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All electric

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scissors

One of the most significant product development trends for scissor lifts in the past year or two has been that of compact electric Rough Terrain units. This was largely pioneered by MEC as early as 2008 when it launched the 3072 and 3772 models, however they were not the first battery powered Rough Terrain scissor lifts by any stretch of the imagination.

UpRight offered electric drive versions of its full size LX models, with diesel/bi-energy recharging units as early as the late 1990s. However the trend for compact electric RTs kicked off by MEC has recently gathered steam, with all of the major manufacturers now signing up to the concept. Both Genie and Skyjack launched bi-energy/hybrid versions of electric models at the recent ARA and Conexpo shows in the USA.

It is now possible to buy such machines from around half a dozen manufacturers, with more on the horizon. Most units are around 68 or 69 inches wide - 1.7 or 1.75 metres - and around three metres long. The detailed specifications do range quite widely, so for this study we have limited the models we looked at to units less than 3.1 metres overall length and less than 1.8 metres wide. To properly qualify, machines need to have at least

200mm of ground clearance, more than 25 percent gradeability and ideally are four wheel drive. Snorkel, Imer, Airo and Dingli all have electric powered Rough Terrain scissor lifts that might be described as compact, but are in fact larger than the machines we are looking at here. As are MEC's electric powered Speed Levels, although they are all more compact than the full-size Rough Terrain products used for cladding work etc.

As the chart below shows, while there is a good deal of similarity between the products on offer, the specifications do differ in some key areas, including dimensions, platform capacity, overall weight and extended deck size.

Why electric?

One of the major driving forces behind the shift towards electric and bi-energy scissor lifts is almost certainly the increasingly tough



engine emission regulations obliging manufacturers to redesign machines to take the latest engines, helped along by improved electric drive technology and lower componentry prices. Rather than trying to keep up with the engineering challenges of installing these new, more expensive engines, it makes sense to convert to electric or hybrid

power, which can also offer users a number of substantial benefits. The latest electric AC wheel drive motors and efficient motor controls have also encouraged manufacturers, and provide excellent lugging power/traction to cope with off road conditions and steep grades as well as providing excellent braking and dramatically extending battery life.

Adding a small diesel power pack to the package and you have the very best of both worlds in terms of performance, while overcoming the high cost of engineering a new engine installation. The diesel power packs currently seen on scissor lifts are not however true hybrids, they tend to be simple recharging units that can be used either for remote recharging or for topping up the batteries. The latest units do though have a hybrid setting, which allows the system to monitor the charge in the battery pack and then kick in automatically when the batteries reach a certain level of discharge. Alternatively the operator can select 'always off' so that the engine will not start up on its own for when working indoors, or 'always on' useful when working outside and when the batteries are in need of topping up.

Compact Electric/Hybrid Rough Terrain scissor lifts

Manufacturer	Model	Platform height	Overall width	Overall length	Platform capacity	GVW GVW	Deck Extension
Genie	GS2669E	26ft	1.75m	3.1m	680kg	3,442kg	1.52m
Genie	GS2669BE	26ft	1.75m	3.1m	680kg	3,445kg	1.52m
MEC	2659ERT	26ft	1.5m	2.67m	450kg	2,750kg	1.07m
Holland Lift	Y-83EL16-4wd	26.7ft	1.66m	2.95m	350kg	2,830kg	900mm
Haulotte	Compact 10RTE	27ft	1.8m	2.65m	565kg	3,380kg	1.2m
Skyjack	SJ6832 RTE	32ft	1.7m	3.1m	454kg	3,500kg	1.52m
Genie	GS3269	32ft	1.75m	3.1m	454kg	3,623kg	1.52m
Genie	GS3269BE	32ft	1.75m	3.1m	454kg	3,650kg	1.52m
MEC	3259ERT	32ft	1.5m	2.67m	340kg	3,150kg	1.07m
JLG	3369LE	33ft	1.75m	3.07m	454kg	4,600kg	910mm
JLG	M3369LE	33ft	1.75m	3.07m	450kg	5,250kg	910mm
Haulotte	Compact 12RTE	33ft	1.8m	2.65m	450kg	3,800kg	1.2m
JLG	4069LE	40ft	1.75m	3.07m	360kg	5,300kg	910mm
JLG	M4069LE	40ft	1.75m	3.07m	360kg	5,700kg	910mm
MEC	4069ERT	40ft	1.75m	3.20m	360kg	4,900kg	1.21m
Genie	GS4069	40ft	1.75m	3.1m	363kg	4,810kg	1.52m
Genie	GS4069BE	40ft	1.75m	3.1m	363kg	4,850kg	1.52m

Full hybrid on the horizon?

The next step for manufacturers will surely be to follow Niftylift and more recently JLG, both of which have installed true hybrid power systems in boom lifts. These use a smaller diesel engine with a generator and an electric motor which combine to provide the machine's maximum tractive effort when needed, such as on steep muddy slopes. In these systems the engine and its generator can also input current directly into the machine's power system, rather than running through the batteries.

Genie's 69E and BE scissor lift range also include regenerative braking, so that as the machine slows down or runs downhill it generates power which is used to top up the battery pack. This principle could also be applied to the lift function, so that gravity platform descent generates power. However the amount of power generated hardly seems worth the added complexity.

Another advantage of the electric powered models is simpler maintenance, especially if the batteries are equipped with automatic top-up systems, or are sealed. There are simply fewer components that require attention or to go wrong.

Conversely the latest diesel engines require more care than older power units, with additives, particulate filters and special oils often required. The full impact of looking after the latest tier engines has yet to hit most rental companies, and may well be something of a shock when it does. Finally another advantage of electric powered models for end users is the fact that the running/



JLG 4069LE



Skyjack 6832 RTE tilt and turn generator

fuel costs are substantially lower than for diesel units. Add to this the noise issue, with battery powered models helping keep work sites quieter, while they can also be used both indoors and outdoors allowing one machine to stay on site for the duration of the contract, saving on delivery and collection costs etc.

New Skyjack SJ6832 RTE

The Skyjack SJ6832 RTE launched at Conexpo claims to be the only machine in its category with four wheel drive and 45 percent gradeability as standard, as well as providing end users with a zero emissions and low running costs. The unit is likely to be the first of a number of electric powered RT scissors from the company, as it moves towards a full conversion from diesel to electric power for these lifts. To simplify operator and service training, not to mention efficient manufacturing, the new model uses the same chassis as the existing 68RT diesel/dual fuel units, while the elimination of air, fuel and oil filter servicing, oil changes, belts and coolants etc reduces maintenance costs and time. Almost all non-power plant related parts are common with the internal combustion 6832RTs. Easy access to components includes being able to service the generator when the machine is stowed,

thanks to a clever twist and tilt mounting. Standard drive is direct electric through a crossover symmetrical four-wheel axle drive system to foam-filled non-marking tyres. The company claims that the unit also has the tightest turning radius in its class and uses Skyjacks normal relay driven controls for ease of service and replacement.

The generator pack can either be manually controlled from the platform



MEC 3259 ERT

or set to come on automatically when the batteries drop to 50 percent of charge. The RTE has a 454 kg platform capacity and is available with auto-levelling outriggers.

Genie bi-energy hybrids

Genie has expanded its 69 inch wide compact Rough Terrain scissor lift range with the addition of a recharging package that creates three new bi-energy (BE) hybrid versions the 26ft GS-2669BE, the 33ft GS-3369BE and 40ft GS-4069BE. The new models will be available for all markets early in the second quarter and feature four AC wheel mounted drive motors, an active oscillating front axle and the integrated BE generator pack to recharge the batteries as well as supply power to outlets installed on the platform and the chassis. As with the straight battery powered versions which were launched two years ago, the bi-energy machines can all be driven at full height and include the 1.5 metre slide-out deck extension. Platform capacities range from 680kg for the 26ft GS-2669, to 454kg for the GS-3369 and 363kg for the GS-4069.



Genie's new bi-energy hybrid

The BE scissor lift series features two selectable operating modes. In 'hybrid mode' the system automates the charging function of the integrated generator, maintaining the battery charge by coming on automatically as and when required. All models are also equipped with a regular on board charger for normal mains re-charging. Non-marking foam-filled rough terrain tyres are of course standard, which allows the machines to be the first on site and the last to leave, as they are used for finishing work on indoor slab surfaces.



Skyjack SJ6832 RTE



Simply Reliable

By keeping design simple and using proven technology, Skyjack products offer the rental industry's best life cycle value through low cost of ownership, ease of service and maintenance while retaining high residual values.

Skyjack products feature:

- Standard color coded and hard wired relay based control systems which are easy to trouble shoot and repair using commonly available components
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Compact 10DX with stabilisers



JLG M3369LE



Hy-Brid HB 1430



MEC Titan 60S and 6092 scissor at Conexpo

A hybrid Holland Lift?

With regards to other new hybrid products we understand that Holland Lift is currently working on at least one fully hybrid scissor lift model and possibly a new range for introduction later this year. The company already offers several of its larger models including its largest - the 106ft platform /34 metre working height Megastar G-320EL30 4WDS - with battery electric power packs and 4x4 drive and steer. It also had one

model that fell within our look at compact 4x4 battery electric RT models, the 26.7ft Y-83EL16-4WD. At least two of the leading Chinese manufacturers are also planning the introduction of electric powered versions of mid-range Rough Terrain lifts, while Haulotte has had some success with its Compact 10 and 12RTE models, which are significantly shorter than other machines that we compared, although they are also wider topping the pre-set limits of our study. So far

the company has not yet dipped its toe into the hybrid market, either for its booms or its scissor lifts, but this may well change as it emerges from economic hardship.

Rising fuel prices and the increasing demand for zero-emission equipment will surely lead to more hybrid machines especially as the hassle of looking after the latest engines becomes apparent. When it comes to scissor lifts, we can see a day - in the not too distant future - when electrics or hybrids will outsell

diesel powered units, at least in developed markets. Expect further product launches over the next 12 months.

A small scissor with a difference

At Conexpo, Xtreme unveiled a small highly specified slab electric self-propelled scissor lift, the 32" wide, 12ft platform height XS3212 with a 227kg platform capacity, overall length of 1.37 metres and 635mm long deck extension. Overall

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Snorkel TM12

weight is just 844kg making it competitive with 12ft mast type lifts. The unusual machine has a very low step-in height of just 463mm, with saloon-style gates. Most unusually it has four wheel steer, including two wheel, four wheel co-ordinated and crab steer. The control box is fixed in position and includes a two axis joystick for full proportional control of the steering, drive and platform lift. Snorkel - now part of Xtreme - says it will introduce a simplified two wheel steer version of the new lift. The company has also re-introduced the TM12 name on its popular 12ft mast lift at least in North America. The choice of products competing in the 12ft lift sector has expanded rapidly in the past couple of years and appears to be gathering pace, with Custom Equipment now shipping its new self-propelled 12ft HB-1230 scissor lift, while French



The new ATN PVR 79 mast-type lift



MEC Titan 60S



Xtreme XS3212

manufacturer ATN says that it will introduce a mast-type lift later this year. The ATN PVR79 Compact Palfi will use a forklift style mast and offer a 19ft platform height, although dimensionally it will be similar to the existing 12ft mast lift models such as Snorkels TM12, and those offered by JLG and Skyjack - which also builds a 16ft model.

Unusual MECs

MEC has been busy with a variety of other interesting platforms including the new 60ft 6092RT scissor lift which it claims is the largest scissor lift produced in North America. The company has also delivered the first units of its Aircraft GSE - ground support equipment - series of scissor lifts and started shipping its Titan Boom 60S, the high capacity scissor lift sized platform on a telescopic boom with 20 metre working height and a huge 6.7 x 2.28 metre deck and 1,350kg capacity. Optional platform accessories include pipe, glazing and cladding cradles and racks and a sheet material rack and platform

canopy. The unit has the advantage over a scissor lift in that it offers 14.6 metres of outreach over the front, with the stabilisers deployed and three metres of outreach to the rear.

The new dual deck 6092RT scissor has a 20.1 metre working height with one-touch outrigger auto levelling. Weighing 9,300kg it has a platform capacity of 540kg with 227kg on each deck extension. Width is 92" (2.38m), while platform length is 5.23 metres extending to 7.54 metres when both decks are used.

Aircraft GSE range

The diesel/gas powered MEC 4069RT-A and battery/hybrid electric 4069ERT-A are the first units in the company's Aircraft GSE range, with a working height of 14 metres, they have been specifically designed for maintenance work on both jumbo jets and smaller aircraft. Designed in partnership with the engineering team of major international airline, the units have a 4.22 metre extended deck with 400kg platform capacity. The most significant feature is its unusual scissor style sectionalised guardrails - the VVC (Variable Vertically Collapsing) concept - that adjust to the curvature of an aircraft's fuselage, without compromising the fall protection benefits of the guardrails. The design also incorporates an over-wing maintenance hatch, allowing work on the wing surface without reaching outside the guard rails.

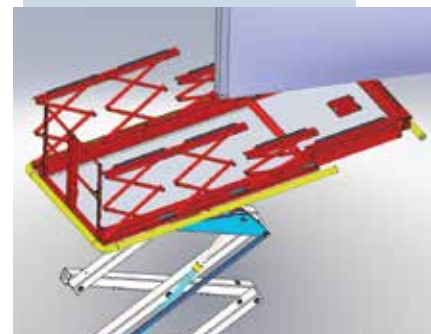
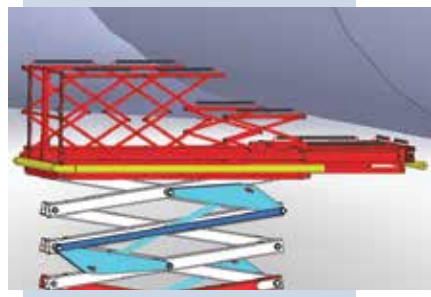
Aircraft bumpers with shut down sensors, aviation paint and adjustable programmable speed controls are just a few of the features that tailor the unit to the aircraft support industry. Its first order for around 20 units has now been delivered and the units are said

scissors

to be performing well. They can be spotted at work around on aircraft at Heathrow's Terminal 5.

"The VVC guardrail system allows the operator to position each guard rail independently, in a manner that forms to the curvature of the aircraft's fuselage," said Jim Tolle MEC's director of international markets. "This can be accomplished not only in the front of the machine but also on both sides. Our reverse mounted scissor linkage also allows the scissor stack to move towards the rear of the machine when elevated, providing the operator with more out-reach."

MEC's Aircraft GSE scissor with variable folding guardrails



Scissor attachments

Scissor lifts, with their larger, higher capacity platforms are ideal for applications that involve bulky or heavy materials for construction and the fitting-out stages of a building. However long or bulky items - such as lengths of tubing, boards and cladding - cause problems by not fitting easily or safely in the platform and are therefore often carried on top of the handrails or in positions outside of the platform that could compromise stability or safety.

There are several side mounted rack-type attachments that hold materials such as boards, but the first to offer a handling and positioning capability for wall boards was Italian manufacturer Bravi when it launched its board handler at Conexpo 2011.

The unit features a lightweight electric powered track and detachable adjustable frame to hold and move the sheet material weighing up to 15kg. The handler can track the sheet from a position alongside the platform through 90 degrees to an overhead position for ceilings. The combination of aerial lift and positioner is intended to replace two separate units which would require at least two men to make it work.

The Bravi dry wall-handler holds the sheet in an adjustable bracket before raising it on the track into the overhead position



About 18 months ago UK-based rental company Aerial and Handling Services introduced its deckRail Xtra materials handling attachment for Genie scissor lifts - initially designed for a 19ft Genie GS1932. It uses a system of floor stiffening saddles and loadbearing outer guard rails which replace the originals. Jaw brackets are then attached which safely restrain and hold materials in place without intrusion into the platform area.

Once installed the jaw brackets can either be set up on the two guard rails or just on one side, with each bracket having a simple lashing strap to hold the loose items such as tubing in place. The system has also been designed so that the deck extension can function normally

and weighing just 14kg it only reduces the platform capacity to 213kg. The system is available for purchase in complete kit form and takes approximately 45 minutes to install. The company has also said that a wider version is being developed for a Genie GS2646 scissor lift.



The deckRail jaw brackets can either gather and bundle loose materials or restrain larger single items



Initially the deckRail Xtra has been designed to fit the Genie GS1932 scissor lift

New developments

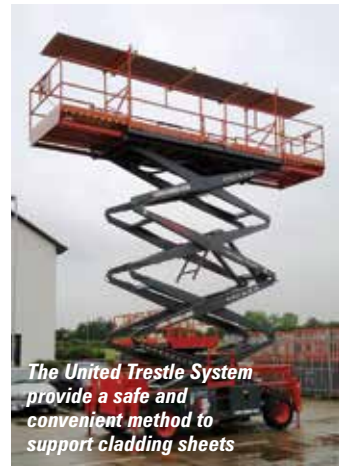
In the past month or so there have been two new attachments launched. The first is the United Trestle System developed by UK rental company United Powered Access (UPA) for its fleet of big deck Skyjack scissor lifts. Designed specifically for the 47ft 88/41 and 56ft SJ9250 scissor lifts, the system comprises two steel trestles fixed to the scissor lift's roll-out extension platforms which provide a safe and convenient method to support cladding sheets and other sheet material.

The retrofit system - approved by

Skyjack and CE marked by PAC (Powered Access Certification) - weighs just 58kg (29kg per trestle) and takes 15 minutes to install once a machine has been modified for adaption. Measuring 1.2 metres wide the trestles can be positioned from 1.4 metres up to four metres apart depending on how far the two roll-out platforms are extended. The trestle height is also adjustable in 100mm intervals from the top of the guardrails up to 1.8 metres above the platform. The system can be adapted to support sprinkler returns, six inch mains pipes and air conditioning duct systems.



One of the two steel trestles fixed to the scissor lift's roll-out extension platform



The United Trestle System provide a safe and convenient method to support cladding sheets

The SHU (Stand High Unrestricted) attachment has been developed for Genie scissors with widths from 30" to 46" by Manlift Manufacturing in the USA



Finally the SHU (Stand High Unrestricted) attachment has been developed for Genie scissors with widths from 30" to 46" by Manlift Manufacturing in the USA. The device takes the place of and uses the fixing points of the lift's roll-out deck extension and provides an additional 500mm work height and more importantly allows safe access to small openings in a ceiling - such as through false ceiling tiles - without the often seen practice of using ladders, standing on the machine's guardrails or using planks spanning between the rails.

Costing around \$3,500 the unit slots into the Genie platform's deck extension rails and is then

plugged into a pre-wired connector that feeds and monitors two safety switches on the attachment. One prevents the machine from being raised if the SHU guardrails are in the lowered position (they drop down to the same height as the main guardrails), while the other switch disables lift functions when a person is standing in the SHU attachment - the floor is hinged and spring loaded so it triggers the safety switch when someone is in the platform. The 30/32 inch wide model weighs 70kg and has a 550 x 630mm platform and a capacity of 113kg. CE approval is already underway.



Costing around \$3,500 the unit slots into the Genie platform's deck extension rails

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