







# AS SAFE AS IT CAN BE?

Most people will agree that using an aerial work platform is one of the safest ways to work at height. And yet there are still far too many incidents - many of them fatal - involving platforms, and in particular boom lifts.



Looking back through Vertikal.net over the past year or so reveals a steady stream of news stories highlighting such incidents, most of which fall into three main categories: overturns, electrocution and being thrown from the platform, often due to a collision either from a passing vehicle or a falling load such as a tree limb or steel beam. For more details on incident and platform types, IPAF's Global Safety Report 2023 presents a comprehensive overview. We also know that neither Vertikal.net nor IPAF's statistics come close to presenting the full extent of the issue, it is almost certain that the majority of such incidents actually go unreported outside the immediate region.

What is worrying is that the type of incidents and causes are much the same as they were 10 years ago with little sign of change. The top five also include falls from the platform and entrapment. In an effort to reduce incidents, most companies have invested in more training, while IPAF and other associations have instigated numerous safety campaigns. Last year IPAF launched its 'High Voltage!' campaign aimed at reducing the number of electrocution incidents which are particularly prevalent in the United States, due to the greater number of overhead power lines in the country running alongside



buildings, trees and communication lines, rather than a lack of training.

As with all incidents - whether they result in a near miss or a fatality - they are rarely the fault of the equipment, 99 times out of 100 it is down to operator error. Training has of course made a huge difference to the overall safety of the industry with reported deaths declining slowly year on year, in spite of the growing numbers of aerial lifts in use. However, as has been said

many times before, training is not competency, and even very competent operators have been known to take a short cut, or ignore procedures and protocols - it is, after all, human nature.

## **OVERTURNS REDUCING**

For many years outrigger mats and pads - inadequately sized or total lack of - were one of the main causes of incidents, particularly with cranes but also with truck and trailer mounted





platforms - machines relying on outriggers for stability. Thankfully the number of incidents has fallen substantially as more users appreciate the need to spread the load.

But at the same time the number of larger selfpropelled boom lifts in use has ballooned, along with the number of incidents of overturning, as users struggle to understand the high point loadings these machines apply and the impact that has on differing ground conditions. Contractors are though becoming aware of the risks of moving 100ft plus boom lifts around, or even just working with them was well as when loading and unloading.

# **BRILLIANT IDEAS**

One company that has been spreading the message widely in the past couple of years is UK based Brilliant Ideas with its Alimats product line which includes standard trackway allowing aerial lifts and other heavy equipment to travel across soft ground to a place of work or new site set up. According to Brilliant Ideas, one of the main challenges when developing a solution for a given project is obtaining the datasheet for the equipment in order to find information such as wheelbase, track width and contact area of

the wheel on the ground, as well as maximum load applied. Such information is critical to understand the impact on the ground and design an appropriate matting system. See case study below.

## **FALLS FROM PLATFORM**

Falls from a platform are the main cause of reported incidents and fatalities when working at height. Over the years these figures have been reduced by increasing awareness through training and media campaigns of the need to wear a harnesses with a short lanyard attached.

Over the past year or so several systems have arrived on the market designed to ensure that harnesses are attached to harness points including Haulotte's 'Fastn' and Nationwide Platforms' 'Harness On' systems.

The latter system hit the news late last year when major UK contractor Willmott Dixon mandated its use on all boom lifts used on its sites. The 'Harness On' system employs a link between the platform anchor point and the lanyard which senses when a lanyard is attached - or not. It is wired into the platform's controls so that anyone planning to operate the platform must first attach their lanyard to the device thus

enabling the controls.

The company said: "Willmott Dixon has teamed up with Nationwide Platforms, which has developed a system called 'Harness On', which works by requiring anyone operating a '3b' boom lift to wear a harness with its lanyard connected to a specific intelligent anchor point within the platform's basket."

"'Harness On' is now mandatory, meaning that only 3b boom type lifts with the new system installed can operate on a Willmott Dixon project. This is to reduce to zero the chance that an operator using a platform could fall to the ground because they have not connected their harness correctly."

The fact that only a small percent of machines were equipped with the system at the time, seems to have escaped the contractor. There is also no mention of alternative systems, such as the more comprehensive 'Fastn' system from Haulotte, which also detects a stricken operator in the platform, and which does not need to be wired into the control box. And according to Haulotte it can be installed on any platform with a foot pedal in around 10 minutes.

# **CASE STUDY**

# LOAD SPREAD SOLUTION FOR FK GROUP

FK Group - working for main contractor Sir Robert McAlpine - needed a solution to spread the ground loadings of a 185ft JLG 1850SJ Ultra telescopic boom lift during finishing works. The boom had to work on recently constructed hard landscaping adjacent to a façade with twin elevations.

The 1850SJ - which weighs in at 27.4 tonnes - has a working height of 58.5 metres, and horizontal reach of 24.38 metres. The overall width and wheelbase change significantly from being stowed for transport when it is 2.49 metres wide - the outside edge of the tyres - to 5.04 metres when working, at the same time the wheelbase goes from 5.52 metres down to 4.59 metres. To allow the axles to swing out

into the working position a frictionless layer of two plastic mats were placed above the Alimat modules, a popular solution for this size and type of machine.

"With all mobile work platforms there are two load cases that need considering - tracking and operating. The latter imposes loads similar to mobile crane outriggers, but through the wheels. Both conditions were considered in our proposal and approved for use," says Brilliant Ideas.

When the machine arrived on site, it was driven between two immovable bollards (Load Case 1 - Tracking), then onto the platform with the plastic layers where the axles were extended/retracted (Load Case 2). The machine was then driven to its final position (Load Case 3 - Tracking/



Operating) where an additional layer of mats was used, which simulates a standard outrigger mat arrangement.

Ethafoam was also used below the mats to ensure they could work as intended by distributing the load evenly and protect the newly laid hardstanding.





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# A MAJOR SHIFT IN BUYING ATTITUDES



Perhaps the biggest change to the self-propelled boom lift market in recent years is how quickly rental companies in the well-established markets of Europe and North America have been prepared to drop their normal conservative buying attitudes and purchase large numbers of booms from new Chinese based manufacturers. Some rental companies have always been adventurous with small equipment purchases, such as micro scissor lifts, but when it comes to high ticket items like a boom lifts, telehandlers or big truck mounts they have always stuck with the big, largely American/European brands that are familiar to their customers, have known levels of reliability and predictable resale values. Until now...

Veterans at Skyjack, UpRight or even Haulotte will tell you just how difficult it is, or was, to break into the boom lift market - even when you are a market leading scissor lift supplier. Changing attitudes might be one thing, but certainly timing has also been a significant factor, as supply chains and pandemic shutdowns restricted volumes, while Chinese financiers were awash with cash and eager to invest in up and coming manufacturers and rental companies, to try and provide some diversification from the property market.

That allowed Chinese manufacturers to take risks that most publicly quoted (non-tech) western companies would never take, such as investing in large state of the art facilities, huge levels of research and development and perhaps most importantly large sales inventories. In a small way it bears parallels to the early days of JLG, Genie and perhaps Haulotte. As a result, when lead times from western manufacturers were long, the new arrivals have units in stock and are ready to deliver with an attractive price.

While taking the opportunity presented they also invested massively, developing all aspects of their business including new products, further manufacturing advances and capacity, overseas sales teams, product support and marketing - progressing from me-too products to something altogether more innovative.

The growth has also been stimulated by an explosion of demand in China's home market as minimum safety levels have been raised and rental entrepreneurs seized the moment and financiers' cash to build substantial businesses. In 10 years, the local market has grown from nothing to one of the largest in the world.

More than ever, boom lifts are becoming a global product, with major manufacturing facilities now found in China, India, Europe and North America. If there is one thing that the Chinese know how to do and do well, it is manufacturing on a large scale.

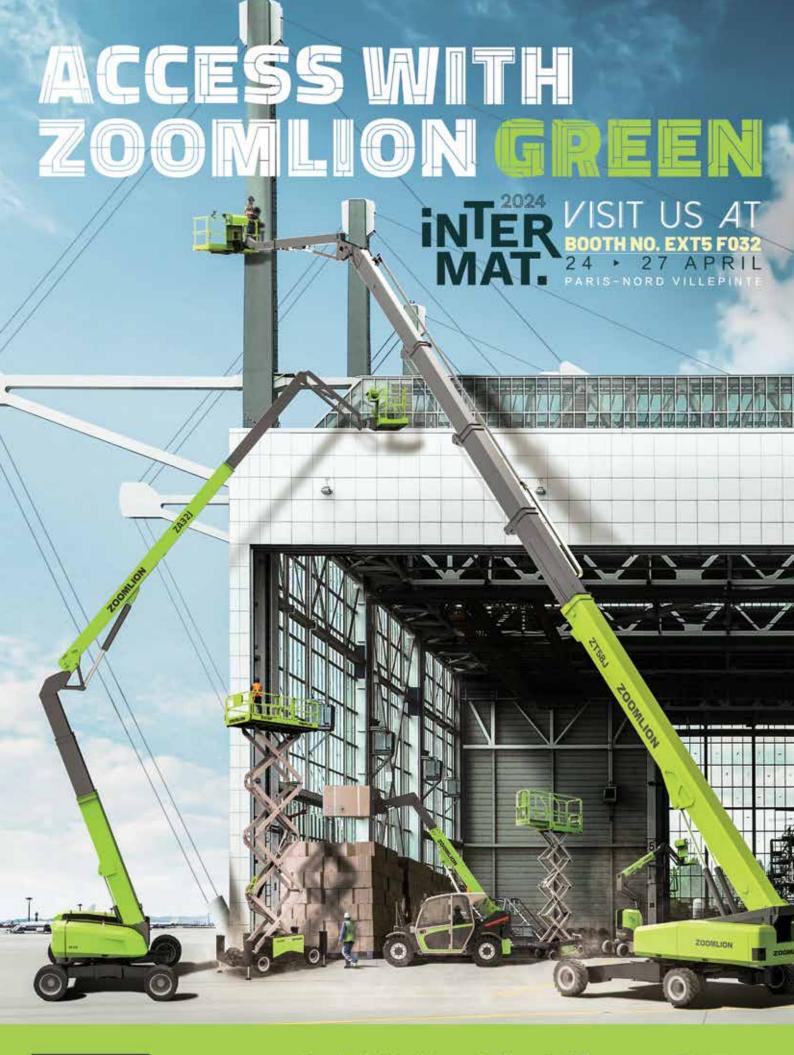
# THE NEW MEGA BOOMS

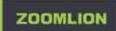
One interesting recent development is the

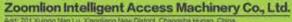


expansion at the top end of the boom lift market - over 150ft - with the number of suppliers more than doubling, while the number of products in this rarified sector has probably tripled. Zoomlion and XCMG are the new entrants, not only joining Genie and JLG but also introducing ever higher models as the two crane and construction equipment manufacturers do battle. Snorkel also dipped its toe in the market in 2020 with its 210ft platform height 2100SJ, however while units are out on site trials in the USA, the manufacturer does not quite seem to have fully committed itself to the market yet.

Last May we saw the first pictures of XCMG's 224ft, 70 metre working height telescopic boom lift and within a few months of the announcement, the first batch of export XGS70K lifts were





















shipped to the Europe with the first arriving in the UK. XCMG says that a further 24 units are scheduled for Europe by mid-year - with the majority already sold. Two further units have also been shipped to India.

The XGS70K has a five section telescopic boom, topped by a three section jib with 131 degrees of articulation, providing a working height of just under 70 metres and a maximum outreach of 32.5 metres with 230kg in the platform. The maximum platform capacity is 460kg at an outreach of 27 metres, while 300kg is possible at just under 30 metres. The machine has an overall retracted width of just under 2.5 metres, extending to 5.5 metres when working on site. Total weight is 35.4 tonnes and the overall stowed height is 3.1 metres, with a stowed transport length of 16 metres.

Zoomlion unveiled its 215ft ZT68J at the end of 2020. Most if not all the first production units were delivered to customers in China, where demand for these big machines has driven their development. This year the first two units have

arrived in North America where it becomes the ZT215J. The first unit was delivered to Groupe ELG in Quebec, Canada, while the second was shipped to Mexico where Segamac, the Mexican subsidiary of German international rental company Mateco is the Zoomlion access distributor, as is ELG in Canada.

While slightly smaller than XCMG's XGS70K it also has a five section boom but a two rather than a three section articulating jib giving 31 metres of outreach with the unrestricted 300kg platform capacity. Maximum platform capacity is 454kg available at an outreach of just over 25 metres. Overall stowed width is 2.5 metres, which increases to around 5.5 metres in work mode. Total weight is slightly more however at just under 36 tonnes.

The only other boom lift over 200ft is the 210ft Snorkel 2100SJ launched at Conexpo in 2020 - at the time a world record. The 2100SJ also features a five section boom, with a simplified telescope system, topped by a 9.1 metre two section telescopic articulated jib for a maximum



working height of 65.8 metres and up to 33.5 metres of outreach. The unrestricted platform capacity is 300kg, while the maximum capacity of 454kg can be achieved at almost 30 metres and a working height of 60.5 metres when the telescopic jib is retracted. Maximum drive height is 64 metres.

The major issue with such large booms is transporting them to and from site. 70 metre truck mounted lifts are relatively commonplace these days and dimensionally not so different to these Mega booms while having a potentially lighter load bearing footprint. Before the 200ft plus booms arrived, Genie and JLG had the market to themselves for several years. However, there is no indication that either will be rushing to introduce any larger boom lift models any time soon. The main issue is the amount of investment and sheer engineering time required for such large booms relative to the potential volumes and returns.

# Until XCMG and Zoomlion's 200ft plus booms arrived, JLG and Genie had the market to themselves



Over the past year, the majority of the new booms from Haulotte, JCB, Sunward, Sinoboom, Genie and LGMG have been articulated models in the highly popular 45/46ft mark - 15 metres working height - a market that originated in the 1980s with the Genie 45, although it was not the first to develop an articulated boom lift.

# **PULSEO BOOM**

Last month Haulotte announced a new 46ft all-electric articulated Rough Terrain boom lift - the HA16 E - along with the higher specification HA16 E Pro with the public unveiling at last month's ARA Show. The new boom lift has the same performance as the diesel model in terms of operating speeds and gradeability thanks to its direct AC wheel motor drive, but is equally at home working indoors or out. The new boom





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is available with Haulotte's Range Extender generator pack, effectively converting it to a hybrid machine. The unit shares features and systems with Haulotte's now well proven Pulseo Rough Terrain scissor lifts.

The design is similar to the diesel with dual riser, two section telescopic boom and articulating jib and a working height of 16 metres, although outreach is 400mm less at 7.9 metres, but it has more up & over reach at 7.88 metres and a higher maximum/unrestricted platform capacity of 300kg. Overall width is a compact 2.3 metres, but it is almost a tonne heavier than the diesel at 7,120kg.

Charging solutions include plugging into a normal AC mains socket or three phase outlet for faster charging, or the diesel Range Extender, which according to Haulotte, can be installed in around five minutes as long as you have a forklift handy, can recharge the battery pack from zero to 80 percent in around three hours.

The standard HA16 E has four wheel drive, two wheel steer and fixed axles while the Pro version also has four wheel steering and an oscillating front axle along with a higher standard specification.

# SUNWARD'S ELECTRIC BOOM

Sunward has become more active in the aerial lift market over the past 12 months, mostly with scissor lifts, but has now added a 46ft electric articulated Rough Terrain boom lift - the SWA16JE. The new model features a classic dual sigma type riser, two section telescopic boom and articulated jib with maximum working height of 15.8 metres, and an outreach of around eight metres at an up & over height of 7.5 metres with a 230kg unrestricted platform capacity.

The standard specification includes four wheel drive, 360 degree continuous slew, 160 degrees

platform rotation and oscillating axle. The overall width is narrower than some at 1.75 metres, but that is reflected in the 230kg platform capacity and overall weight of 7,800kg. CE versions are said to be ready for delivery with bulk shipments on their way. The company also has a 60ft articulated boom and some mid-size telescopics which are not yet available in Europe.

# SINOBOOM'S 46FT TELESCOPIC

Another new 46ft boom, this time a telescopic, is Sinoboom's TB14J Plus in Europe or TB460J Plus in North America. In many respects it is a classic 46ft telescopic boom lift with articulating jib, offering a maximum working height of 16.1 metres, and a maximum platform capacity of 454kg. Maximum outreach is 10.9 metres with the unrestricted capacity of 250kg, while 10 metres is possible with 340kg in the platform and 9.1 metres with the 450kg. Platform rotation is 160 degrees.

The new lift is unusual for a 46ft telescopic in that it features a three rather than two section boom resulting in a shorter stowed length of 7.99 metres with jib out or 5.88 metres with jib tucked under, although that raises the overall stowed height from 2.49 to 2.8 metres. Being shorter allows two units to fit into a 40ft shipping container or on a standard flatbed truck. Overall width is 2.3 metres, slew is 360 degrees continuous and overall weight 7,300kg. Power comes from a relatively small Kubota Stage V/ Tier 4 diesel, while a Yanmar is available for other markets.

The TB14J Plus features four wheel drive and oscillating axle providing a 40 percent gradeability. A seven inch display screen shows real time machine status, performance and usage data, along with rapid fault diagnosis. The first units are expected to ship before the end of this year.

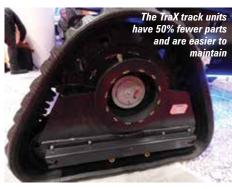
# GENIE UPDATES 'XTRA CAPACITY' AND TRAX BOOMS

Genie has added two 'Xtra Capacity' booms - the 45ft S-45 XC and the 65ft S-65 XC - and launched the next generation of its TraX four track system for boom lifts. The TraX system has been redesigned and claims to simplify maintenance, with 50 percent fewer parts, more of which are unique to Genie, while maintaining the current performance features. The system is available as a factory installed option on four boom lifts - the regular 62ft Z-62/40 and 80ft S-80 J telescopic - along with the two 'Xtra Capacity' telescopic booms - the 45ft S-45 XC and 65ft S-65 XC. Genie plans to offer retrofit 'upgrade' kits for all new S-65 XC and Z-62/40 wheeled boom lift models.

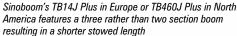
The four independent tracks avoid the break over issue of normal full length tracks on uneven ground, while maintaining the oscillating axles of wheeled machines, adding the ability to swivel up and down by 22 degrees, helping the tracks tackle obstacles on the most extreme terrain. As with the existing product, the tracks can be swapped for tyres for flexibility in use, or resale, and as already mentioned the new TraX units will also fit on new wheeled booms shipped from this year onwards.

Shortly before the announcement of the upgraded TraX system Irish rental company Balloo Hire took delivery of two of the existing 80ft Genie S-80 J TraX models, the first to be delivered in the UK and Ireland.











# DINGLI UPGRADES D SERIES BOOMS

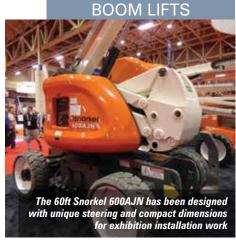
Dingli has upgraded its D Series of articulated and telescopic boom lifts to provide unrestricted platform capacities of 320kg. Introduced last October, the D Series uses a modular build concept with four working heights of 16, 18, 20 and 22 metres and a choice of articulated or telescopic lift mechanisms. Each model is available with three power options Electric, Hybrid - Electric with a small generator - and pure Diesel resulting in a total of 24 variations.



All models feature four wheel drive as standard with oscillating front axles, 360 degree continuous slew, 180 degree platform rotation, secondary guarding against entrapment or crushing, articulated jibs and end mounted platforms. They also retain their drive at full height performance. Dingli has not yet confirmed all of the design changes required to achieve the additional capacity, but the specification sheets suggest a little more weight has been added and possibly a little less outreach.

# 'PIGEON-TOED' SNORKEL

This year's ARA Show had several interesting boom launches including an all-new 60ft articulating model from Snorkel designed for major exhibition set up and teardowns - the 600AJN. The two standout features are the short stubby over centre two element riser which almost eliminates any riser tail swing even when fully lowered. The other is a new five mode steering system, the four wheels can all be steered independently allowing the machine to 'spin' around its central axis with wheels on the same axle turning in opposite directions, to offer what



it officially calls pivot steer - or 'pigeon-toed' steering - add these features to a 2.1 metre overall width and it's easy to see why it will appeal for work where space is limited. The lift has all manner of options including a special 'exhibition platform' complete with storage trays and a platform mounted carrier for large display screens and graphic displays. Maximum platform capacity is 272kg.













# **BOOM LIFTS**





A lightweight G-20 hydrogen gas cylinder

# **NIFTYLIFT HYDROGEN ELECTRIC**

While most manufacturers have been busy on all-electric boom lifts, Niftylift has been working in co-operation with UK rental company Speedy Hire to develop hydrogen power for its electric boom lifts, starting with the 50ft HR17 H2. So far there are around 40 to 50 units working in the Speedy fleet.

The new model is a version of Niftylift's standard all-electric, two wheel drive boom lift with direct electric wheel motor drive and AGM maintenance free batteries, with a lithium-ion battery option. The Hydrogen models are equipped with a hydrogen fuel cell, fed by a standard G20 hydrogen gas cylinder which produces electricity to top up the battery pack when necessary, and can be set to provide a constant top up, or only when the state of charge drops to a pre-set level, thus preserving the hydrogen.

As straight electric machines, the HR17s are said to be capable of four to five days work between recharges in typical applications. However, for sites where no electric power is available, a single hydrogen cylinder should enable the machine to run for more than 12 working days of typical usage, before requiring a cylinder change. The system can also alert the operator and/or owners when the gas level in the cylinder falls below a pre-set point, so they are prepared.

The cylinder/fuel cell concept looks like an ideal solution for mid-sized boom lifts as the machines

are clean, quiet and powerful as well as being low maintenance and capable of running for two or three weeks or more on a single small cylinder, which can be quickly and easily changed. It seems more practical than the hydrogen/internal combustion solution, although that might prove more suitable for larger equipment?

## **NEW JCB BOOMS**

Last May, JCB launched electric and hybrid versions of its 45ft AJ48D articulated diesel boom lift sold in North America, and confirmed that all JCB aerial lifts will now be built at the company's facilities in India.

The A45E and A45EH are basically one and the same machine, with different power options. The maximum working height is almost 16 metres with a maximum outreach of 7.47 metres at an up & over height of 7.48 metres and an unrestricted platform capacity of 300kg. Features include secondary guarding, non-marking tyres and JCB's LiveLink real-time remote monitoring system.

The 48 Volt A45E is powered by eight, six Volt batteries, located on either side of the chassis for a low centre of gravity, powering four AC wheel drive motors. The A45EH uses a three cylinder Kohler diesel with generator to top up or recharge the batteries so you might call it a range extender, its 40 litre tank is said to have enough fuel for a week of typical use.

# FIRST JCB TELESCOPIC BOOM

JCB also unveiled its first telescopic boom - the 65ft T65D - at the ARA Show last month which is available in North America and other non-European markets. The T65D has a Tier4 JCB diesel with all service points on one side for easy access. There are no plans at this stage for StageV or electric versions. The unit has a three section boom, topped by a 1.53 metre jib with 135 degrees of articulation. Outreach is 17.23 metres with 300kg while the maximum platform capacity of 454kg is available at up to 14.5 metres. The overall width is 2.4 metres, with an overall length of just over 10 metres while total weight is 12,655kg.

### **LGMG'S NEW 45FT**

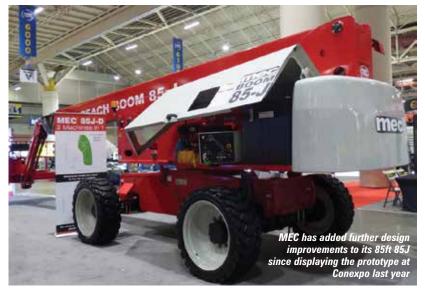
When LGMG opened its new facility in Dordrecht last April it also unveiled a new 45ft dual capacity articulated boom lift, the AR14J-H/ AR45J-H. The machine offers a maximum working height of 15.9 metres and an outreach of just over eight metres with the unrestricted platform capacity of 300kg, at an up & over height of 7.3 metres. The 450kg maximum capacity is available at 6.5 metres outreach. The unit has standard four wheel steer, with one touch wheel alignment, four wheel drive with oscillating axle, 45 percent gradeability and can work safely on a five degree slope. Power comes from a Kubota diesel, while the overall weight is 7,400kg.







# **BOOM LIFTS**





# **MEC'S NEW BOOMS**

Around the same time last year, US aerial lift manufacturer MEC unveiled a prototype 85ft boom lift the 85-J - its largest model to date. Using the feedback it received it made a number of further developments. The boom features two modes of operation - as a telescopic boom or an articulated - with a simple switch on the lower controls converting from one format to the other. Electric and hybrid versions are scheduled to arrive later in the year.

The unit uses a heavy-duty over-centre single element riser, three section boom and jib with up to 135 degrees of articulation. The unrestricted platform capacity is 272kg with a maximum platform capacity of 408kg.

In telescopic mode the riser acts as a rising pivot point automatically working proportionally with the main boom on a single joystick action, in a similar format to those seen on the Genie S-85 J or similar to the S-80 XC and JLG 860SJ. Maximum outreach is 21.6 metres with 272kg or 19.5 metres with 408kg. In articulated mode the operator operates the riser independently of the boom elevation function, the maximum up & over height is 6.4 metres, with an outreach of 17.6 metres with 272kg and just under 16 metres with 408kg.

The new 85-J also has two oscillating axles providing up to seven degrees of automatic frame levelling. When the two axles are parallel - such as side-on to a ramp - the machine can travel

while elevated. Four wheel three mode steering is standard. Overall weight is just over 17 tonnes and width is a hefty 2.6 metres.

# **AN ARTICULATED 40FT**

The other new MEC boom lift is the 40ft 40J based on the highly successful 34J compact telescopic, developed in co-operation with United Rentals and launched in 2020. A single section riser and 135 degree articulating jib have been added to gain the 1.8 metres or so of extra reach. Outreach is around nine metres at an up & over height of 4.3 metres with the 272kg unrestricted platform capacity. Overall stowed length is just over six metres, width is 2.44 metres and it weighs in at 5,170kg. Four wheel drive and oscillating axle are standard. ■

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