



SJ16 VERTICAL MAST LIFT

A compact footprint, superior maneuverability and zero inside turning radius.

ANSI model shown.

Skyjack's self propelled vertical mast lift features a compact footprint and superior maneuverability. The SJ 16 has a working height of 6,75 m. When operating in tight workspaces, a high degree steer angle allows superior functionality and flexibility by offering zero inside turning radius. The SJ 16 features a 0,41 m traversing platform, providing increased access and the ability to reach over potential obstacles. A unique slide away platform provides easy access to components, when raised or in the stowed position.

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Automated scaffold

C&A

mastclimbers

We have been covering the mastclimber market for many years and it has often seemed to be on the verge of a major market breakthrough. As the concept has developed and been refined many thought that it would eventually replace the majority of steel façade scaffold – particularly with the elimination of ladders and the large scale labour and logistics required to install and dismantle traditional scaffold. And that is without mentioning manual handling and the aesthetic intrusion on a building. However after 30 plus years since it first appeared on the scene the mastclimber has still not taken a significant slice of that market.

In spite of high labour costs, working hours directives, manual handling restrictions and tighter safety rules when working at height nothing much has changed for your average façade scaffold application. It is true that well designed system scaffold has made large strides to replacing the old tube and

coupler in most countries. And while mastclimbers are now regularly used in a number of specific types of work, the bulk of contractors don't even seem to consider them in spite of the many benefits that the mastclimber manufacturers are only too keen to present and demonstrate.



Mastclimbers are much better at maintaining the building's aesthetics



This is a far cry from the idea of the original pioneers who thought that it would take over all but the most complex and long term façade work. One clue to what might be slowing or preventing its uptake is its geographic spread. Look for the big markets and it has tended to be the Netherlands and Nordic countries where penetration is highest. Both markets have a widely accepted rental concept, both have suffered severe skill shortages during periods of economic growth and both have high labour costs.

So why then is Germany or the UK not among the big mastclimber markets in terms of penetration?

Several of the larger access rental companies in the UK tried to run mastclimber rental fleets but failed primarily because the equipment is far more labour intensive than mobile powered access platforms. EPL and GKN were classic examples of access rental companies which added mastclimbers and then struggled with the labour problems of designing, erecting, handing over, servicing and dismantling.

Mastclimbers are a bit of a hybrid - not general equipment rental but not quite full-on contracting. With mastclimbers you have to provide a service and not just a piece of equipment. Consideration has to be given to engineering the ties and supports, fitting in with the site requirements and the supplier must also coordinate with staff on site or occupants in the building which makes it far more complex than most think. Many dabble with them for a few years but ultimately get rid.

One of the major questions to be answered is how do you choose between when to use a mastclimber



Modified platforms working on a curved building

or scaffolding system for carrying out work on a building.

While not taking the sector by storm, mastclimbers are becoming more and more common on construction sites around the world. But like many other 'new concepts' in the construction industry, they take a long time to be accepted, even when there are substantial savings in time and expense.

What are they?

Perhaps their poor uptake on sites is the result of a general lack of awareness or preconceived ideas of them being more costly, unsafe or complicated?

In the UK for example mastclimbers are generally used on projects more than 20 metres high but as scaffolding is limited to about 45



Mastclimbers are not only used in construction here an Electroelse platform is being used indoors on a ship maintenance project

metres, the higher the project the more likely mastclimbers will be used. Taking a simple example of a 100 metre long building with a height of 25 metres i.e. 25,000 square metres, the mastclimber solution is said to be about 60 percent cheaper. And as projects are being squeezed on costs due to the economic slowdown, more and more contractors are looking at alternatives to the traditional access methods they have used.

Most mastclimber platforms in Europe have rack and pinion drive that climbs one or two vertical towers. This allows them to reach much higher heights and carry greater loads than traditional scaffolds, the heavy duty Canadian built models use different technology and offer even greater platform capacities - ideal for block laying. In the USA figures suggest that there are about 6,000 mastclimbers working on contracts, the UK around 1,500 to 2,000. They offer many advantages over other forms of traditional scaffolding. They are quicker to erect and dismantle and can play a major role in reducing the risk of shoulder and lower back injuries to tradesmen since they can be adjusted to an optimum working height.

Yet some of their advantages, such as their ability to reach beyond a height of 150 metres can create new and potentially hazardous conditions. When installed and used correctly, they are safer than traditional scaffold both during use and erection, but like any façade platform when they fail, the results can be catastrophic, often involving multiple deaths or serious injuries. For example just 12 mastclimber incidents in the US cost 18 lives and a number of serious injuries. Like other forms of powered access mastclimber accidents are usually down to two main things. A serious

lack of training or a dreadful lack of maintenance. They have the additional complication over other forms of powered access of needing to be erected and dismantled for each job. However the procedure for doing so is always clearly set out and if followed religiously is exceptionally safe. Unlike suspended platforms it has a direct connection with the ground and for greater heights the building. Unlike traditional scaffold there is no need for a lot of climbing and a lot less manual handling so overall it is exceptionally safe and truly a product for the new environment.

Mistakes can happen

However when people are involved mistakes do happen, a mastclimber collapse on a Lend Lease contract on the Banco Sabadell building in Madrid, Spain last year is a case in point - a twin mast platform was travelling to its work point, when the platform reached its destination, the sixth floor around 25 metres up, reports say that the platform immediately dropped. The emergency braking system on the left hand mast engaged but the right hand drive unit continued to fall down the mast until its progress was halted by the blocked left hand drive unit and the angle of the platform to the mast. However the shock load of the rapid stop and the horizontal forces applied by the falling platform caused the left hand drive unit and mast to fail too and the platform fell to the ground, causing two fatalities and one serious injury.

The initial investigation indicated a shocking lack of maintenance on the motors and brakes, tie distances not complying with manufacturers specifications and possible tampering with electrical circuits, among other issues. As with over 90 percent of accidents it was totally avoidable and should not



have happened. An initial response by the contractor - naturally keen to react - has been to institute draconian measures based on this specific incident, measures that might just introduce different risks. One of these measures is the requirement to be 'tied-off' whilst working in a mastclimber.

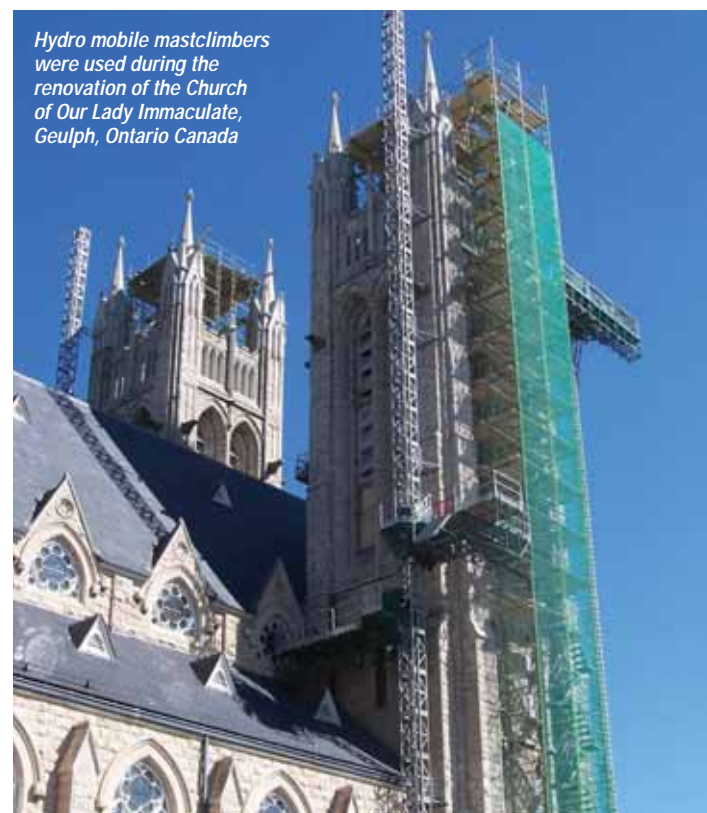
IPAF recently included mast climbers in its Technical Guidance Note H10812 titled Fall Protection in Mobile Elevated Work Platforms

Getting the right mast climber for the job is also important. Some units are designed for stucco or painting work and are too lightweight for heavy block work, the capacity of the platform is extremely important. Also many have narrow (900 to 1,100mm wide) platforms which also makes working from the platform for some trades a bit of a challenge.

Secret of success?

As mentioned above, renting and installing mastclimbers is much more complicated and more labour intensive than other forms of powered access equipment. On many contracts the mastclimber supplier is involved with the contractor months before it starts clarifying details of loads and sequencing to enable cladding or glazing sub-contractors to have the access to the areas when required.

Other advantages is the reduced damage and a better finish - no board and lift lines or scaffold tie patterns which gives a better cladding finish on the building, however according to mastclimber suppliers, contractors rarely carry out a proper cost analysis which takes this sort of factor into consideration.



Hydro mobile mastclimbers were used during the renovation of the Church of Our Lady Immaculate, Geulph, Ontario Canada



UK-based Brogan Group has recently opened the first dedicated IPAF mastclimber training centre in London

There is a down side in that mastclimbers place an additional onus on the contract programming as two trades cannot work at the same time. Windows, for example, would have to be finished before the next trade commences. But that is really down to better project planning, something that is increasingly happening on the better managed construction sites.

Dedicated mastclimber training centre

UK-based Brogan Group has recently opened the first dedicated IPAF mastclimber training centre in London. The company says that its experience shows that the use of mastclimbers is becoming more popular in the construction industry, thanks to them being relatively easy to move and erect, while allowing safe work at height for brick and masonry work, glazing, restoration projects and many similar trades.

Benefits over other powered access methods include being able to work from the safety of the platform without the need for fall restraint protection (although this can be provided if required of course). The platform can also be configured to fit to the building profile rather than continual movement from ground level to reduce the inside gap and cantilevered sliding platforms can

be used to alter the platform position to the building façade as the platform is raised and lowered i.e. to work around balconies.

"Although mastclimbers have time and cost benefits compared to many other access solutions, more attention needs to be paid to design, planning, supervision and training which can be provided at our London training centre," said James Lewis, Brogan group health and safety manager.

The courses will be delivered by Brogan's in-house IPAF qualified instructor Jim Casey who has more than 10 years' experience in the mastclimbing sector. The courses available at the centre include User, Demonstrator, Installer and Advanced Installer.

The centre boasts impressive training facilities including a decent outdoor practical area and indoor training room. Courses can also be delivered on site if suitable facilities are provided by the client. All training is delivered in line with IPAF training requirements.

"Effective training and proficient technical competency are a key component in achieving a safe working environment," adds Lewis. "A safe culture attitude can be achieved through the education of the users and their responsibilities."



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Quicker and cheaper chimney construction

Italian mastclimber manufacturer Safi has recently introduced an innovative system which reduces the project time on chimney construction projects. Its specially designed rack and pinion circular platforms have provided contractor GASCO with a highly efficient access system to help build four, 120 metre high steel chimneys which are eight metres diameter at the base reducing to five metres diameter at 25 metres high right up to its maximum height.

One of the main features of all Safi's mastclimbers is the possibility to convert them into almost any circular shape. The main problem of

the chimney's changing diameters was overcome with the use of an easy to operate, push-button automatic sliding platform



Safi's circular platform cope with a reduction in diameter from eight to five metres

extensions that can extend up to three metres. The special platforms have been certified to all EU safety regulations and allow for constant adjustment to avoid any dangerous gaps between platform and work surface.

Safi says that the contractor was very happy with the new system which resulted in numerous benefits, including substantial cost savings. The number of tradesmen required was significantly reduced and the new system resulted in completing the chimney in record time as well as saving the cost of a large mobile crane to lift the chimney modules.

The company says that a similar type of application can be used in Liquefied Natural Gas and petrol tank construction/maintenance as well as construction and maintenance in refineries and power



stations. SAFI also manufactures explosion proof industrial elevators for the oil and gas industry based on rack and pinion technology in accordance with BSI DD222 and EN 81 regulations.



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Common componentry

Just one of many Italian mastclimber manufacturers is Poggibonsi based Electroelse which also produces construction hoists and material hoists. Distributed in 64 countries across Europe, Japan and the Caribbean, the products are distributed in the UK and France through Harsco which has a substantial mastclimber business.

"All our mastclimber components are produced in-house and are typically 'medium quality'. Compared with some Chinese made products we can be 20 to 40 percent more expensive, however our mast sections are considerably more heavy duty than a typical Chinese product," says Said Shabana, export manager for Electroelse. "One of the main advantages of our system is that about 75 percent of all components on each model are common across our product range.

However this does not mean that we rarely launch new models. Generally we introduce two new products a year and this year we have already launched three. Many are kept in stock so delivery is quick."

The company was formed in 1982 supplying components to Alimak however in 1993 it produced its own mast and 2002 supplied control panels. Currently 55 people work at the factory producing 24 models which equates to about 600 motor units per year.



Crane operators for mastclimbers?

Last month at IPAF's US Convention Kevin O'Shea of Mastclimbers LLC conducted an awareness session which discussed new regulations which are likely to have an impact on mastclimbers.

Mastclimbers and hoists are frequently subjected to new rules and regulations around the world. One of the latest requirements in North America which could have a significant impact on some users is an inadvertent by-product of the new crane regulations. The new crane rule which requires all operators and riggers to be trained and independently certified will also apply to many heavy duty davit type material handling cranes used on the large Canadian-built mastclimbers.

The crane rule applies to all cranes used in construction with a capacity over 2,000lbs. As a 'crane' they will need a certified crane operator, rigger and when necessary a signaller. Certified riggers will also be required for assembly and disassembly work as well as for hooking or unhooking and guiding a load. Signallers are required when the point of operation is not in full view of the operator or the operator's view is obstructed. In the case of the mastclimber platform the operator should have a clear view, so this will probably not be an issue. However a trained operator and rigger would be needed on the platform. This has significant implications for installers and users of mastclimbers as will the requirement for additional information which includes:

- The weight and the position of the centre of gravity of any loads being lifted
- Following prescribed methods for slinging a load, including, orientation of any shackles, pins or choker angle
- The requirement to use a tag line to control the load
- Having a form of communication between the crane operator and rigger
- Extra inspection of all lifting equipment



A Fraco crane

These requirements while good practice in general can be onerous for a simple platform mounted davit, which is used to raise materials and mast sections to the platform. Talks over the implications for mastclimbers are on-going with OSHA.



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E-Mail: info@geda.de
www.geda.de