the JCB Teleskid*

roof trusses, placing lightweight steelwork and chimney stacks on housebuilding projects and even lifting air conditioning units etc.

There are also many specific applications such as working on or near an airport or near a railway line where cranes have to jump through so many hoops to even get on site, while a telehandler is simply 'waved through'. However the telehandler's versatility and 'jack of all trades' ability also makes them rife for unsafe use which over the

years has resulted in a significant number of serious accidents and fatalities particularly when carrying suspended loads.

The two most significant hazards associated with telehandler operation are lateral stability and visibility. As a load on the forks of a telehandler is lifted, the centre of gravity of the whole machine rises. This does not really matter if the machine is working on level ground, is equipped with chassis levelling or in the case of 360 degree models

*Are telehandlers taking the place of cranes on site?*



*Carrying a suspended load is particularly dangerous for a telehandler*



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with outriggers. However if the machine travels or manages to lift on a cross slope, the centre of gravity will move towards the tipping line as the load is raised increasing the risk of overturning. Lateral stability is particularly an issue when lifting and travelling with suspended loads as the load may swing, adding to the potential instability.

Restricted visibility when the boom is raised or when large loads are carried, plus poor workforce/public segregation have been identified as a major cause of

accidents involving pedestrians and telehandlers particularly because of the telehandler's manoeuvrability around site. Because of this, telehandlers are often fitted with additional aids - sirens, mirrors, cameras as well as more hi-tech solutions - to improve visibility and the operator's awareness of people in the vicinity. Manufacturers have also done a great deal to improve visibility on new models. In last month's issue of Cranes & Access (Vol 19 issue 3) we looked at the growth of proximity warning systems to alert site pedestrians



A Genie GTH-4018



Compact telehandlers are very versatile on site

who may stray too close to equipment particularly telehandlers. One system - SiteZone - uses Radio Frequency Identification - RFID - to alert the operator whenever anyone is in the immediate vicinity. The fact that the telehandler constantly moves around both the site and adjacent public roads is part of the problem. Because of these issues a Good Practice Guide in the Safe Use of Telehandlers in Construction has been produced in the UK by the Strategic Forum for Construction which addresses planning for safe use, roles and responsibilities, inspection, maintenance and thorough examination and training.

The advice in this document is straightforward, comprehensive and easy to adopt.

**Lift types**

Where the telehandler and crane differ is in the process of carrying out a lift. When renting a crane in the UK for example clients have two options - the CPA straight Crane Hire where the crane and operator are supplied by the rental company but the client is responsible for planning the lift, selecting the correct crane, arranging for slinging and signalling as well as supervising the lift until finished. They must also provide a competent and appropriately



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The 35 tonne capacity Grove RT540E Rough Terrain crane

trained Appointed Person to oversee the process. As soon as the hired crane leaves the public highway, it is completely the client's responsibility as well as being responsible for creating a risk assessment and method statement and complying with BS7121 and LOLER. Basically, complete responsibility is taken by the customer including all loss or damage to the crane during the rental period.

The second is the contract lift where the client appoints a crane rental company to carry out the lift and take on all the responsibilities such as planning, selecting a suitable crane, providing an Appointed Person, then supervising the lift, including arranging slinging and signalling. With the contract lift the customer still hires a crane but beyond this the crane rental company takes on the majority of responsibilities including covering any loss or damage to the crane and associated equipment. Crane companies even have an onus placed on them by the UK Health & Safety Executive to determine if a customer has the ability to meet all of the requirements to safely plan and carry out a lift under the Crane Hire terms.

Given the additional responsibilities of the regular crane hire lift it would seem to make

sense to use a contract lift even if there are higher upfront costs. However, according to our latest survey of the 'Top 30 crane rental companies' just one third of all crane lifts carried out in the UK are contract lifts - a figure that has been surprisingly constant.

#### But what about the telehandler?

As with all lifting equipment, the safe operation of telehandlers depends on a number of factors including its correct selection and maintenance, the planning and supervising and the competence of the operator. It is essential that site managers ensure that all telehandler operations are planned, supervised and carried out safely by competent people. But are lifts planned in the same detail as a crane? They should be as the same fundamental rules apply, but in reality telehandlers are often treated differently. Like it or not, there are significant differences in using a crane and a telehandler on site in most European countries.

All too often telehandler lifts are almost spur of the moment decisions - "can you put those trusses on that roof for us mate!" - and its success is down to the competence and experience of the operator. If the telehandler is already on site it is called on to do the lift.

Training for the telehandler operator also tends to be less rigorous than for a crane operator and while there may be a slinger and signaller on site there is not the same pressure to have a designated Appointed Person or someone to supervise the basic lift. Is it safe or right that a large 360 degree telehandlers such as the 49 metre RTH 6.49 can carry out a lift without all the planning and checks that a crane has to adhere to?

#### 360 degree benefits

The benefits of a large 360 degree telehandler are however hard to overlook. Compared to a crane it is quick and easy to set-up and operate, they tend to have a decent pick & carry capability which only a Rough Terrain or telescopic crawler crane can compete with, although when comparing lifting on its stabilisers the AT crane has substantial advantages. As we have also mentioned,



Kato's 35 tonne CR-350Ri





The performance of the Kato, Grove and Magni are surprisingly well matched

operator training is less demanding for a telehandler, which many will see as an advantage, although it should be remembered that basic telehandler operator training does not include the lifting of suspended loads, the lifting of persons or the use of other attachments! If such tasks are to be carried out the employer must ensure that the operator is suitably trained and assessed as competent in these additional areas. In addition, basic operator training for fixed frame machines does not cover 360 degree machines.

**How the Magni RTH 6.46 compares**

Comparing the new Magni with the Grove RT and Kato City-type crane it is surprising how similar the overall performance figures are. True, the Magni has a maximum capacity of six tonnes compared to the 35 tonnes of the other two, but it has the best capacity at full height of 2,500kg, it is a more

compact machine but has about the same outrigger spread. It is slightly heavier at 30 tonnes but all are around the same weight.

So should you use a large 360 degree telehandler rather than a small crane? As the chart below confirms many performance characteristics are very similar between the three machines. But if the telehandler is to be on site all the time, there would have to be the work to justify its high rental cost or purchase price? Rough Terrain and telescopic crawler cranes tend to be based on site for longer periods to carry out intensive lifting duties and only removed when completed. A smaller capacity/reach telehandler may be one of the first machines onto a new site and may be the last taken off. This certainly would not be the case with the larger 360 degree models which would really have to earn their keep lifting enough loads to make it worthwhile.

**How does the 46 metre telehandler stack up against a crane?**

	Magni RTH 6.46	Grove RT540E	Magni RTH 5.30S	Kato CR-350Ri
Max capacity	6,000kg	35,000kg	4,999kg	35,000kg
Max boom length	43.5m	31m (33.6m tip)	27.5m	32.5m
Max lift height	45.64m	47m with ext.	29.9m	47.3m with jib
Max reach x capacity	33.5m x 200kg 33.0m x 300kg	33m x 600kg	25.85m	34.5m
Cap at max height	2,500kg	2,400kg	2,000kg	1,350kg
OA Length	8.85m	11.94m	7.78m	9.77m
OA Width	2.54m	2.61m	2.50m	2.62m
OA Height	3.22m	3.23m	3.09m	3.56
Ground clearance	390mm	368mm	320mm	397mm
Total weight	30 tonnes	28.78 tonnes	21.83 tonnes	28 tonnes
Max outrigger spread	6,223 x 6,750	6,047 x 6095 max	5,310 x 5,500	6,800 x 6,836mm
Drive x steer	4 x 4	4 x 4	4 x 4	4 x 4
Max speed		40 km/h	40 km/h	49 km/h
Boom	7 section	4 section 31m		6 section
Pick & Carry	6 tonnes	12.3 tonnes	5 tonnes	9.5 tonnes

**Ridiculous to the sublime?**

At the other end of the scale, JCB launched its new Teleskid earlier this year, a cross between a tracked or wheeled type skid steer loader and a telehandler. Available in North America with either tracks or wheels and only wheels in Europe, it has a lift height of four metres, a forward reach of 2.4 metres and can dig below ground level to a depth of one metre. So although an unusual concept, what other machines offer similar performance?

Telehandler specialist Manitou has also launched its smallest telehandler model, the MT 420 H with super compact dimensions with an overall height of 1.9 metres, an overall width of just 1.49 metres and an overall length of 3.6 metres. The MT 420 is the smallest in the Manitou MT range and is perhaps the modern incarnation of the company's 'Buggyscopic', a machine that Manitou deleted from its line-up seven years ago.

Comparing the two machines it is clear that the JCB does what it says on the tin - a skidsteer with telescopic boom. This does give it additional appeal for some applications, however the MT 420 appears to have it beaten in almost every single category. Not only is the MT 420 more compact and lighter but it has a greater lift capacity, lift height and reach, and

has a faster travel speed of 25kph compared to the 20 kph of the wheeled Teleskid. Manitou says that the design target with the MT 420 was to reduce preventative maintenance which it claims is now less than €1 an hour. Maintenance intervals have also been extended with hydraulic oil changes every 2,000 hours, with costs lessened by reducing the volumes - i.e. cooling fluid is now 8.6 litres, engine oil 10.2 litres and hydraulic oil 55 litres. The design has also used many of the main components of the MT 625 keeping costs down and improving maintenance commonality.

Another option is the Giant 4548 HD compact telehandler from Tobroco Machines of Oisterwijk, the Netherlands. The company has a range of several compact machines including mini skid steer loaders, compact loaders, telescopic wheeled loaders and telehandlers. With good capacity, lift height and forward reach - the best here - it is also significantly the lightest at under three tonnes. The company says that it is also working on a new model with a six metre lift height and 2.5 tonne capacity.

**So why use the Teleskid?**

According to JCB the Teleskid can do the work of four machines - a telescopic handler, masted forklift, compact loader and a skid steer. True its telescopic boom will allow operators to load trucks without a ramp, reach over kerbing and



JCB tracked teleskid



Manitou MT 420 H



Manitou MT 420 H

**The JCB Teleskid takes on the Manitou MT 420 and Giant 4548**

	JCB Teleskid 3TS-8W	JCB Teleskid 3TS-8T	Manitou MT420 H	Tobroco Giant 4548 Tendo HD
Maximum capacity	1,676kg	2,000kg	2,490kg	2,870kg with counterweight
Lift height	3.7m	3.8m	4.28m	4.8m
Forward reach	2.25m	2.25m	2.65m	3.2m
Capacity @ full reach	590kg	726kg	900kg	585kg - 710kg with counterweight
O/A length	3.8m	3.8m	3.63m	3.85m
Wheels/Tracks	Wheels	Tracks	Wheels	Wheels
O/A height	2.1m	2.1m	1.9m	1.97m
O/A width	1.8m	2.0m	1.49m	1.57m
Weight	4,472kg	5,722kg	4,260kg	2,950kg
Travel speed	20kph	12.6kph	25kph	25kph
Drive/steer	4x4	tracked	4x4x4	4x4x4
Engine	JCB EcoMax	JCB EcoMax	Kubota 3A	Kubota



Tobroco 4548 HD

dig below ground, all with clear visibility of the attachment, however both the Manitou and Giant can carry out similar duties. In fact it is only the dig depth of 910mm that differentiates the JCB, but then again is that a feature that many would find useful?

The Teleskid certainly has the most powerful engine but is also the heaviest. The wheeled Teleskid

may have its followers but both the Manitou and Giant have as good if not better performance.

The tracked Teleskid however is more unusual but at 5.7 tonnes is a hefty beast especially compared with the Giant 4548 HD. It is though good to see another innovative addition at this end of the market and it will invariably prove a popular machine.



Tobroco 4548 HD

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