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Booming safely

Until a couple of years ago, genuine new product developments in the self-propelled boom market were at best sluggish, with little to differentiate a new boom and a 10 year old one. However in response to higher fuel and transport costs several manufacturers have launched innovative new models, some of which achieve similar or better performance in terms of reach and capacity, but with lower weights and more compact dimensions. Cranes & Access takes a look at the latest trends.

Preliminary results from IPAF's accident database revealed that last year there were 53 fatalities worldwide involving aerial work platforms. This may sound a lot but to put it into perspective, it probably equates to around 14 million man hours for each death, making platforms by far the safest solution for working at height.

Analysing the figures reveals that 26 or almost half of the reported fatalities involved self-propelled boom lifts. In fact IPAF category 3b (self-propelled booms) is the only category to have seen fatalities from every type of accident. There is some argument as to whether an incident (fatal or not) involving say an electrocution or soft ground overturn, is the fault of the

equipment or the operator - but these statistics do not apportion blame, they merely record the facts. With more outreach, more outdoor and heavy construction use and higher working heights it is no surprise that self-propelled booms carry a higher level of everyday risk. But as we have already said the equipment itself is inherently safe.

Crushing and entrapment a UK issue

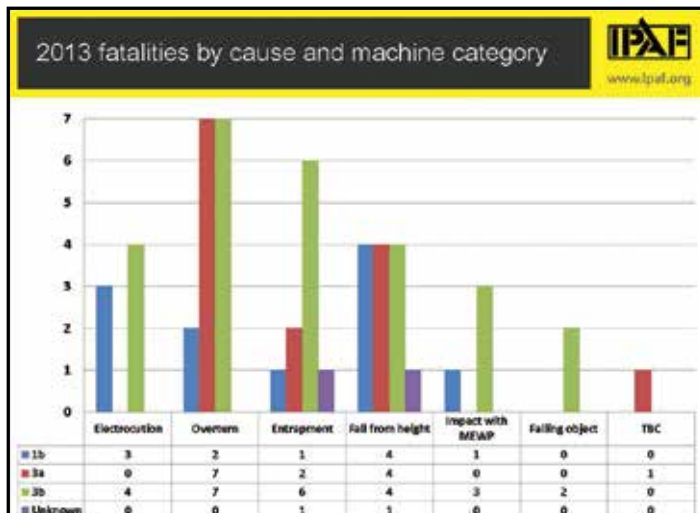
As the vast majority of incidents are caused by operator error rather than any fault of the equipment, training is essential and significant progress has been made in ensuring that those using work platforms are properly trained. In the UK, the UK Contractors Group (UKCG) - which includes the largest UK



A Snorkel A46JRT at a toffee factory in Newcastle

construction companies - has been focusing disproportionately on aerial work platforms, mostly because even though incidents are rare, when they occur it is usually serious or fatal and highly visible. At the end of October last year the group stated that all net riggers and steel erectors operating booms and scissor lifts - along with their associated trades - will require IPAF PAL+ certification or equivalent. The group has also been instrumental in the development of devices to help prevent crushing or

entrapment incidents with boom lifts. The interest in anti-entrapment began in April 2008 when Balfour Beatty indicated - following a fatal accident on one of its sites - that all boom lifts with shrouded foot pedals and unprotected control panels, would not be permitted to work on its sites unless they were modified to prevent the "sustained involuntary operation of the controls". Other major contractors jumped on the bandwagon and before long the tail had wagged the



One of the latest secondary guarding products on the market is Haulotte's Activ Shield



A Genie Z45/25

dog as manufacturers were forced into 'off-the-cuff' solutions' to a low occurrence problem for a small group of influential contractors.

In December the group published the UKCG Mobile Elevated Work Platform toolkit which provides guidance on how its members should manage and permit the use of platforms on their sites. It says that all boom lifts should normally be fitted with a CE marked 'secondary guarding' device or system. But it also states that the contractor should select the most appropriate device for the risks associated with the work. It also adds that if the risk of entrapment is minimal then it is not required. A small but significant amendment to its previous stance.

New terminology

There has been some debate of what these devices should be

called ranging from anti-crushing to anti-entrapment to the now preferred secondary guarding. The logic behind this is that boom lifts are safe by design without the need for additional devices, but that additional equipment or devices might help reduce the risk of serious injury from overhead hazards in some circumstances, hence the term 'secondary guarding' is more appropriate.

There are now a large number of systems available on the market - most of which we have covered in previous issues of Cranes & Access - however in the past six months a couple of new ones have emerged, including two from Skyjack and the Activ'Shield Bar from Haulotte.

A choice from Skyjack

Skyjack has launched two secondary guarding options - one mechanical and one electronic. The

mechanical SG-M system features a lightweight protective steel structure/crash bar which is similar in principal to the AFI Sanctuary Zone or Genie's Operator Protective Structure, in that it physically protects the operator from being hit and/or pressed against the controls - simple and effective.

The electronic SG-E system features a sensor bar that when pushed instantly stops all machine functions and initiates a siren and high intensity flashing beacon. If the bar is released within a second, the siren and beacon will cease automatically, and the selected function will return. If pressure is applied for more than a second, the warnings will continue to operate and the engine will stop, halting all functions until the machine is reset via an illuminated button on the control box. The machine's

emergency controls remain fully operational.

Skyjack developed both options in close co-operation with UK-based Select Plant Hire, the rental/equipment division of major contractor Laing O'Rourke. Both the SG-E and SG-M devices can be factory fitted on new Skyjack booms or ordered in kit form for retrofitting to all models manufactured since 2006. Once fitted, neither system impairs operator visibility, platform space or access to the work area.

Haulotte's Activ'Shield Bar

Haulotte's system uses a spring loaded sensor bar which moves out of the way when a certain amount of pressure is applied to it, creating what the company refers to as a Safety Gap, protecting the operator from full entrapment and potentially allowing them to get out of danger. At the same time as the bar is

How they stack up - models with a working height of around 28 metres

| Make | Model | Working height | Outreach | GVW | Maximum capacity | Power | Jib | Grade | OAL stowed |
|-----------------------|-------------|----------------|----------|----------|------------------|---------------|----------|-------|------------|
| Articulated | | | | | | | | | |
| Niftylift | HR28 Hybrid | 28.0m | 19.0m | 14,500kg | 280kg | Hybrid/Diesel | 150° jib | 40% | 6.78m |
| Manitou | 280TJ | 27.7m | 21.4m | 16,500kg | 350kg | Diesel | 140° jib | 40% | 8.04m |
| Genie | Z80/60 | 25.8m | 18.3m | 17,010kg | 227kg | Diesel | 135° jib | 45% | 11.27m |
| JLG | 800AJ | 26.4m | 15.8m | 15,558kg | 227kg | Diesel | 130° jib | 45% | 11.13m |
| Snorkel | A85JRT | 27.7m | 18.8m | 17,500kg | 227kg | Diesel | 135° jib | 30% | 12.5m |
| Haulotte | HA 260PX | 25.6m | 16.2m | 15,950kg | 230kg | Diesel | 140° jib | 40% | 9.5m |
| Straight booms | | | | | | | | | |
| Genie | S85 | 27.9m | 23.3m | 17,236kg | 227kg | Diesel | no | 45% | 11.6m |
| JLG | 860SJ | 28.2m | 22.9m | 17,200kg | 230kg | Diesel | no | 45% | 12.19m |
| Mantall | HT270 | 28.5m | - | 17,200kg | 250kg | Diesel | no | 45% | 12.5m |
| Mantall | HT285J | 28.5m | - | 17,200kg | 250kg | Diesel | yes | 45% | 12.5m |
| Dingli | GTBZ28S | 28.2m | 22.2m | 17,250kg | 230kg | Diesel | yes | 40% | 12.63m |
| Haulotte | H28TJ+ | 27.5m | 22.6m | 17,300kg | 350kg | Diesel | yes | 40% | 12.35m |
| Sinoboam | GTBZ28J | 28.1m | 20.1m | 16,370kg | 250kg | Diesel | yes | 45% | 12.6m |



Niftylift has launched two new narrow models - the HR15N and HR17N - both less than two metres high

moved, all functions except reverse and lowering movements cut out, allowing the possibly panicked operator to get out of trouble. Once triggered the system can be easily reset from the basket, eliminating machine downtime. The system has been designed to preserve the machine's working envelope and maintain easy access to controls. First seen at Vertikal Days last June, the system will be available on all Haulotte diesel boom lifts this summer. It can also be fitted to machines dating back to 2008 with older units retrofitted on a case by case basis.

Niftylift first on the market

As we have said a good number secondary guarding systems are now available most of which are electrically activated systems such as Lavendon's Sky Siren and JLG's Sky Guard. However the original system Niftylift's SiOPs system was introduced in 2009 and is now

standard on all of its new and larger booms. Shortly after its launch, UK international contractor Balfour Beatty recommended it along with its Tough Cage, as industry best practice. Put simply, SiOPs has a built-in load sensor on the control panel which if pressed down by the operator - due to pressure on him from an overhead obstacle for example - cuts boom and drive functions before the pressure reaches life threatening levels. An override button allows the operator to extract himself from the situation by lowering the boom.

As well as being first with secondary guarding, Milton Keynes, UK-based Niftylift has become the leading innovator in every day boom design, with lower transport weights, more compact dimensions, cleaner more efficient power units including hybrid models and numerous safety items such as secondary guarding. The company has also expanded its range, with its 28 metre working height HR28. Another increasingly innovative producer, Manitou has also ramped up production of its new 28 metre boom, giving users a much wider choice in this class of boom lift.

Comparing 80/86ft class booms

The 80 to 86ft platform height - 28 metre working height - sector of the boom market has until fairly recently been dominated by Genie and JLG, with Haulotte beginning to elbow its way in. However with recent



Haulotte's latest model is the 23 metre HT23RT with longer than normal (2.2 metre) articulating jib and 18.1 metres outreach



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new product launches buyers have not only gained significantly more choice, but the new introductions offer new features and performance, giving this market a major dose of much needed invigoration.

The chart highlights how the most recently introduced booms - Niftylift and Manitou - offer a winning combination of working height, outreach, platform capacity and stowed length. Those machines which compete directly on working height are either heavier (up to 2.75 tonnes more), have longer overall lengths for transport (over five metres more in some cases) or lower platform capacities.

The Nifty HR28 Hybrid - the world's largest battery electric powered boom - is by far the lightest at 14.5 tonnes, as well as having the shortest folded length of 6.78 metres - a whopping 5.5 metres shorter than straight boomed platforms. Outreach does suffer though, but is still reasonable at 19 metres given its weight. More compact dimensions help with transportation, allowing more machines on a low loader or offering the ability to deliver with smaller/cheaper transport. The company is also surprisingly still the only manufacturer offering a true Hybrid power unit on its boom lifts - including the HR28. The system

uses a smaller diesel engine and employs the electric motor to provide a power boost for the toughest grades.

The JLG 800AJ and Haulotte HA 260PX are weight competitive at less than 16 tonnes, however as 80ft models, working height and outreach are not as good as the Manitou of Nifty, and they are longer and with a little less platform capacity.

If you are looking for a machine with a good working height (27.8 metres) and maximum outreach (23.3 metres) the Genie S85 is hard to beat. Its weight is also comparable with other straight boomed machines and it has the shortest stowed length at 11.6 metres.

All three of the Chinese products follow the traditional straight boom design and are longer, heavier (apart from the Sinoboom) and have lower platform capacities. This does though provide them with better outreach.

Manitou success

The new Manitou 280TJ is selling well and it is easy to see why from its specifications. Its outreach rivals the straight boomed machines and it is lighter and along with the Haulotte H28TJ+ has the best platform capacity at 350kg. Its variable hydraulic system and lighter weight



The Mantall HT270 is typical of the straight boomed 28 metre lifts

also allows the use of a smaller power unit, making it more fuel efficient. Manitou initially unveiled two models at the prototype stage in 2011, with the 280TJ featuring a two section telescopic articulated jib, while the 260TJ's jib was fixed. With all the interest in the larger machine, production has yet to start on the 260TJ. Netherlands-based Collé is a big Manitou user and was one of the first to order a significant number 280TJs last April. 1 Up Access was the first in the UK to take one at the end of last year. Managing director, Ben James, said: "We purchased five booms from

Manitou, including the 280TJ which sits perfectly into our 'big' boom fleet and has been on hire from the first day it arrived."

Brand new booms

Niftylift is continuing its range development and modernisation, with the introduction of two new fully redesigned and updated versions of its popular narrow HR15N and HR17N - both 1.5 metres wide but now a reduced stowed height. The original narrow machines were launched almost 15 years ago but their overall stowed heights had crept up to more than 2.1 metres.



The 27.7 metre working height, 350kg capacity Manitou 280TJ is selling well



The new Nifty HR15N has been totally revamped and is now less than two metres high

The overall height on both machines has been reduced to just under two metres. Although a relatively small reduction, Niftylift says it is very important for specific applications, such as accessing and working in shopping centres.

A lot of thought had to be put into the design to reduce the height and weight has gone up slightly with the new machines, which weigh 4,500kg for the HR15N and 7,250kg

for the HR17N. However Niftylift has also taken the opportunity to add the latest features from the larger machines in its range. A more efficient power control system has apparently tripled battery life and will be gradually introduced on other Niftylift machines. The much slicker, better laid-out platform has fully multifunctional proportional controls as well as SiOPs, and for the first time on a Narrow machine - a Tough



The ATN Zebra 16 offers good performance

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Genie launched the world's largest boom, the 180ft platform height/56 metre working height SX-180 with new X chassis which is just over five metres wide fully extended and 2.49 metres retracted

Cage is fitted as standard. Working heights are 15.5 metres and 17 metres respectively with 9.7 metres outreach on both. Other features include 225kg platform capacity, a more rugged 180 degree platform rotator and 150 degree articulated jib. Both are available now.

Poor rates

With rental rates for diesel booms lower than they were 10 years ago, (around £220 per week for a Genie Z45) Niftylift hopes product differentiation will help rental companies obtain a better return. Examples of this are low weights - the HR15 Hybrid is just 4,500kg - around two tonnes lighter than the norm - and the HR17 just 4,750kg - and Hybrid drive offering greater utilisation with one machine being able to work indoors or out. The formula is clearly working with Niftylift booms selling well in the UK, USA, Germany, Australia and Scandinavia. It now exports to around 70 countries, helping it to win a Queen's Award for Enterprise in recognition of its outstanding achievement in export sales. It also won a Queen's Award for Enterprise, for Innovation on its 17 metre HR17 Hybrid 4x4 boom lift.

ATN another new boom lift manufacturer

An eagerly awaited launch last year was the ATN Zebra 16, mainly because of the excellent performance - particularly outreach - of the smaller Zebra 12. The new machine certainly lived up to expectations in terms of build quality and design, but was naturally unable to achieve the extreme differentiation seen with the 12.

Comparing the Zebra 16 with another recently introduced model, the Niftylift HR15 does show how good the Niftylift really is. The Zebra offers an excellent working height, matches the HR15 on outreach and capacity, but is 2,700kg heavier, and two metres longer when stowed, as well as being wider, higher and with a less jib articulation and no hybrid power option.

Big boom

The biggest boom launch last year was Genie's unveiling of the SX-180 - the world's largest boom - beating the previous title holder the JLG 1500SJ by a significant amount. Genie has pushed the design limits

with the 180ft platform height/56 metre working height telescopic boom, aimed at applications from

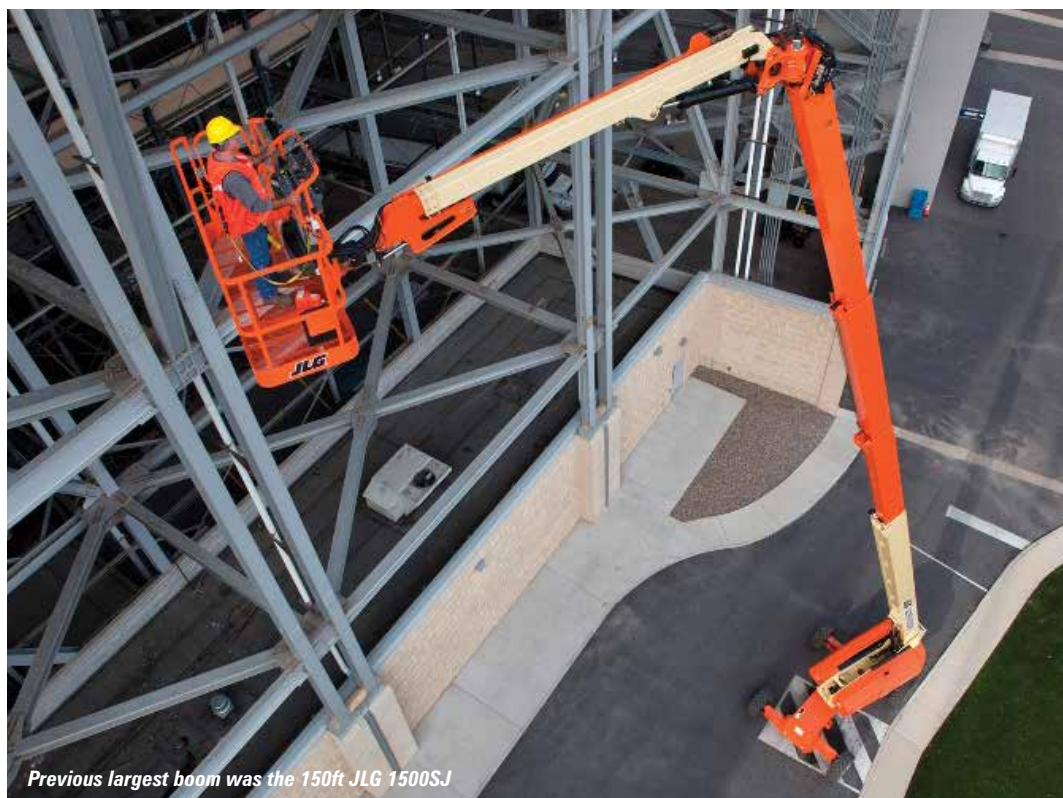
oil & gas to construction and maintenance. With an outreach of 24.4 metres the SX-180 has an ample working envelope helped by its 3.05 metre articulating jib with its unique slewing gear, providing 60 degrees of jib rotation in the horizontal plane, in addition to the impressive 160 degrees of articulation and 180 degrees of platform rotation.

With the jib tucked under in transport mode the SX-180 measures just 12.98 metres long - not too dissimilar to a 28 metre boom. The new X-chassis - also used on the new ZX-135 - is 2.49 metres wide when fully retracted just over five metres when extended. Overall weight is 24,494kg. The SX-180 can be driven at full height with the normal elevated travel speed reduced from 0.65kph to 0.17kph above 38.1 metres. A 7.5 KW generator as standard.

Genie has also updated its 135ft Z135/70 to the ZX-135/70, the

ATN Zebra 16 v Nifty HR15 Hybrid

| | Nifty HR15 Hybrid | ATN Zebra 16 |
|-------------------|------------------------|--------------|
| Working height | 15.6m | 16.4m |
| Outreach | 9.3m | 9.3m |
| Platform capacity | 225kg | 230kg |
| GWV | 4,500kg | 7,200kg |
| Length stowed | 5.1m | 7.12m |
| Width | 2.0m | 2.24m |
| Height | 2.15m | 2.25m |
| Jib rotation | 150 degree | 133 degree |
| Power | Diesel, Hybrid Tier IV | Diesel |



Previous largest boom was the 150ft JLG 1500SJ

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Skyjack products feature:

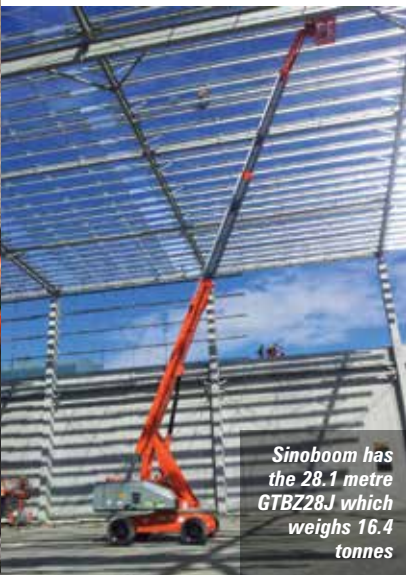
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| | Genie SX-180 | JLG 1500SJ |
|-------------------------|----------------------|---------------------|
| Working height | 56.7m | 47.72m |
| Outreach | 24.4m | 24.4m |
| Capacity | 340kg | 227kg |
| Extended width | 5.03m | 3.81m |
| Jib length/articulation | 3.05m /160° | 7.62m /140° |
| Shipping dimensions | 12.98 x 2.49 x 3.05m | 13.1 x 2.49 x 3.05m |
| GVW | 24,494kg | 21,770kg |



Sinoboom has the 28.1 metre GTBZ28J which weighs 16.4 tonnes

most significant change was the chassis adopting the wider SX-180 frame. The articulating jib has also changed, providing better up, over and telescope-in capability.

Conexpo launches

Those visiting Conexpo in March will also be able to see the SX-180 together with several

other new booms.

JLG 450AJ

JLG will launch the new 45ft 450AJ aimed at rental companies with a lower purchase price, reduced cost of ownership, while retaining a 15.5 metre working height, it offers a larger working envelope with both a jib and non-jib option. Features include easy to use controls and better fuel efficiency.

Skyjack

Skyjack re-entered the boom market in 2007 with the strategy to build simple reliable models, that while they employed some innovative engineering, were not too 'far out' from the mainstream. The recession substantially slowed its development plan, which is now firing on all cylinders. It is upgrading its 45ft, 227kg capacity SJ45T, and the 66ft platform height SJ66T to be Tier IV Final complaint, and we should start to see some line expansion in the year ahead. The company is unusual in that it uses axle-based four wheel drive systems. Its SJ46 AJ and SJ63 AJ articulating booms will be



C&a boom lifts

shown with a similar drive system and hydraulic differential lock/unlock switch, allowing the operator to select it on rough terrain and unlock it to make tight turns without leaving nasty tyre marks. It struggled for some time to make substantial inroads into the market, although it has steadily delivered a surprising number of machines and is now gaining some traction, as more owners appreciate the products and realise that it is back in the boom market for good.

Haulotte

Haulotte has held the number three spot in the boom market for some time, and while companies like Nifty, Skyjack and Manitou might be looking to take over it is as equally determined to stay put and build share. Its latest all - new model the 23 metre HT23RT has been shown in Europe since Intermat 2012. Conexpo will see its launch - rebadged as the HT67RTJ - in the all-important North American market.

The unit has a longer than normal 2.2 metre articulating jib, up to 18.1 metres of outreach, a platform capacity of 450kg and a fast lift speed - a feature highly appreciated in North America and by steel erectors everywhere. It was also the first to feature Haulotte's new modular basket, which allows individual parts to be replaced rather than the whole platform.

IPAF awareness

As mentioned at the start of this feature, booms account for almost half of the recorded fatalities in the IPAF accident statistics. While electrocution accounted for seven or 13 percent of the fatalities, in the US it is the single largest cause of death when using a platform. With this in mind, IPAF will be using its Lift Safety Zone at Conexpo to raise awareness and promote the safe and effective use of platforms when carrying out temporary work at height near to power lines.



The 25.6 metre Haulotte HA260PX



Light and compact, the 28 metre Nifty HR28 has Hybrid power