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# Booming masts

It has been some time since we took an in depth look at the products we call mast booms. Looking back to our first feature in 2004, it is clear that little has changed, apart from a few refinements there have been no significant breakthroughs or new entrants.

What is clear is that the sector itself is often confused in peoples minds, focusing more on the method of elevation than what the product does. To us a mast boom is an aerial lift that uses a mast to obtain its vertical height, but then features a jib or boom on top of that in order to provide a variable outreach. Ideally the mast or superstructure should also be capable of slewing, at least through 180 degrees, preferably more.

A fixed mast lift - along the lines of an UpRight TM12, JLG1230ES or Genie Runabout - is not a mast boom. We have always grouped those handy tools into the scissor lift category. True, it does not have a scissor lift mechanism, but then nor does a self propelled sigma lift. But the fact is that they perform in an identical manner. So having identified the sector, lets move on.

Some 18 years or so since the Delta Toucan took the concept into the modern age and started to make it popular, the product remains something of a niche item. Why remains something of a mystery.



ATN Pfaf 1000R machines

When the product is readily available and users are aware of what it can do, the market grows substantially. For many applications, both industrial and construction finishing trades, it is the lift of choice, but only when users realise its benefits and can get hold of it easily.

So why has the mast boom lift not taken the overall market by storm? One reason might be that it is more costly than a scissor but not as versatile as a small boom lift. While this might not deter an end-user for which it may be the perfect platform, it tends to put off your average rental company which evaluates the rental rate versus its height. Add to this the fact that its outreach is limited so it has a specific set of customers/applications and that the majority of users in Western Europe and North America prefer to rent their equipment than buy it. So if the rental companies don't stock it and it is not on the lips of rental salesmen, it will not be adopted, plain and simple.

In spite of this more and more users are discovering the concept, albeit gradually, and most manufacturers have remained in the market,



c&a

mast booms



although it is increasingly dominated by French suppliers. This might seem odd especially when you understand that the dominance has nothing to do with the fact that Europe's largest aerial lift manufacturer - Haulotte - is French. The dominant player in this market is JLG, which acquired the Toucan product and its Tonneins production facility from Grove/Manitowoc in 2004. Grove had acquired the same assets from Delta a few years earlier, before being acquired by Manitowoc in 2002.

No, the real reason that France dominates the mast boom market is down to one company and in essence one man, Daniel Duclos. As a young design engineer he had the brief to produce an improved and less expensive version of a concept pioneered by North American specialist manufacturer Lift-A-Loft. Having designed the product and built the prototype something happened between the client - Alexis Biramian of ABM and Duclos, the facts of which remain

hazy. The outcome though was that Duclos took over the prototype and started to market it under the Delta banner, using a toucan as part of his marketing campaign. Perhaps its long beak looked like the mast booms jib?



Driving a Toucan



Manitou 100VJR Evolution

The new products took off well enough selling to end users but for reasons we have already discussed, not with rental companies. Selling aerial lifts on a one by one basis to end users who might have a two year budget procedure is something of a slog. So when the French economy slowed a little in the mid 1990's Duclos decided to start renting as well as selling them. He figured that having failed to persuade any rental company to take the product seriously he would disregard concerns about competing with them and show them how it was done. Sure enough the rental operation was a success and the expanding fleet (which eventually morphed into Access Industrie) spread the word, eventually forcing other rental companies to invest in them, which in turn, further boosted awareness.

As a result the French market takes the product very seriously and mast booms are widely used. Other locally based manufacturers, including Manitou, Haulotte and ABM all introduced similar products.

ABM - owned by Biramian, Duclos' original client - was acquired by Haulotte and the product lines merged.

In spite of this success it has not been emulated anywhere else. Ian James, now with APS the Omme, Hinowa and UpRight distributor, began to build a dedicated mast boom rental fleet in the UK under the Delta Rentals Name, (albeit in a more conservative manner to Duclos), after Grove appointed him as its UK distributor. However then JLG took over the Toucan distribution and James made his move to APS. As a result of that move the UK and for that matter Ireland, no longer has a rental company that really champions this type of machine. Haulotte says that it is having increasing success with its Star 10 mast boom (See the James gang - page 22) to institutional and retail clients, largely on a sales basis. As the owner of UK Platforms it has more potential than anyone to 'champion' the concept in a major way as Duclos did in France, but is not showing any inclination to do so.



*Haulotte is having increasing success with its Star 10 mast boom*

Many other rental companies do have one or two or even several units in their fleets but none have enough to make it painful if they are not rented out. Until they do the concept is likely to remain a small specialist niche outside of France.

### So what's new?

There are four principle manufacturers of mast booms plus a handful of niche producers including Duclos himself as an investor in ATN which builds units mounted on wheels and rubber tracks. The past 12 months have seen two new models enter the market, the first came last summer from Manitou which completely revamped the two models in the VJR Evolution series.

### Manitou Evolution

The eight metre working height 80 VJR and 10 metre 100 VJR mast booms both offer up to three metres of outreach.

However the new offerings look so similar to the ones they replace that you could be forgiven for thinking that they have simply been 'refreshed'. However you would be very wrong. Although the Manitou products performed well, had a strong reputation and were beautifully made and finished, many prospective buyers said they were too heavy. So Manitou literally started again,

completely redesigning them under the skin and reducing the overall weight to 2,250kg and 2,600kg respectively. At the same time it clipped a few centimetres off the height and extended battery life between recharging through an improved electrical system. Given that manufacturers - other than JLG - claim that it is hard to make a decent margin on their mast booms, one assumes that Manitou also took the opportunity while redesigning to reduce the build cost? If they did it certainly doesn't show in the product itself, which appears to be every bit as good, if not better than the models they replace.

### JLG Toucan

Then in September at the APEX show, JLG unveiled its latest 10 metre offering the Toucan 10E which is just now beginning to ship. The Toucan range has always been different from the offerings built by other producers in that it uses a forklift rail type mast assembly, while the others all use telescopic box type masts. The argument is that the box offers more rigidity, as well as avoiding the stacking effect of a fork lift mast design. However the Toucan masts have been honed and fine tuned by both Delta and Grove to the point where it has become a strong feature that the company



*Manitou completely revamped its two mast boom models last year*

uses to sell against the boxes, also pointing out that inspection and maintenance of the telescope mechanism is much simpler with an open mast than with a closed box. One of the major changes is its direct electric AC drive fitted with two brushless AC motors, the first time that JLG has used this technology. Its other direct drive products use DC motors. Other benefits include a faster 5.5 kph drive speed and more rapid battery recharging.

The onboard diagnostics 'advanced design electronics' (ADE) control system is said to give smoother machine control, while the standard LCD display gives added troubleshooting capabilities. JLG's engineering team has also simplified the hydraulic system with potential leak points reduced by 75 percent - now only six hydraulic hoses run throughout the entire machine.

The proportional drive and lift controls have also been improved as have the platform, jib and outreach. The Toucan 10E is rated for two people (200 kg) for both indoors and outdoor usage.

Loading onto trucks or trailers has been made easier thanks to the increased, 25 percent, gradeability and 105mm of ground clearance. But while the overall machine weight has been reduced to under 3,000kg, it is still a tad heavier than some competitors.

### Haulotte Stars

Haulotte gave its mast booms a good going over some years back in order to make them easier to build and today the Star 10 is probably the second best seller after the JLG Toucan. While there are five machines in the Star range - 6, 8, 10, 11 and 12 - the smallest Star 6 does not have a jib and falls into another category. The Star 10 has almost identical specifications to the Toucan 10E - strange that. However the Toucan is slightly quicker across the ground and has 100 mm more working height but is 230kg heavier. The Star 10 has a best in class overall length of just 2.66 metres.

### UpRight

UpRight entered the market in the late 1990's with a three model line up, the MB20N, MB20 and MB26. The MB20N was the first and only full size mast boom that kept its overall width down to single doorway proportions - 810mm - a feature that has always been in demand with small slab scissor lifts. The lifts also featured active pothole protection in order to provide greater ground clearance in the fully stowed travel position. In spite of this the MB20N never really sold that well, with most buyers going for the 10 metre working height MB26 with its more traditional 990mm overall width. The company virtually stopped making the MB in 2004 due to the poor margins it generated, but the range has been brought back under

Tanfield ownership and has done relatively well. The company has seen sales steadily improve since and recently landed a deal for seven units with one of Austria's leading crane and aerial lift rental company Felbermayer.

### Lehmann

An early entrant in this market was Hanover-based Lehmann. The company introduced a very sophisticated product in the mid 1990's that it built in low volume for the German car plants. Dubbed the Emu for obvious reasons, the product was one of the first aerial lifts to feature full electric motor-controlled hydraulics. The problem was the combination of a high specification and low production volumes made them considerably more expensive than the Delta/



UpRight MB20N

The largest Lehmann machine features 5.15 metres of outreach



Toucan product. In spite of this the company has persisted with mast booms and today offers a model with a long telescopic jib for additional outreach. Four models with working heights between eight and 12 metres are available in the UK from Wakefield-based Northern Access. Its largest model - the Emu ST-K 1205 - is able to fit through standard doorway, has a 12 metre working height and an amazing 5.15 metres of outreach. Correspondingly it weighs 4.8 tonnes.

### ATN

All the ATN platforms are built in Tonneins, France, only a short walk from the JLG Toucan plant. The company says that it has opted for a rugged all hydraulic design, capable of withstanding the knocks of the rental business. It has also reduced the amount of electronics used, saying that its battery powered 810, 880R and 1000R Piaf units are easier and less expensive to fix should they go wrong. Covers are provided and any form of plastic



or ABS avoided. The company says that should a cover be damaged a hammer will often fix it!

ATN makes both tracked and wheeled machines - the R signifying wheels - with working heights from 8.1 to 10.04 metres. The Tracked models are it says a niche within a niche, and best suited for applications where low ground bearing pressures are required.

**The Alley Cat**

Niftylift was also a brief player in this market with a first class product in terms of specification and overall design. The aptly named Alley Cat was an excellent machine to use with a number of interesting features, however battery life was poor and it was produced at a time when Nifty was still pioneering its

electric controls. Its other products used full pressure hydraulic controls, so there were some very unNifty-like reliability issues. Add to this the fact that the company, like many others, found it difficult to turn a profit on them and it is not hard to see why it let the product fade from its line having built very few.

With the work the company has now done on the controls of its larger booms and the fact that it currently has the benefit of the exchange rate it would do worse than dust off the design and take a fresh look at the market? Interestingly last year it won a long battle with Caterpillar, winning the right to continue to use the Alley Cat name if it so wishes. However the battle was probably more one of principle than a precursor to a relaunch.

French scaffold manufacturer Comabi has also produced products at the lower end of the market, but has never really managed to get them off the ground.

So what of Lift A Loft the original producer for this type of machine? The company's mast booms were fairly rustic and had a legendary reputation for unreliability. This is not untypical of new concept products, the first All Terrain cranes for example were horrendously unreliable.

However the Lift A Lofts were also very expensive and the company was not the easiest to deal with at the time. No matter what might be said about Lift-A-Loft, it did and still does produce some highly original aerial lifts, some of which appear to defy gravity, the company is not presently active in Europe but does have a full and impressive range.

**The future in rental**

The modern mast booms are extremely reliable and first class products, much appreciated by those who know how to use them as well as those rental companies that have made a business out of them - largely in France.

Perhaps given the tough economic times we find ourselves in, where rental companies are looking for niche markets where better rates and conditions exist, the mast boom might become a more mainstream rental tool outside of its home market?

**Quickspecs**

Toucan 10E	
Working height:	10.10 m
Platform height:	8.10 m
Stowed height:	1.99 m
Overall width:	990 mm
Overall length:	2.82 m
Horizontal outreach:	3.08 m
Platform capacity:	200 kg
Standard platform size:	0.90 x 0.70 m
Ground clearance:	105 mm
Weight:	2,990 kg
Drive speed, lowered:	5.5 km/h
Dive speed, elevated:	0.75 km/h
Gradeability:	25%
Use:	Inside and outside, 2 persons.

Haulotte Star 10	
Working height:	10.00 m
Platform height:	8.00 m
Stowed height:	1.99 m
Overall width:	1,000 mm
Overall length:	2.66 m
Horizontal outreach:	3.00 m
Platform capacity:	200 kg
Standard platform size:	0.90 x 0.7 m
Ground clearance:	
Weight:	2760 kg
Drive speed, lowered:	4.5 km/h
Dive speed, elevated:	
Gradeability:	23%
Use:	Inside and outside use

Manitou 100VJR	
Working height:	9.90 m
Platform height:	7.90 m
Stowed height:	1.99 m
Overall width:	990 mm
Overall length:	2.82 m
Horizontal outreach:	3.00 m
Platform capacity:	200 kg
Standard platform size:	0.88 x 0.68 m
Ground clearance:	100 mm
Weight:	2,630 kg
Drive speed, lowered:	4 km/h
Dive speed, elevated:	0.6 km/h
Gradeability:	23%
Use:	Inside 2 person/ outside 1 person

ATN Piaf 1000R	
Working height:	10.04 m
Platform height:	8.04 m
Stowed height:	1.98 m
Overall width:	1,003 mm
Overall length:	2.88 m
Horizontal outreach:	3.46 m
Platform capacity:	200 kg
Standard platform size:	0.90 x 0.80 m
Ground clearance:	
Weight:	2980 kg
Drive speed, lowered:	4.8 km/h
Dive speed, elevated:	1.0 km/h
Gradeability:	20%
Use:	Inside (200kg) & outside use (120kg)

UpRight MB26	
Working height:	10.00 m
Platform height:	8.00 m
Stowed height:	1.98 m
Overall width:	990 mm
Overall length:	2.8 m
Horizontal outreach:	3.0 m
Platform capacity:	215 kg
Standard platform size:	0.78 x 0.73 m
Ground clearance:	
Weight:	2672 kg
Drive speed, lowered:	3 km/h
Dive speed, elevated:	0.7 km/h
Gradeability:	25%
Use:	Inside and outside



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