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# Design revolution

Self-propelled boom development over the past 10 years or so has been sluggish to say the least, with the vast majority of lifts coming off production lines offering little tangible differentiation for the owner or user to 10 or even 15 year old models. This looks set to change though with several exciting new product launches threatening to re-ignite the sector. Cranes & Access investigates...

The self-propelled boom lift has become one of the most popular forms of powered access second only, in terms of volume, to the self-propelled scissor lift and probably the largest market sector in terms of value. Within the sector there is a roughly 50/50 split between articulated and straight telescopic booms, with telescopics more popular in North America and articulated booms in Europe. Articulated booms provide up and over reach, while straight telescopics tend to be faster, and on small to mid-range models offer more outreach. They now also tend to include articulated jibs, some of them telescopic.

Over the past 12 months there have been several exciting developments in what is a relatively mature market. This is most dramatically shown when a fully renovated/

re-built boom lift from the late 1990s is placed alongside a new one - in many instances you would struggle to tell the difference. This lack of substantial development can stifle new equipment sales, as rental companies renovate rather than replace which can then have a knock-on effect on rental rates.

Thankfully there has been something of a renaissance in boom lift design in the past year or two that could set off a new period of enlightenment, with several radical new models and producers entering the market. The key development trends include lower transport weights and smaller dimensions – an increasingly important factor, given the higher fuel and transport costs and competitive rates - higher platform capacities, cleaner more efficient power units including the arrival of hybrid models, faster function speeds, remote diagnostics and numerous safety items such as the anti-entrapment systems that came



The Niftylift HR17 - a boom ahead of its time?



The JLG 740AJ is specifically built for aircraft maintenance



The Genie S45 Trax

to the fore in the UK last year.

The other big change is a significant increase in the number of reliable suppliers, offer buyers more real choice – with Manitou, Niftylift and Skyjack all expanding their boom ranges while new entrants into the self-propelled market, such as ATN and Dinolift are adding new alternatives. This is most marked in some of the larger models. For example if you are looking for a boom lift with a working height of around 28 metres you now have a choice from six international manufacturers, rather than three or four a couple of years ago, on top of this Chinese manufacturers, particularly the better ones - such as Dingli and Mantall - are looking to export their boom lifts.

### Leading the way

If we focus on the past three or four years one company has probably done more to lead this self-propelled design revolution than any other. UK-based manufacturer Niftylift is setting design the design

parameters in most height sectors of the articulated market. The key attributes that the company appears to have mastered are low overall weight, combined with narrower overall widths, without sacrificing outreach or platform capacity. The company now has a substantial following in North America, Germany and Australia as well as in its home market.

In May 2010 Niftylift launched its new 50ft/15 metre platform height articulated Rough Terrain boom lift, the HR17. Sometimes it is only with hindsight that you appreciate just how advanced this machine was and how it may have influenced the more recently launched booms - including several from Niftylift.

Not only was the lift considerably lighter (at just 4,750kg) than anything on the market, including the HR17 it replaced, but it also incorporated several other innovative features that the company had been developing. Dimensions were also compact with





Niftylift's largest boom to date - the HR 28 Hybrid 4x4

an overall width of just two metres, an overall stowed length of just five metres (6.3 metres with the jib in working mode) and an overall height of 2.15 metres.

The lift was fitted with a Hybrid drive - as used on its increasingly popular HR21 - which allowed the fitting of a smaller Kubota diesel engine equipped with an exhaust purification system and supported by a powerful electric motor which kicks in for steep gradients or when extra 'grunt is required'. It also works as a generator to top up a 'bi-energy' battery pack when the engine is idling or left running.

The HR17 also incorporated Niftylift's Tough Cage and included the company's SiOPs fully integrated anti-entrapment system that cuts the enable button and foot pedal in the event of the operator exerting excessive pressure on the control panel, allowing him to operate a function to free himself or warn others of his predicament.

Performance wise, the new HR17 Hybrid 4x4 had similar characteristics to the outgoing machine despite being significantly lighter and was only beaten by wider, heavier lifts with better platform heights. At the time of its launch we said: "The HR17 is a winner and could change buying patterns for 45/51ft, 14/15 metre boom lifts" and to some extent it has at least got others thinking. However it's smaller, even lighter, more compact cousin the 45ft HR15 may be the catalyst for a major 45ft boom development boom among the market leaders? Genie has announced a revamped version of its popular Z-45, managing to trim almost 500kg from its overall weight, while introducing new engines, improving the drive train and service access.

### Bigger and better

Two years after the HR17 Niftylift appears to have pulled off another coup, with the launch of its largest



Manitou 200 ATJ



Haulotte HA32 PX

boom ever - the 86ft/28 metre HR28 Hybrid 4x4 and the low-weight HR15. The Nifty HR28 Hybrid claims to be the world's largest battery electric powered boom and boasts a class-leading 19 metre outreach with a three man/ 300kg platform capacity. With production starting in the next month or two, the HR28 weighs just 14,500kg - more than a tonne lighter than most competitors - and has an overall stowed length of around 7.5 metres with its articulated jib 'tucked under' without increasing travel height. In Europe transportation on 26 tonne delivery trucks should be possible.



Haulotte H23 TPX

Power options include straight diesel 4x2, diesel 4x4 or Hybrid/ Bi-Energy 4x4 - with a full battery powered unit possible and gradeability of 40 percent.

At the same event Niftylift unveiled its HR15D, the lightest 45ft self-propelled boom available on the market today. Weighing 4,250kg it has 9.2 metres of outreach and working height of 15.6 metres. The Tier 4 engine is installed with a particulate filter to further reduce emissions and it uses virtually the same running gear as the larger HR17. While the HR15 is up to two tonnes lighter than any mainstream product on the market, it is right out in front in terms of outreach. Up and over height is just slightly lower than the others, but the machine itself is significantly shorter than most products on offer - adding to its transportability. Add to all this the suggestion of a very competitive price, plus the extra goodies such as a Hybrid power option, non-marking

Make	Model	Work height	Max outreach	GVW	Platform capacity	Up & over	Power	Grade
Genie	Z60/34	20.39m	11.05m	10,215 to 11,331kg	227kg	8.23m	Diesel or LPG	40%
Haulotte	HA20 PX	20.65m	13.5m	11,710kg	230kg	6.8m	Diesel	40%
JLG	600AJ	20.29	11.81m	10,830kg	230kg	8.09m	Diesel	45%
Manitou	200ATJ	20.00	12.0	10,000kg	230kg	8.0m	Diesel	40%
Niftylift	HR21 Hybrid AWD	20.8m	12.5m	6,400kg	225kg	7.0m	Hybrid Battery and diesel	40%
Skyjack	SJ63AJ	21.3m	12.19m	9,616kg	227kg	8.38m	Diesel or dual fuel	45%
Snorkel	A62JRT	20.8m	11.1m	10,659kg	227kg	N/A	Diesel	45%





A Zebra 12 from ATN



A JLG 800AJ and Skyjack SJ6832RT on one trailer



RT tyres and the Tough Cage and this little boom could prove to be the big breakthrough product for Niftylift.

### French pair

While the two big players, JLG and Genie dominate the self-propelled boom market, neither of them are at currently at the cutting edge of the emerging boom lift development trends. Their recent products tend to be safe and robust, steering clear of radical innovation until fully proven – or customers demand it – this is no different to Caterpillar in the earthmoving market. The fact is that the companies strong distribution, product support and resale values, not to mention end user recognition, especially in the world's largest market – North America - allows them to keep product development at an evolutionary, rather than revolutionary pace. Although the

two have also been focusing efforts at the top end of the telescopic market, with Genie set to release more details on its big new boom any day.

Two other recent significant telescopic boom lift developments have come from France and are just beginning to ship as we go to press. Manitou unveiled its 86ft/ 28 metre 280 TJ and 260 TJ just over a year ago, followed closely by Haulotte with its HT23RTJ. The new Manitou 260 has a fixed jib, while the 280 boasts a telescopic jib - in all other aspects they are one and the same. This gives the 260 TJ a 400kg unrestricted platform capacity whereas the 280 TJ has 350kg, reducing automatically to 240kg at full outreach. It also makes the 280 TJ slightly longer at 11.25 metres and heavier at 16,600kg (compare this to the Niftylift HR28 at



Manitou 280TJ

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Haulotte's latest boom the HT23 RTJ

14,500kg!). The two platforms have been designed along the same lines as the company's smaller articulated boom the 46ft 160ATJ-2, to offer premium performance from a smaller engine which being less than 36kW does not have to meet 3B emissions regulations. Electronic management of the engine RPM provides the required hydraulic pressure and flow needed for faster single movements and still allows four simultaneous functions, without noticeable interference between them, making it a very quick and smooth machine and adding to the comfort and security for the operator. The unit also offers a single button programme to provide automatic single control movements in both the horizontal or vertical planes.

The new models are an interesting combination in terms of specification thanks to the fact that like the Genie S-65 and S-85 models they feature an articulated boom pivot point, which both raises and moves it forward, providing a more compact overall length that traditional straight telescopic booms. With tuck under jibs both fold down to

overall lengths of around eight metres.

### Two stage telescopic jibs

The two stage telescopic articulated jib is becoming a more popular addition on telescopic booms. Haulotte introduced the idea on straight telescopic self-propelled booms in 2008 on its H28TJ+ which offers 22.6 metre outreach and a 350kg platform capacity. JLG followed suit with its 1500SJ in 2011 taking the concept to new lengths, and now Manitou has adopted the concept which adds to the working envelope. It will be very interesting to see if Genie adopts the idea on its new boom rumoured to be in the 170ft range.

Haulotte's latest boom is the HT23 RTJ, also available as the jib-less HT21 RT. On paper the performance of the HT23 looks impressive, with a 67.3ft platform height/22.4 metre working height, longer than normal 2.2 metre articulating jib, up to 18.1 metres of outreach and a platform capacity of 450kg. The company clearly set out to design a machine that achieved or came close to 'best in class' for every key parameter.



Snorkel T66JRT

The special top guardrail on the basket of the JLG 740AJ allows work to be carried out while remaining tethered



The company also claims that the boom has the 'best in class' manoeuvrability, lift speed (53 seconds to full height) and outreach - one metre better than industry standards. It is also the first to feature Haulotte's new modular basket, which allows individual parts to be replaced rather than the whole basket.

### Skyjack presses ahead

Skyjack re-entered the boom lift market in 2006 with a strategy of introducing a range of booms that were adopted the best of existing technology, without attempting to introduce any radical innovations. Its programme was slowed substantially by the recession and pressure on engineering time caused by the need to update all of its engine installations - both aerial lift and telehandlers - to meet new regulations.

However it is now ramping up its efforts and last year unveiled its new 63ft SJ63AJ. This latest model, which has just gone into production, shows signs of it becoming more

adventurous in terms of innovation, and it clearly had an eye on Niftylift's HR21 in terms of parameters. The most innovative feature of the new 21.2 metre working height articulated boom is its lift mechanism, with a dual sigma type over-centre riser with an 'open throat' knuckle joint. The benefit of this design is that it allows the telescopic boom to nest between the risers, keeping the overall height of the machine low enough for transport in a standard container, while offering the best combination of outreach and up and over reach with constant zero tail-swing, perfectly vertical lift and a relatively compact overall length.



Skyjack SJ63AJ





A JLG 450A helps to respray an aircraft



Manitou's 28 metre 280TJ



Snorkel T46JRT

It also allows the platform to be lowered to the ground while the risers remain fully elevated.

Outreach is just over 12 metres matching Niftylift and beating Genie, JLG, Snorkel and Manitou, with only the single riser Haulotte offering more. Up and over reach is a very respectable 8.3 metres. (See comparison table).

GVW is just under 10,000kg allowing two units to be carried on a trailer in the USA. Power comes from a Deutz diesel with the company's standard drive system using rough terrain drive axles,

complete with operator controlled differential lock and 45 degree crank angle steering.

**New telescopic Snorkel**

Snorkel, once one of the world's leading manufacturers, has a strong following in some countries with its larger booms and has recently been expanding its range in the 60/66ft platform height area. Its latest is the T66JRT telescopic. The new model shares a common chassis with the T40RT and 16 metre T46JRT telescopic booms and the 21 metre articulated A62JRT, helping lower production costs and simplify

maintenance. The T66JRT (also available without jib as the T60RT) features an oscillating axle, four wheel drive, 350mm ground clearance and 45 percent gradeability. Maximum outreach is 17.8 metres and it has a good sized platform - 2.44 x 1.0 metres - which can be entered from three sides capacity is 227kg and stowed height 2.5 metres. Options include a smaller platform, generator and on-board welder and a range of packages specifically designed for certain industries or weather conditions.

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The new Genie super boom is expected to be the largest boom ever in the region of 170ft



Three Niftylift HR21s - each weighing 6,400kg - making a total of 19,200kg

### Designed for specific applications

The trend towards offering standard factory models tailored to specific industries, seems to be finally gathering momentum. JLG is launching an aviation version of its 740AJ and joins Genie and Dingli

with its shipyard versions. The JLG 740AJ has a working height of 24.6 metres and has been built specifically to carry out maintenance on and around aircraft. It features a special top guardrail to which the user can clip his fall-arrest lanyard, enabling them to



Haulotte HA18 PX



German rental company Willenbrock Platforms' Genie S-3800 shipyard boom

work a full 270 degrees around the outside of the platform, while remaining tethered, providing an outside work area of 19.5 square metres. In addition, the 740AJ meets the industry jet blast standard ARP1328 that takes wind gusts up to 90 mph into consideration, enabling the machine to be placed in most air side operating areas around the terminal. Furthermore, the 740AJ can be equipped with a Soft Touch option with function cut-out, which reduces the risk of accidental contact damage when working close to aircraft. Outreach is 15.80 metres at an up and over height of 7.65 metres.

### Genie shipyard boom

Earlier this year German rental company Willenbrock Platforms acquired the first Genie S-3800 shipyard boom in Europe. The 120ft self-propelled lift went to work on a six month contract at BLG Logistics Wind Energy in Bremerhaven, where it is being used for inspection work and final acceptance of large tripods and components for offshore wind

turbines. The S-3800 is built in Genie's plant in China and has a working height of 38.58 metres, an outreach of up to 22.26 metres and a platform capacity of 340kg. It comes standard with a hostile environment package which includes protective covers on controls, cables, hydraulic cylinders and slew ring as well as brush covers between boom sections and special salt water protection.

### Big Genie on the way

There has been talk for some time about a new Genie super boom for launch at Bauma or even this month. The boom is expected to be the largest self-propelled boom ever - currently the JLG 1500SJ holds that title - but details are as yet unavailable. We expect the new machine to be in the region of 170ft and use an extending swing out X-frame chassis design similar in concept to its Z135/70

### Anti-entrapment devices

The requirement for the use of anti-entrapment devices on boom lifts in the UK has been well documented in recent months, with



Currently the largest boom -  
the JLG 1500SJ



several UK based international contractors demanding the fitting of specific devices to all boom lifts working on their sites. This shift by some contractors towards a more prescriptive blanket policy caused IPAF and the HSE to issue a statement warning that prescriptive 'blanket requirements' contradict its current advice.

Some contractors issued bulletins with overly prescriptive requirements that at the time only Lavendon's SkySiren, Niftylift SiOPs and JLG's SkyGuard could comply, with, however none of them work in every possible situation and those solutions cannot be fitted to all boom types. In response Niftylift has introduced a simple cut out and warning anti-entrapment device for its popular 33ft HR12 self-propelled boom lift, at under three tonnes it is often the only boom that can operate on some specific applications, and yet was at the risk of being banned from overly prescriptive sites.

The new system can be specified on new units or retrofitted to any older machines and has been designed for rapid removal and re-fitting, taking about a minute to fit or remove, once the initial installation has been

done. The installation includes a small electrical box, a blue warning light, a longitudinal pressure switch with brackets and a connection to the control box. Once installed the removal of two security bolts and the unplugging of the power connection is all that is required to take off the main switch bar. A blanking plug then reactivates the system for use without the switch bar. To refit, the switch bar is clicked into place, plugged in and the security bolts installed - we watched being done in 60 seconds.

UK rental company Kimberly Access has also introduced a design for its own fleet, dubbed the Sky Alarm. It has no plans to market it and has simply purchased the system from a local supplier which has adapted it from existing proximity/crushing devices. The device is similar in principle to Lavendon's Sky Siren, JLG's SkyGuard and Niftylifts new retrofit solution - in that it uses a pressure switch/sensor bar in front of the control panel which stops the machine and sets off an alarm and flashing light if activated. It now intends to fit the device to all of its boom lifts and has no plans to charge a specific fee.



A Facelift Nifty HR21

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More Than Lifting



# It's a game changer

When it comes to new crane, access and telehandler products, 2012 was a good year. Niftylift unveiled its 45ft HR15 and 86ft HR28, Haulotte the 70ft HT23 RTJ, Bronto's 50 metre S50XDTJ, the Cela D24, Ruthmann's T540, JLG's SkyGuard system, Skyjack and its 63ft SJ63AJ, Terex Superlift 3800 and plenty more.

Yet one product that has not even had a proper launch yet eclipses them all in terms of sheer innovation. The Power Towers Peco may also qualify as the smallest new product introduction of the year. At 150kg it is certainly one of the lightest machines on the market and features no electrics or hydraulics of any kind. It is manually powered - gas assisted - clean, environmentally friendly - thus Peco and not Pico - and priced to market.



However it is the technology and design behind what is an utterly simple machine to own, use and operate that makes it so special. We managed to steal a peak at the workings of the two section elevating mast but were then sworn to secrecy. It is not overly complicated and adopts and adapts existing well proven technology from the automotive sector.

The machine is exceptionally well finished, with large diameter round steel tubular guardrails, dual saloon style gates with substantial stainless steel closing springs, large high quality wheels and castors, four point braking, rubber bumpers

*The Peco is well finished, has four point braking and incorporates fork pockets for easy loading etc...*

to prevent wall damage, a tool tray - currently steel but changing to moulded composite material - and rubberised wheel guards.

The lift rolls on three wheels, two fixed wheels at the front and a single rear castor which, combined with its low overall weight, makes it easy to manoeuvre and roll-over thresholds. When you enter the platform the brake on the castor is immediately applied as the machine drops onto two heavy non marking rubber skids. To raise the platform the control knob is pulled and the sizeable wheel turned. The gas assisted lift will raise 80kg on its own with the wheel providing control and assistance. With a platform capacity of 150kg heavier people will of course need to put in a little more effort into winding the large central wheel to raise the platform. As soon as the platform is raised, two spring-loaded, plunger-type brakes lock the front two wheels to create four point braking. When coming down the roles are reversed, heavier users benefiting greater from gravity. The fact is that the effort is minimal and the control precise, so the manual power system is unlikely to deter anyone. In fact those trading up from podium steps or step ladders will consider it luxurious.

In a side by side race with a Power Tower Nano, the Peco reached its full working height of 3.5 metres considerably faster, even with a 90kg plus Brian King of Power Towers operating the Peco and a lighter Leigh Sparrow aboard the Nano. Power Towers has used



*The Peco is considerably more compact than the already diminutive Power Towers Nano*



*The lift is easily raised and lowered with the winder control*

SGS to do the third party CE certification. While the Peco is totally non-powered, it is still technically a machine and therefore strictly speaking covered by the machinery directive. In order to comply the company has had to incorporate redundant systems into a totally mechanical device and equip the unit with a means of emergency lowering the platform from the ground. All of which has added cost, but at least the solutions do not complicate what is likely to be an exceptionally low maintenance machine. The absence of hydraulics, batteries or even a mechanical screw drive make it an ideal unit for clean environments - including food processing plants - as well as suited to potentially hazardous environments such as offshore oil platforms. The company says that it has already received interest in producing a stainless steel Peco which it could easily do as long as the customer is prepared to pay the price.

A substantial number of the new machines are already in the Hire



*Paul Smith (L) and Carl Huntingdon (R) of Hire station, with Brian King (centre) of Power Towers at the recent Executive Hire Show in the UK*

Station and Nationwide Platforms fleets and given that the price is pitched between a podium step and Pop-up type push-around scissor lift returns are likely to be interesting. Having given this machine a good look over we are convinced that it will replace a good number of mobile steps, podiums and even step ladders. The biggest challenge will be for Power Towers to make an acceptable margin with the current specification and quality level.

