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# Coming of age

To outsiders the mastclimber market may look a little staid with the latest products seeming to be quite similar to those of 10 years or more ago. A lot of this is down to the fact that like a tower crane, the structure of the product itself reached a high level of refinement early on and visually little has changed since.

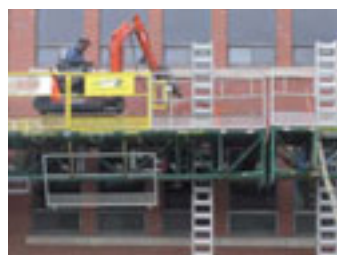
However don't let this fool you. Much has been happening in the mastclimber world. The products on the market today offer increased versatility, are easier to erect, easier to transport and offer a much wider capability to be modified for tricky applications with standard systems and components. Add to this a huge increase in the choice on offer and you have a product that offers an amazing range of capabilities.

The use of mastclimbers in the UK and Ireland has grown rapidly in recent years after something of a lull in the mid to late 1990's. New regulations and working practice rules, not to mention simple economic drivers have significantly curtailed the use of traditional tube and coupler scaffolding with contractors looking at alternatives such as system scaffold and increasingly

mastclimbers. As a result of the increased demand the number of companies offering mastclimber rental/contracting has grown considerably, which in itself is helping to increase their usage on high rise construction projects.

## A global market

One of the interesting developments of the past year or two is the 'globalisation' of the mastclimbing business. Typically the North American market has tended to prefer a different type of climber than those used in Europe.



One application for high capacity mast climbers - a mini excavator equipped with hydraulic hammer removes brickwork.

American models were in fact based on an older British concept targeted at the masonry trade. As a result they were heavy-duty products with high platform capacities up to 9,000kg, hydraulically driven by internal combustion power units with slow climb and descent speeds. At the extreme as slow as 900mm a minute! European products on the other hand tended to be lighter weight, electric powered rack and pinion models aimed more at renovation work or tasks that did not require heavy loads to be transported to the work area.



Fraco's continuous screw system

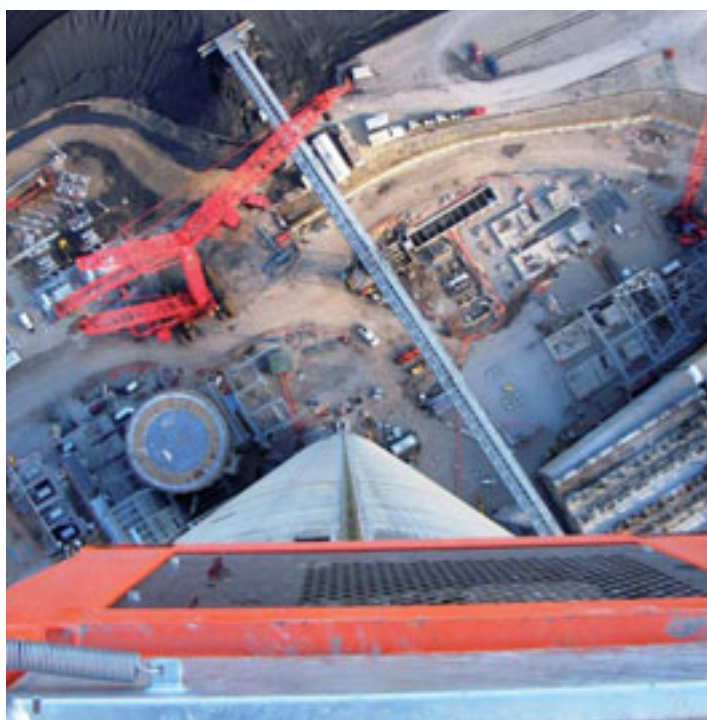


They have also introduced lighter duty rack and pinion, or in the case of Fraco, continuous screw models both of which offer significantly faster lift speeds.

Market leader Alimak-Hek recently launched its new modular range with combines interchangeable components with three mast sizes, for light, medium and heavy duty applications. The idea is of course to be able to offer all trades on both sides of the Atlantic and further afield, a tailored product without a multiplication of completely different models.

In recent years an increasing number of European manufacturers have managed to carve out a share of the North American market for themselves, probably due to the faster lift speeds, while North American, largely Canadian, manufacturers such as Hydro Mobile and Fraco have made significant inroads into Europe.

*How good is that mast?  
More than 300 metres up on a chimney.*







Ultra heavy duty! A four mast Hydromobile M series mast climber installation.

The company has in fact gone one further in that many of its components will work on both the HEK mastclimbers and transport platforms as well as Alimak hoists, providing real versatility for contractors and particularly rental companies. As part of its switch over to the new modular system HEK recently shipped the last of its MSM mastclimbers, having

produced almost 3,000 base units since it was introduced.

Another company which had already managed to bridge the divide was Finland's Scaninter Oy and its Scanclimber product range. While building its products to the European

rack and pinion design concept, it was early in offering a range that bridged the divide. The number of manufacturers producing mastclimbers is also growing with companies exporting from all over Europe and North America, including Holland, Sweden, Italy, Spain, Czech Republic, Finland, Canada and more recently China. Note the absence of significant German manufacturers, this in spite of the fact that the country boasts a number of world class hoist manufacturers. In fact Germany is still very much a system scaffold market with contractors being even more conservative than those in Britain. The absence of a major French producer is a little more difficult to explain.

The benefit of all this 'global' activity is that those buying mast climbing work platforms - mostly rental companies and contractors - now have a real choice, both in the type of platform they buy and the number of alternative suppliers. It has also played a role in the expansion of many company's product lines, all in all a major benefit to users.

**The key benefits of mast climbers over façade scaffold**

UK contractors have in the past been slow to adopt new ideas and, at the risk of being guilty of a sweeping generalisation, they have not been helped by a reluctance of rental companies to spend the time and energy required to convince contractors of the benefits that mastclimbers can offer. These benefits include:

- Lower cost - mastclimbers can offer cost savings of between 30 and 50 percent over traditional steel façade scaffolding when transport, erection/dismantling, and speed of work are all taken into consideration.
- A more aesthetic appearance to the building during renovation work (building is not completely hidden by ugly tube and clamp scaffolding).
- Greater security - no ladders are required and the platform can be disabled and secured at the ground floor level.
- Greater safety - workers are enclosed within the guardrails and should have no need to climb ladders.
- Greater efficiency and quality of work - tradesmen work at the optimum height, no need to bend or stretch so they work faster with better quality work.
- More efficient material handling thanks to the ability to carry all the materials and tools to the precise working area and be right at hand for when required.

**Smaller projects**

Another development which has yet to take off in Europe is the use of mastclimbers on smaller projects such as three to four storey residential buildings for new build and even painting, rendering and guttering/fascia work.

Seems far fetched? Well the latest towable mastclimbers are relatively lightweight, can be set up quickly and provide an ideal working platform for certain types of work.

In the UK these smaller projects still employ traditional tube and clamp scaffold, often provided by local family companies. One thing is for sure, this will change. The cost of labour combined with a



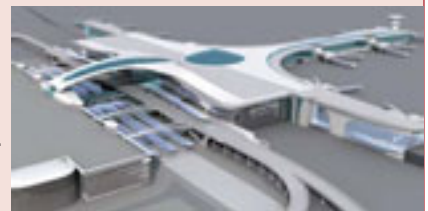
With Mastclimbers tourist attractions/city landmarks need not be covered in scaffold for years.

skills shortage and regulations such as work at height and manual handling rules will encourage the use of such climbers. One of the big restrictions on this market at the moment is the lack of availability. Few rental companies stock them, and even fewer builders, painters and other trades will be aware of them or even consider them. It is possible fast forwarding five years or so that general rental companies such as HSS, Speedy and A-Plant will stock mast climbers such as this? Watch this space.



**Mastclimbers at Moscow Airport**

The new terminal three at Sheremetievo airport in Moscow is currently a hive of activity as its fast-track construction nears completion. Among all the access and lifting equipment are a large number of mastclimbers provided by local rental company L-Tech. These have proved particularly useful on tasks such as cladding, where their height, platform size and lift capacity has proved ideal, particularly for work above 20 metres.



The plans for the new terminal 3 at Sheremetievo.



A series of Scanclimber mastclimbers were used to fit the upper cladding and carry out trim work on this building.

Two mastclimbers are being modified to accommodate the beams and gain clear access to the ceilings.





# Compact and easy to use



Almost a year after it announced its new Multilift hoist concept at Bauma, Geda has introduced its new 'medium class' Multilift.

Geda says that the new hoist is both compact and easy to use and has already proven popular with buyers all over the world.

The main reason for this positive take up, it says, is the lack of reasonable alternatives to large hoists in terms of performance, which forces many users into using oversized hoists for the job. Geda says that in addition to the higher acquisition costs for such hoists, logistics and transport costs add a further financial penalty. Once on site the larger hoist products consume more of the often limited space available and take longer and more experience to assemble.

The Geda Multilift is shipped to site as a complete one-piece base unit with dimensions tailored for easy container or flat bed truck shipping. Once on site work can begin immediately on setting the base

*The Geda Multilift 12 person hoist on a project in Queens Square, Sydney. The installation is 135 metres high with 27 levels and a speed of 40 metres per minute.*

and putting the mast together, no need to spend any time assembling the cage/car. The company also claims a first with its patented flat cable which is integrated into the base enclosure.



*The new Geda Multilift hoist with high base enclosure.*

## Hospital parking hoist

A Maber MB2000/150 in use on the construction of a seven storey NCP car park at Addenbrooke's Hospital. The 2,000kg capacity goods hoist is being used on a daily basis to transport a variety of building materials to each of



the seven levels at a speed of 30 metres per minute. It is equipped with a 3,200mm x 1,500 mm cage and is powered by a pair of 9.2 kW electric motors.

The site manager at the hospital said: "The hoist is proving perfect for our requirements. For example, we can load whole packs of blocks directly into the cage using a telescopic handler, hence minimising manual handling."



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# Cladding Liverpool's tallest

At 140 metres high, the West Tower in Old Hall Street is by far the tallest building in Liverpool. As with any high rise project in a tight city centre site, several aspects of the construction presented significant challenges to the main contractor Carillion.

Reportedly employing the tallest tower crane in the UK at the time, as well as a 120 metre hoist and two Scanlift SC5000 mastclimbers, the building houses Britain's highest restaurant - the Panoramic Restaurant Liverpool - on its 34th floor.



*The project employed the tallest tower crane in the UK at the time*



**Scanclimber's adjustable wall console**

The mastclimber erected to the full height of the building on the north elevation was to enable Dobler Metallbau to fix the glazing panels. The machine could not be based out at ground level due to obstructions so instead had to be supported from a specialist fabricated gallows bracket at second floor level. The gallows bracket was drill fixed through the highly reinforced 450mm thick core wall with anchoring bolts and plates and the mastclimber base and machine lifted and fixed into position on the bracket. The machine could then be progressively erected to full height, anchoring into the concrete core as the mast progressed.

Brogan, which has a rapidly growing mixed fleet of mastclimbers, selected the SC5000 for a variety of reasons particularly its lift capacity, platform capability and its ability to handle the 110 metre working height requirement.

The mastclimbers were then fitted with offset platforms and 2.2 metre long extensions to wrap around the lift tower sides. The two units performed without a major hitch and the project was completed at the end of 2007.

*The two mast climbers.*



*The platforms were each fitted with 2.2 metre extensions*

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# A new slant on access

The University of Nottingham has commissioned three dramatic new 'landmark buildings' at its Jubilee Campus extension. Designed by MAKE Architects they feature extremely unusual and difficult architectural profiles. Two of the buildings - International House and the Amenities Building - rise from the ground like sloping natural landforms, an effect heightened by their terracotta tile cladding. The third, The Gateway which houses a range of facilities for new businesses, is a rounded metallic shingle-clad building.

When the contractor SOL Construction came to work out what access equipment to use on each building it contacted SGB - which offers most types of access equipment from steel scaffolding to mast climbers and self propelled platforms - for advice and help to provide the solutions.



*The mast climber is the ideal solution*

On the Gateway building SGB selected a combination of traditional tube and coupler steel scaffolding mixed with a galvanised steel Cuplok system. This accommodates the eccentric array of angles, with the Cuplok

*The masts are angled at 25 degrees.*

cantilevering towards the building without actually touching it. SGB selected a similar set-up for the Amenities building using Cuplok to a height of 24 metres along with a specially designed mastclimbing work platform.

The International building presented the most complex challenges of the three structures. Cuplok scaffolding was used on the sides of the building but its front 27 metre sloping façade is set at a 25 degree incline and required access throughout its full 27 metres. This combination effectively ruled out any form of traditional or system scaffold on the grounds of complexity and cost.

SGB Mastclimbers came up with an ingenious solution to the problem by using a specially designed mast climbing work platform - the first time in the UK that a mast climber has been erected at such a demanding angle. The ties to the building façade were unusual in that they had to be designed to high levels of compression type loadings rather than the more usual tension type loading. The masts were attached to each floor panel with large footpad type ties. The platform includes automatic levelling, safety limit switches to control travel, manual brake release levers and centrifugal brakes on the motors.

Paul Hills, project manager for SOL Construction said: "The Jubilee Campus site required a unique approach to access solutions due to the complexity of the angles on the buildings. SGB Project Services was able to effectively meet the demanding criteria required and its offering of a comprehensive range of access solutions meant that a bespoke system could be designed to meet these needs."



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# The safety fundamentals



*Experienced erectors should only install the basic platform until the mast is fully erected and tested*

With the growing popularity of mastclimbing work platforms many users are looking to understand the basic safety points. Kevin O'Shea, the newly appointed chairman of IPAF's International mast climbing committee, highlights some of the fundamental points to be aware of when you plan to use these versatile access platforms.

A mastclimbing work platform is primarily used to position personnel, along with their necessary tools and materials to perform their work. They are very different to other forms of powered access, such as scissor or boom lifts, which have a fixed lift capacity. A mast climber has various load characteristics depending on the configuration of the platform. Because of this training on the proper use and operation should be carried out at every handover.

## The fundamentals

### 1. The Job Survey

One of the most important parts of the process - the job survey - occurs before the unit or units arrive on site. The job survey - which should be completed by a 'competent person' - establishes vital information which is used to plan the number and configuration of machines. It also identifies the method of tying, ground conditions and the identification of hazards, leading to a method statement for the erection and dismantling of the unit. It is vital that the person carrying-out this survey has the relevant experience to be able to fully plan a safe installation.

### 2. Ground conditions

A 60 metre high mast climber can create 16,000kg of load at the base plate or chassis. The ground therefore needs to be solid, level and

compacted. Danger can arise from underground cavities, including those that might be created after installation such as pipe trenches. The mast needs to be absolutely vertical, both perpendicular to and parallel to the face of the building. Many people comment when they observe a mastclimber being installed that erectors spend a disproportionate amount of time on the positioning and leveling the base unit, and that once the mast erection commences, it 'goes up quickly'. The attention to detail in properly positioning and leveling the base can save lives, time and money.

If the unit is being erected on a 'cantilever bracket arrangement' the design must be approved and passed by a qualified structural engineer.

### 3. What are you tying into?

Ties keep the mast in place, holding you safely to the structure. It is therefore a mystery why so few users pay enough attention to this critical aspect of the installation. Here is a list of questions that should be answered before you begin installing expanding anchors into a facade for mast stability:

- What am I tying into and will it take the loads?
- What forces (tensile and shear values) need to be counteracted by the anchors or tying system?
- What size of anchor and how many do I need?

- What is the diameter of the hole I need to drill for the anchors, how deep should it be and how close should the next anchor hole be. The incorrect application of any of these factors can seriously damage the effectiveness of the anchor. Drill holes should be cleaned out before inserting the anchor
- Am I drilling into a post-tensioned slab?
- What torque setting should be used to tighten the anchors?



### 4. Tie distance

The manufacturers' recommendations on tie distances must be rigidly followed. One of the most common mistakes is to measure the tie distance in 'floors' rather than in distance. For example, if a manufacturers guidelines state 'maximum tie distance 10 metres, many installers will convert this to "a tie every three floors". If the floors are more than three metres, which is entirely possible, guidance must be obtained from the manufacturer before tying every third floor.

### 5. Platform configuration

When building a mastclimber the manufacturers' guidelines on platform size and configuration must be followed exactly. Experienced installers build the mast first and configure the platform afterwards. This means building the mast with a minimal of platform sections either side of the mast and no unnecessary front edge extensions, these greatly increase the load on the mast and ties and can easily and quickly be added once the mast has been built and tested.

### 6. Don't overload the platform during installation/dismantling

Make sure that you do not exceed the recommended number of mast sections stored on the platform, and that they are 'evenly distributed' either side of the mast. Another reason for limiting the platform size during erection and dismantling is to physically limit the number of masts that can be carried.

### 7. Make sure erection and dismantling crews are trained and communicate

One of the most hazardous areas of mast climber use is the dismantle phase.

Too many times we see properly trained installation crews erecting the mast climber at the start of the job because the supplier wants to impress, only to see a less competent crew brought in to dismantle it, or worse the customer is allowed to dismantle 'to cut costs'. This is where accidents can happen.

### 8. Training

Finally, remember that no one was ever injured because they were over-trained. Mastclimbing work platforms are fantastic tools and when erected and used properly, they both increase safety and productivity at the same time. Comprehensive training is available and there is no substitute for well informed and properly trained installation and operational personnel.



*Properly leveling of the base is essential*



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