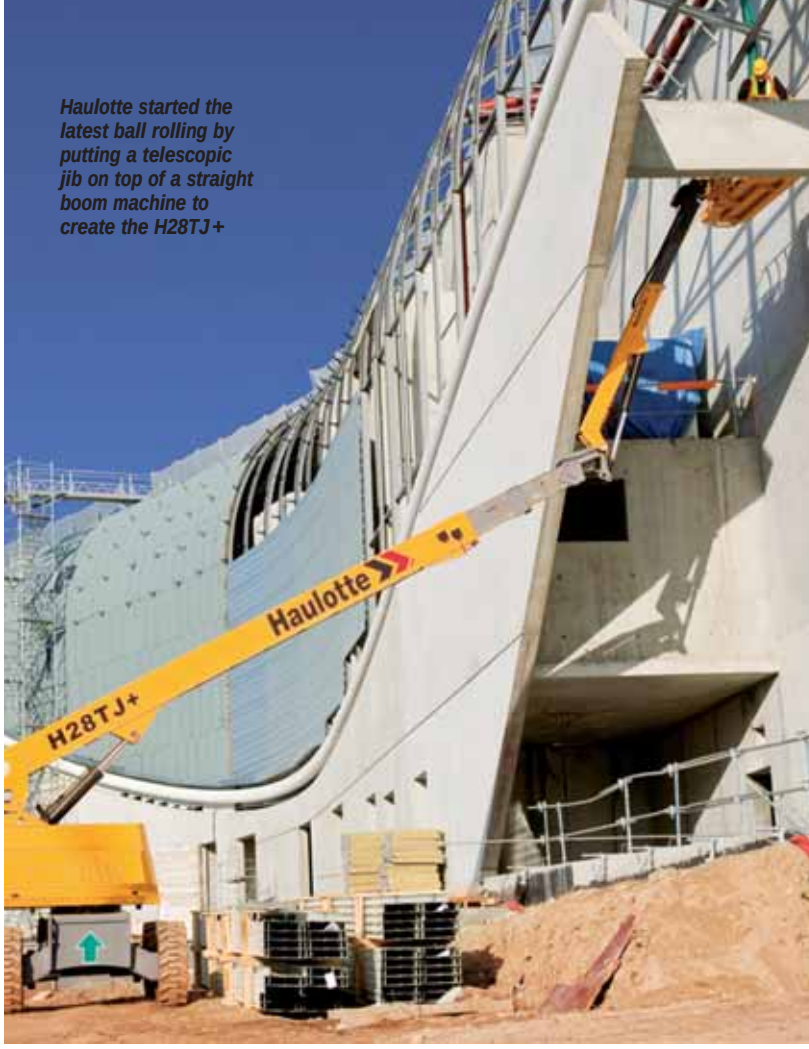
Booming unusual!

It is almost 40 years since John Grove introduced what is widely acknowledged to be the first self propelled aerial lift with a telescopic boom - the Condor Lift 21-32. This machine was the forerunner of the JLG 40F which did more to kick off the European aerial lift rental industry than any other single unit.



Haulotte started the latest ball rolling by putting a telescopic jib on top of a straight boom machine to create the H28TJ+

Since then the only really significant change has been the arrival in the early 1980's of the articulated telescopic boom lift. Certainly boom lifts have become more refined and more widely available, both in terms of the number of manufacturers and the range of models that each offers. Over the years manufacturers have strived to improve on the boom lift design and introduce new practical ideas.

40 years on - a JLG 21-32 the forerunner of the JLG40F alongside a JLG400S being auctioned off for charity

The articulated jib arrived in the 1980's and has been widely adopted since. First class rough terrain performance came to the fore in the early 1990's and is a prerequisite now on diesel powered boom lifts. Bi-energy power packs became popular in the mid 1990's although mainly in Europe and there have been a wide range of designs to reduce the overall weight of boom lifts, ranging from aluminium boom sections, to a rising boom pivot point from Genie to clever internal moving counterweights and outreach restriction devices from Skyjack and JLG. Apart from these key additions the number of true innovations have been far and few between.

With rental rates for the most popular boom lifts dipping to 'silly' levels in many areas, the pressure on rental companies to find products that provide some differentiation has rarely been greater. Thankfully in the past 12 to 18 months there have been numerous new machines that have introduced new ideas, largely tailored to specific applications or markets and mostly built by smaller niche manufacturers.

Telescopic jib

Haulotte - not a niche player - started the latest ball rolling by putting a telescopic jib on top of a straight boom machine to create the H28TJ+. While this is common practice on the truck mounted lifts, self propelled booms have until now featured simple parallelogram articulating jobs, with most engineers focusing on achieving the maximum range of articulation rather than reinventing the concept.

The H28TJ+ creates a machine that almost straddles the telescopic/articulated boom divide in that it clearly offers the outreach and boom speed of a telescopic, while also offering up and over reach closer to that of an articulated boom. In addition it offers some interesting additional reach capability such as when the boom is at a lower angle and the jib articulated to the vertical for some exceptional under and up reach.

Recognising that articulated booms tend to be more compact than telescopics, Haulotte also made sure that the H28TJ+ included reduced tail-swing and relatively compact dimensions.

Make Model	Haulotte H28TJ+	JLG 860SJ	JLG 800AJ	Genie Z80/60	Genie S85	UpRight SB85J
Platform Height	26.2m	26.2m	24.4m	23.7M	25.9m	25.9m
Capacity	350kg*	360kg*	227kg	227kg	227kg	227kg
Outreach	22.6m	22.86m	15.8m	18.3m	23.3m	23m
Up&Over	6.0m	0	9.78m	8.83m	0	0
Tailswing#	0.72m	1.42m	0.76m	1.17m	1.42m	1.89m
WxL (m)	2.49x12.3	2.49x12.2	2.44x11.1	2.44x11.2	2.5x12.2	2.6x12.9
GVW	17,300kg	16,500kg	15,600kg	17,000kg	17,300kg	17,100kg

** restricted capacity 230/227kg unrestricted # Tailswing beyond chassis*

Looking at the chart above the Haulotte does appear to deliver in terms of dimensions. It is about a metre longer than the articulated booms, but has a smaller tailswing than any other boom of this size. In terms of weight it is similar to the Genie and UpRight/Snorkel machines, but a good two tonnes heavier than the JLG 800AJ articulated boom. Where it falls short of course in comparison to the articulated models, is up and over reach, although it does offer an extra six metres of horizontal outreach at around 20 metres height, but of course the main boom is at an angle so it is not quite the same as an articulated boom where the riser is vertical. However it does offer some interesting possibilities.

Levelling on slopes

Self propelled boom lifts are supposed to operate on firm level ground, however, unlike most scissor lifts, boom lifts are not usually fitted with lock-outs that stop lift operations when the machine is out of level. As a result a large number of users are under the impression that they can operate a boom on any slope as long as the tilt alarm is not sounding. With most boom tilt alarms set at five degrees this gives a reasonable degree of flexibility.

Matilsa has recently launched a 21 metre articulated boom with outriggers, the Parma 21D

The outriggers on the new Matilsa Parma 21D boom lift provide levelling of up to 17 degrees.

The fact is though this is not correct. Firm level ground is stated in most operator manuals and the five degrees is the safety margin. It is true that a boom lift is unlikely to tip forward unless it is significantly overloaded with a substantial amount of boom extended. Even then there is a fair degree of warning as the machine starts to 'get light'. However if a fully retracted boom is raised rapidly to maximum elevation with a light load the lift may well go over backwards if set up on such a slope.

For jobs where a slope or steps are involved the correct solution is either to bring in a larger boom and stand further back from the slope, or to use a spider lift with outriggers that allow it to level on the slope. Spider lifts cannot drive at height, so if this is important for productivity the big boom that can stand off has been the only way to go. Of course, if there is no place to stand back then that is not a solution either.

The slope solutions

There are however now a couple of self propelled alternatives and both, oddly enough, are made in Spain. Matilsa has been producing aerial lifts for many years and several years ago introduced a product that was deceptively similar to a Genie 45 articulated boom. However it included an often requested option of levelling outriggers, allowing the machine to level up when necessary but be fully self propelled when required. More recently the company has extended the concept to larger models and earlier this year announced a 21 metre version, the Parma 21D with a dual riser, three section telescopic boom and articulated jib along with four wheel drive, four wheel steering and auto self levelling outriggers capable of levelling on slopes as steep as 17 degrees.

High driving on slopes

While the Matilsa concept solves part of the problem, there are times when the benefits of driving the lift at full height are so beneficial that buyers have sought to combine a machine that would remain mobile at height while working on sloping ground. The UpRight Speed Level partly achieved this in a vertical scissor type machine. It could be levelled on a slope and as long as the oscillating axle remained parallel with the fixed axle it could drive while in the air. However it does not offer the outreach of a boom, and apart from particular situations, such as on a long ramp running alongside a building or in a tunnel, the axles rarely remain parallel.

Up to 15 big booms - 125ft JLG 1250 and 135ft Genie Z135s from Hi-Reach are being used to erect the steelwork on the unusual wave shaped Aquatic Centre for the London Olympics.

The problem was solved by a small Spanish tree pruning company, after it realised that when ground conditions allowed it to use a self propelled boom lift, productivity soared through the roof and it made a lot of money. The problem was that all too often the ground below the trees was not even remotely level.

Unable to find a manufacturer willing to solve the problem it designed a product itself and after considerable trial and error and practical experience it perfected its fully self levelling boom lifts. It then began to sell them to other companies, largely for tree work, and the Mecaplus self propelled boom lift range was born. Having perfected the technology and revolutionised tree pruning in most large Spanish metropolitan areas, the company has decided to expand the product range into more general or dual purpose models and launch them internationally. The company recently attended both Vertikal Days in the UK and Platformer Days in Germany, where it attracted a good deal of interest.

300 percent productivity improvements

Its latest platform - the ME12SL - has a platform height of 10 metres and uses an oscillating axle at one end, while the wheels at the other end are mounted on individual arm-like suspension/drive units which allow the lift to level 30 percent side to side and 16 percent longitudinally. An interchangeable basket can be used for either one or two people (with outreach of seven metres or 6.3 metres respectively) as this is a dual purpose machine it still includes some foot controls

The 12 metre working height Mecaplus ME12SL can level on ground up to 30 percent side to side and 16 percent along its length

The Giraf Track is saving contractors time and money installing insulation and cladding panels on industrial buildings

which are essential for maximum productivity when pruning. At the same time the platform is made from 3mm thick steel and all hoses and electrical cables are fully protected to protect against falling branches, resulting in a very clean-looking machine. Two wheel drive is standard but 4x4 is an option as are tracks.

Mecaplus says that in most pruning applications they can speed up tree pruning work by as much as 300 percent. The machine is equipped with a powerful air compressor, feeding three take-off points in the basket to operate air tools such as pruners and chain saws.

Wheels or tracks?

The demand and availability of track mounted booms has until recently been concentrated in Holland and Northern Germany, but the ability to travel across soft rough terrain has becoming increasingly sought after by a wide variety of users particularly in the utilities and energy sectors. Over the last year several new tracked booms have been launched including the Giraf Track with its all round lifting and big platform capability and the scissor type platform on a boom concept from Nagano/Hanix. At the same time the market leader in self propelled crawler booms - Aichi - has started to build a world wide distribution network and is working on an articulated boom range. All are looking of course to capitalise on this small but growing niche market.

We have covered the Giraf Track GT580B several times recently, its combination of sturdy tracked undercarriage (based on a 15 tonne Caterpillar excavator) three section Merlo boom and a whopping basket - up to 13 metres long with 750kg capacity - has aroused the interest of many. With a maximum platform height of 15.8 metres the unit can be fitted with a two metre jib. The Giraf accepts all Merlo telehandler attachments including winches, forks and buckets as well as a crane jib. Development work continues on customising the machine for specific tasks (including an operator cab). It has already sold several units in Holland and Belgium where its huge basket is saving contractors time and money installing insulation and cladding panels on industrial buildings.

Genie introduced its Trax version of the S85 with four Loegering crawlers instead of wheels

Track mounted boom lifts are generally very stable thanks to their heavy undercarriages and they can of course cope with the very worst of ground conditions, while rubber tracked versions can be more gentle where low ground bearing pressures are needed. They are however not so well suited to hard surfaces particularly the larger models with steel tracks. One solution to the track or wheels question is that offered by Genie. The company introduced its Trax version of the S65 with four Loegering wheel crawlers in place of its usual wheels, but it continues to offer the original Loegering conversion (Loegering is now a sister company within Terex) which allows the machine to be converted relatively easily between wheels or tracks, depending on the application. While this niche unit has had some success in North America, the concept has yet to find favour over here.

Aichi on the move

When industry commentators talk about the big four, self propelled aerial lift manufacturers, they are usually referring to Genie, JLG, Haulotte and Skyjack or UpRight/ Snorkel, almost always overlooking Aichi which depending on the state of the Japanese and Dutch markets and exchange rates jostles with Haulotte for third place. The fact is though that the company has been weak when it comes to worldwide distribution. With the launch of its new global models the company announced plans to become the world leader, however since then progress has been slow - although Aichi is in no hurry. It took over a year to take a decision on its UK/Ireland distribution partner, finally selecting Ranger Equipment in May with products beginning to come through at a very steady pace.

Aichi has typically sold its boom lifts at a hefty premium, a price that those who know them well are prepared to pay. The fact is that when it comes to quality and reliability Aichi's boom lifts are still head and shoulders above the competition. The fact that this is still possible when the products offered by others are these days so reliable and well designed, speaks volumes of the build quality of the Aichi machines. The manufacturers' Dutch-based distributor was so confident of the machines reliability that when it wanted to push the wheeled models a few years back it offered them with a free five year warranty. It claims that the cost of doing so has proved to be minimal. Aichi claims that over a five year period it can prove that its units cost less. The fact is though that selling is more complex than having the most reliable products, you also need a great distribution network, with good sales staff and the initial price remains a factor for many buyers.

In the UK Ranger has said that for a limited period, the first units it sells into the UK can be acquired on flexible payment terms, including purchase, lease or rental options. "The incentive is part of a pilot programme to get units on the ground in the UK, test reaction and gather feedback," says Steve Hatfield of Ranger. "I am very optimistic that Aichi's added-value engineering will emerge a strong contender for rental investment as the industry climbs out of recession. When hire companies start to invest again, we believe they will be extra careful about what they buy and reliability will be the key. We anticipate that buyers will be more prepared to consider the higher priced, premium platform because they command higher rental rates, incur less downtime, and with excellent residual value, offer low overall cost of ownership."

At the same time Aichi which is largely owned by Toyota, has looked at how it might cut the cost of its products and there are opportunities such as taking off some of the extras it includes as standard, such as wiper blades on the boom sections and heavy steel rather than composite machinery covers.

Aichi booms are available in the UK from Ranger Equipment

It is hard though to imagine Aichi following up on such ideas. When it launched its range of small electric scissor lifts for the world market in 2008, it elected to go with AC direct drive and other premium features, suggesting that its heart is not in making a more basic product anytime soon. Instead it is likely to encourage buyers to 'trade up'.

Nagano gives it a try

Another Japanese manufacturer that follows a similar design and build philosophy to Aichi is Nagano (branded as Hanix in the UK). Late last year it launched its more specialised machines at APEX. The range, all crawler models, includes two articulated and one straight boom. The largest is the 18 metre platform height NA180JA with a dual parallelogram riser, three

The 9.28m platform height Nagano NA09ZA has a large 3.15 metre by 2.05 metre wide scissor-lift style rotating platform

section telescopic boom and articulated jib. Platform capacity is 227kg and the unit weighs less than 10 tonnes.

The much smaller, 9.28m platform height NA09ZA has a large 3.15 metre by 2.05 metre wide scissor lift style rotating platform similar in some respects to the big deck Tadano and Aichi lifts. The unit weighs over seven tonnes and offers 360 degree rotation and 600kg capacity. These machines are promoted along the same lines as the Aichi products i.e. lower operating costs and greater reliability. This is not the first time that Hanix UK, has tried to market a platform in the UK. The company promoted a crawler mounted boom lift with big platform in the late 1980's/early 1990's but had little success.

The machines feature tracked undercarriages that can compensate for uneven ground to maintain the equilibrium of the platform. Hanix has also appointed specialist service partner IPS Ltd to manage the ongoing service and parts requirements of customers.

Le boom

Another new entrant to the market is French mast boom manufacturer ATN, launching its first articulated boom lift at this year's Intermat. The Zebra 12 is a 12.2 metre working height, 33ft platform height Rough Terrain boom with a single riser, two section telescopic boom and articulating jib. It boasts an impressive 8.5 metres of outreach competitive with most 50ft articulated booms. While this is the first machine of its type produced by ATN the company has a very solid source of technical input from its largest single customer - rental company Access Industrie. The design and build quality oozes experience and would be a good choice for a company looking for a machine with greater outreach than a Genie 45 in a more compact and lower weight package. Look out for two new models - a 16 and 18 or

The 12.2 metre ATN Zebra has an impressive 8.5 metres outreach

20 metre - in the near future. The Zebra 12 has 230kg basket capacity with 180 degrees of platform rotation, good ground clearance, is simple to operate and has its own in-built diagnostic screen allowing users to monitor the machine's performance without the need to plug in a laptop computer. The machine was available to test at Vertikal Days in June and its build quality and performance are very impressive.

How big a machine is needed to achieve more than 8 metres of outreach?

The new ATN Zebra 12 articulated boom boasts an outreach of eight metres on a machine weighing just over 5,000kg and a platform height of 33ft. We took a look at the smallest articulated boom you need to buy from each major manufacturer to achieve this sort of outreach. The results are surprising.

	Outreach	Platform Ht	GVW	Capacity	Width x Length*	Up & Over
ATN						
Zebra 12	8.5m	10.2m	5,150	230	1.94 x 4.5m	4.0m
Nifty						
HR12 4x4	*6.0m*	*10.2m*	*3,330*	*200*	*1.60 x 4.1m*	*4.2m*
HR154X4	9.2m	13.75m	6,400	225	2.0 x 5.0m	5.7m
JLG						
450AJ	*7.47m*	*13.7m*	*7,257*	*227*	*1.98 x 6.71m*	
510AJ	9.48m	15.8m	7,650	230	2.26 x 7.68m	7.67m
Genie						
Z45/25JRT	*7.65m*	*14.0m*	*6,924*	*227*	*2.29 x 6.83m*	*7.37m*
Z51/30JRT	9.25m	15.6m	7,212	227	2.29 x 7.5m	7.47m
Haulotte						
HA120PX	*6.2m*	*10.4m*	*5,620*	*230*	*1.9 x 5.5m*	*5.7m*
HA16SPX	8.6m	14m	6,850	230	1.83 x 6.65m	6.6m
Skyjack						
SJ46AJ	*7.68m*	*14.1m*	*6,981*	*227*	*2.24 x 6.5m*	*7.63m*
SJ51AJ	9.16m	15.6m	7,316	227	2.24 x 7.25m	7.63m
UpRight						
AB46RT	*7.6m*	*14.1m*	*7,550*	*227*	*2.1 x 5.85*	*7.6m*
AB50JRT	8.5m	15.2m	7,092	227	2.25 x 5.25m	7.5m
Manitou						
160ATJ	8.6m	14.25m	7,450	230	2.3 x 5.0m	7.15m

Units in Italics are company's smallest RT models: Units in normal text are its smallest models with 8m or more of outreach
** Transport length includes folded jibs*

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The Nifty HR21 Hybrid

A practical Hybrid

Alternative power sources for vehicles, such as fuel cells and hybrid cars has been the talk of the trade for several years, although for most of us moving up to a cleaner more efficient possibly diesel car is about as close as we get to getting more environmentally friendly. When equipment manufacturers talk of such things experience says that it is more of a publicity stunt than reality. However UK-based Niftylift has launched and started selling a boom lift that it has dubbed the Height Rider 21 (HR21) Hybrid. The new lift is based on the regular HR21 with its 62ft (18.7m) platform height and massive 12 metres of outreach (to platform edge), 4x4 drive and low operational weight. The Hybrid combines a Bi Energy - diesel electric - power pack with a large electric motor/ alternator. When the lift is used with the diesel engine its Re-Gen configuration keeps the battery pack charged up, but when the lift needs extra power, such as on steep grades or difficult terrain, the alternator becomes a powerful electric motor which combines with the diesel to boost the platform's power.

The concept allows the Hybrid to utilise a smaller more efficient three cylinder Kubota diesel engine, reducing fuel consumption while an exhaust purification system - part of the Hybrid package - further reduces CO/NOx particulates and noise emissions.

The HR21 Hybrid can also be operated as a pure battery powered lift alone for indoor, quiet or clean applications. The unit boasts 40 percent gradeability, a four metre outside turning radius and weighs just 6.3 tonnes, by far the lightest in its class.

Tougher than old boots

Niftylift has also developed an almost indestructible platform which it includes in the HR21 Hybrid package. The 'Toughcage' features a tough, impact resistant composite base and large diameter steel tube guardrails giving extra strength and security for the operator as well as reducing the risk of damage to the cage - a common problem on applications such as steel erection where the operators tend to use the boom lifts as a positioning tool as well as a work platform.


Niftylift's Toughcage

In the UK the Nagano machines are marketed as Hanix

Go East my son

The arrival of Korean built construction equipment in the UK started back in the late 1980's when Samsung excavators first arrived. Since then the range of equipment has increased steadily, although Korean producers are now coming under pressure form the Chinese manufacturers. However while eastern producers have won a fair slice of the earthmoving market, there has been very little, if any, penetration of the access equipment market - until now.

Some of the reason for this is the lack of a significant domestic market for powered access equipment and of course the fact that unlike excavators, the range of products required to compete in the access market is far greater, often with little commonality between product ranges and lower production volumes. Add to this the requirement for strong distribution skills and most oriental manufacturers struggle against the well established US and European producers, even when they have superior products.

However JunJin, the Korean aerial lift producer, recently made its European debut at Platformers Days in Germany on the Liftprofi stand. The German sales and service company has taken on the distribution of the product line for Germany, Switzerland, Austria and Benelux and showed two self propelled booms - a 24 metre straight telescopic and a 13 metre articulated - certainly the first two in Germany and possibly Europe.

Until this year JunJin has specialised in boom lifts for the shipbuilding industry exporting just a handful of machines. Reports from local users in Korea suggest that they are well built and reliable machines, well suited to the work they tend to cover. The company currently offers nine straight telescopic booms (three with jibs) from 18 metres to 32 metres and three articulated platforms with platform heights of 43ft/13m, 49ft/15m and 54ft/16.5m (with jib). All use Hyundai power.

There appears to be plenty of meat in these lifts with the 18/20.5 metre T200, T225 and TJ220 (with jib) weighing in between 14.5 and 15 tonnes!

JunJin has specialised in boom lifts for the shipbuilding industry, exporting just a handful of machines.

Whether JunJin booms will become a regular sight in Europe remains to be seen and will depend more on its ability to work with local distributors and support the product properly. Horst Kruger of Liftprofi is a bit of a maverick and has been ready to work with untested suppliers in the past. He does though have a strong track record of succeeding when he is well supported by a good manufacturer, as in the case of Bil-Jax another line he represents. So keeping an eye on how well Liftprofi does should prove to be a good indicator.

While the Koreans are old hands in the international construction equipment business, the Chinese are mere beginners, although companies such as Sany and Zoomlion have already carved out a respectable market share in the Middle East for their concrete pumps and other equipment.

When it comes to aerial lifts the market in China is still tiny, although it has enormous future potential. JCHI - Beijing Jingcheng Heavy Industry - is the most prominent and professional of the Chinese access equipment manufacturers. Over the past couple of years the company has watched, listened and learnt, designed new models and worked on its product quality. It now offers a solid range of self propelled models, with several units already working in Europe. The company is actively looking for distributors in Europe but is not rushing into any partnerships that it might regret later.

Earlier this year another four of its self-propelled telescopic booms GTBZ26/28/30/32 were CE approved by TüV. This now gives the company eight, CE approved platforms from 22 to 40 metres. Its articulated booms include two smaller trailer lifts and a new

JunJin currently has nine straight telescopic booms - three with jibs - from 18 - 32 metres.

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spider platform the GTBY 22S, a 22 metre wheeled unit with a12 metre outreach.

Whilst really major developments have been thin in recent years, boom lifts are continually being refined and developed to suit both mainstream and niche use. As more manufacturers from all over the globe become involved, the market will continue to grow while the end user will have an increasingly wide range of products to choose from.

SiOPS

Each year a handful of operators around the world are seriously injured or even killed in boom lifts from sustained involuntary operation of the controls. This tends to happen after accidently striking an overhead obstacle such as a beam and becoming trapped between the obstacle and the machine's active controls which then continue to lift the boom or drive into the obstacle eventually crushing the operator.

Articulated boom manufacturer Niftylift recently announced a solution to the problem called SiOPS. The system simply works by using small springs to detect any excessive weight or pressure on the operator control box. If compressed they operate a small switch, the enable button flashes and then works as an override. The foot pedal is cut out until the load is removed from the console. This gives the operator time to consider his position and then use an override switch to operate the machine and get out of trouble.

Be prepared for something completely different

California-based MEC is working on a new product for launch early next year. Clearly a boom type lift, although not as we know it, the patented product could be described as a little bit of boom, a little bit of scissor an a little bit of telehandler all rolled into a tool that could prove to be highly attractive for construction and finishing trades.

With a lift capacity of almost two tonnes and a massive rotating and traversing platform, the new unit should prove popular with commercial glaziers and masons. The unit will be built at the company's new facility located between Fresno and Madera, some 40 miles north of its existing plant - on the site of the old UpRight factory in Selma.

The new concept has been shown to a few of the company's distributors already and as a result the first year's production has already been spoken for according to a spokesman at the company. The new product follows Mec's stated strategy of focusing on niche type products with moderate volume potential and some mainstream appeal. The company has also converted its 40/46ft telescopic boom product that it first showed at the ARA in February 2008 to a track mounted model following its decision not to push into the standard wheeled boom lift market. More information next issue.