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Climbing the walls

Nothing offers the platform space of a Mastclimber

Powered Access is gradually replacing traditional forms of mechanical or fixed access. Self-propelled booms and scissors have been at the forefront of this phenomenon, arguably replacing scaffold towers along with some ladders and steel scaffold. However the biggest single form of traditional access equipment has to be façade scaffold. No matter how big a fan you are of self propelled or truck mounted lifts, in many applications they are simply not a substitute for a big façade scaffold. However the mast climbing work platform IS, at least for most applications.

The mast climber, however, is not habitually the first access solution that springs into a contractors mind when he is planning a job. Although this does vary enormously from country to country. Unlike self propelled lifts the market penetration of mast climbers is not closely linked to GNP/Head or sophistication. The most developed and mature mast climber markets are Holland and Sweden, no surprise then that the leading producer is a Swedish Dutch group.

The UK and Ireland lagging behind

Sweden and Holland are also the most developed markets for self propelled lifts and alloy towers, so clearly what they have in common is a desire to replace as many ladders and façade scaffolds as possible and an appreciation for efficient powered access. Other surprisingly developed markets include Spain and parts of Canada. So where does the UK and Ireland fit into all this, in terms of product acceptance and market penetration?

Mastclimbers can be free standing or anchored in.

Well down the list, behind Holland, Belgium, Sweden, Norway and Denmark possibly on a par with France but at least ahead of Germany.

Why is this?

Our investigations threw up two theories:

1) The conservative nature of most UK builders, a reoccurring theme when it comes to the adoption of new ways of working. Surely though it cannot all be down to blinkered British builders can it? The second reason is

2) Availability, the limited number of rental suppliers and the low profile that many mast climber hirers adopt is probably also a factor.

What went wrong?

15 years or so ago mast climbers were the next big idea when it came to powered access products, a good number of self propelled hire companies, flush with profits from a very strong access market, jumped in feet first and added fleets of mast climbers to their product range.

Disenchantment soon set in as it became clear that their salesmen were not calling on the right customers at the right time in a projects life. – No good turning up on site and offering to cut the rate with mast climbers.

- On top of that the salesmen did not have the expertise to be able to advise a contractor and recommend the right build.

- Hirers also lacked the skilled and highly efficient installation teams needed to design, install and when necessary modify, mast climbers. In some ways mast climbers are better suited to façade scaffold hire companies. However contract scaffolders tend to bill by the hour for installation and modification, the idea of investing heavily in new equipment which results in fewer hours billed, hardly excited the entrepreneurial juices with them!

With the largest part of the potential mast climber applications closed to them, hirers chased the simple end of the market in the only way most of them knew-how in those days -

Small trailer type models are now coming on the market for lighter duty applications such as painting.

Canadian producers in particular, offer amazing cantilevers on their platforms

They cut the rental rate! As night follows day the outcome is no surprise, most companies lost heavily on their investment which also co-incided with the construction downturn of the early 90's. They quit the business as fast as they were able. Sadly the process had an effect on the few companies that were more dedicated to mast climbers. Investment ceased and one by one they abandoned the market.

The UK and Ireland, more than anywhere else in Europe prefers to rent its equipment. So if a product is not widely available to rent it simply does not catch on. The self erecting tower crane is another good example of this phenomenon.

One man saw the potential

In the darkest days of the Mast climber in the UK, one person was canny enough to spot the longer term potential and while everybody else was bailing out of mast climber rental he was buying in. Andrew Reid, barring an upset, the next president of IPAF, was that man. Having retired from the self propelled business to buy a hotel in Scotland (which he quickly discovered was not to his taste) he bought into the mast climber market, establishing Mastclimbers Ltd in Glasgow.

He applied a totally different approach, mirroring the better contract scaffolders and building up one of the most highly qualified management teams in the rental business; he was on hand to take over the mast climber businesses of other companies as they pulled out of the market.

At one time Mastclimbers was virtually the only show in town, with a market share approaching 80 percent. The company also appeared to prefer a low profile, probably not wishing to attract the other hirers back into what has become a profitable and growing market again. In recent times companies such as Alimak-Hek UK and Universal have built up significant fleets and contractors are increasingly replacing their façade scaffold with mast climbers.

The use of mast climbers is growing again

The key benefits that are driving this steady move are:

1. Aesthetics: A mast climber installation does not mask the building while it is being worked on; in fact on larger buildings a mast climber can be almost invisible.

2. Security: No ladders are required and the platforms can be "parked" in the fully lowered or an elevated position preventing intruders from using it to gain entry to upper floors.

3. Safety: Eliminating ladders means no climbing, tradesmen enter the fully guard railed platform at ground level and power up to the work location. No chance of any safety components being left off.

4. Efficiency: The work is carried out at the optimum height, no need to stretch or bend over to reach work areas so quality of work improves too.

5. Erection risks: Many accidents with façade scaffold occur during its erection, mast climber elements are added from the safety of the platform.

6. Material handling: With the ability to load material at ground level, smaller telehandlers can be used and tower crane time saved.

A wide variety of mast types are available

Self propelled rail mounted mast climber solves T5 façade challenges

The main facades of Heathrow airports new Terminal Five building, T5 as it is known, are now virtually complete, although the terminal itself is not due to open until March 30th 2008. The four facades are made up of 3,565, three by two metre special glass panels a significant contract in itself; however the structure presented some major additional headaches for the Swiss based contractor, Schmidlin. The company is no stranger to glass façade challenges, the last big project it completed in London was the Swiss Re building, better known as the "Gherkin". It has created an unbeatable reputation for manufacturing and installing bespoke facades.

At Terminal five, the longer East and West facades presented particularly challenging access and installation problems. The two 400 metre (quarter of a mile) long facades slope outwards from the base by 6.5 degrees, are 27 metres high and in places are located over massive voids down into the underground railway and station. Each of the 3,565 individual glass panels weigh almost half a tonne and has its own unique location, thanks to the random location of the mounting bracket supports.

As if all this was not enough the special curved roof overhangs the façade by eight metres and no tie-ins to the building of any kind were allowed. This eliminated the use of scaffold, as did the contract time and the edict not to block the large entrance points to the building. Suspended access or use of cranes to place the glass was ruled out by the roof overhang and lack of anything to suspend from. Big scissor lifts were considered, but given the capacity requirements, ground conditions - particularly on the eastern side with its large voids, not to mention the possible side loadings from pushing a half tonne glass pane into position, ruled them out.

The pallets sat in motorised stillages.

The solution for lifting the glass panels into place was solved with a specially modified Hiab crane arm, fitted with a vacuum lifter. The crane was mounted to a base that, allowed it to move nine metres side to side and back and forth from the rear of the platform for picking up the panels to the front to reach the façade. The manipulator on its own weighed 1.7 tonnes.

Glass pallets were loaded by telehandler onto storage platform.

Having considered the various access options, or rather, lack of them, Schmidlin contacted Alimak-Hek in order to investigate a mast climbing solution. Hek proposed custom built, free standing, twin mast, A-Frame mast climbers, using HEK MS Pro-Max work platforms and components. The solution arose from a meeting between the project management team set up by the two companies, using two Hek mast climber scale models they leant one against another and had a Eureka moment! The 'A' frame configuration could free stand to the height without any need of anchoring and could easily be self propelled.

Given the contract time, Schmidlin ordered four units, two heavy main glazing units, one for each façade, and two lighter versions for mounting shading and ancillary components.

The glazing units featured a 16 metre long platform with nine metres between the two masts which sloped by 6.5 degrees to match the façade. Special supporting brackets compensated for the angle, levelling the deck. The masts are mounted to a special steel frame chassis, incorporating Demag electric motors to drive each of the four rail track wheels.

In addition to the main deck, a material storage platform was built into the chassis between the two frames, using HEK MegaDeck platform sections. These have sufficient space to hold at least two pallets of five glass panels on motorised stillages. The mast climbers were also subjected to a third party CE certification and incorporated numerous safety features, including a highly accurate overload system.

Tested in advance

This contract was unusual in that before Schmidlin and Alimak-Hek's unusual machine was allowed anywhere near a final structure, it was tested on a life size section of the façade erected in Thirsk Yorkshire. In this way the concept and the working procedures were able to be fully tested well before they were required on site. In the trial the mast climber ran on a standard rail track with timber sleepers and Rock ballast. This proved to be impractical due to the sheer volume of rock required, so a special I-beam track was developed. It consisted of three 72 metre sections, once the façade was completed over one of the lengths it was moved from the back to the front.

The solution to the access and lifting problem was solved with a twin mast A-Frame.

Just in time with storage on board.

The T5 contract calls for just in time delivery of all materials, so Schmidlin rented a 10,000 square metre warehouse nearby, to store the glass and other material as they arrived from the Swiss plant.

The procedure for a days work, involved the arrival from the warehouse of two, 2.3 tonne pallets of glass each with five panels. All carefully marked and stacked in order of installation. A Manitou 1744 telehandler, rented from Universal offloaded the pallets and placed them into the stillages on the storage platforms. When the main deck is in the fully lowered position, the pallets are travelled towards the deck, within range of the manipulator, which grasps a single glass panel. The retaining bands holding it to the pallet are cut with a long handled tool, releasing the glass to the manipulator. In this way there was no need for anyone to go onto the storage platforms avoiding a potential hazard.

The brise Soleil, (foreground) were installed by lighter mast climbers with 19m long decks.

Manipulation

The manipulator crane is then moved to the central point of the platform, between the two masts, in order to ensure equalised loadings. Safety switches prevent elevation unless the load is centralised. The platform was then elevated at 11 metres a second, to the required position and the panel carefully lifted to a point above its location and then slid down into its retaining brackets.

The installation process requires access to both sides of the glass in order to ensure that the glass fits into the gaskets and mounting brackets correctly. Four fitters worked on the mast climber, while the two fitters on the inside, used one of the four specially purchased 38 metre, Palazzani TSJ 38 spider lifts, supplied by Powered Access Sales and Service (PASS).

Shading from Lighter duty models

In total there were four of the special inclined HEK mast climbers working on the building, two of the main glazing units already described, one for each of the two long facades, and two 19 metre long versions used to install the hundreds of brise soleil (sun shade) systems. The brise-soleils, are assembled in situ and comprise three metre long 50mm diameter stainless steel rods, which are supported on a suspension system connected under the roof sofit. After installing a set of rods, the mast climber's platform descends and loads up with the six metre long by 1.8metre wide aluminium blades, each weighing 250 kgs. These are then attached to the rods. These "lighter duty" mast climbing rigs incorporate a secondary platform to facilitate the installation of the long blades, and an extended width to the rear of the masts to allow sufficient storage space for the various components.

Andy Turnbull, Schmidlin (UK) Ltd's on site contract manager, said, " Work on both the west and east facades progressed well, exceeding the 10 glazing elements per day target. The Hek machines have worked very well and been exceptionally reliable. We have an Alimak-Hek engineer based on site to ensure correct operation and to maintain the machines. We have installed wind monitors on each Hek machine so that the operators can bring them down should the wind speed exceed the imposed limit of 12.7 m/s – even though the machines can withstand higher."

The North and South facades are each 176 metres long but are vertical with no significant roof overhang, thus far simpler than those on the east and west. So heavy duty suspended platforms working in tandem with JLG 1350 SJP booms and internal scaffolding, were used.

The Hiab manipulator crane with vacuum head places the 2x3m glass panels, note the Palazzani platform.

Welbro Building corporation is currently completing what will be one of central Florida's largest full-service convention hotels and resorts at Rosen Shingle Creek Orlando.

The Rosen Shingle creek is using 65 mast climbers on the exterior works.

The hotel is designed in 1900's Spanish Revival style architecture, with high-carved arches accented by natural earth tones, and ranges in height from 25 to 50 metres. Welbro had a tight deadline on the external works and needed to have full coverage of the multi sided building, it called in Sunbelt rentals, part of the Ashtead group. In order to satisfy the brief, it supplied 65 Scanclimber mast climbers to provide complete access to the hotel exterior for specialty contractors during the various phases of construction, including window installation, painting, insulation, and exterior finishing.

The mast climbers were positioned side by side in order to completely wrap the hotel exterior during construction. Fourteen of the platforms were installed on mini-chassis and positioned inside the building and extended through the rooftop. Sunbelt Rentals provided a turnkey installation service, including design, erection, and power generation from three 350 KW diesel powered generators.

The 230 acre Rosen Shingle Creek, is scheduled to open in September 2006, and will offer 1,500 guest rooms and suites, along with 24,000 square metres of convention and meeting space.

"It was a great selling point for us, being able to provide everything needed for the job," said Phil Bohenkamp, Sunbelt sales manager of Mast Climber Services. Sunbelt also provided traditional scaffolding and other equipment.

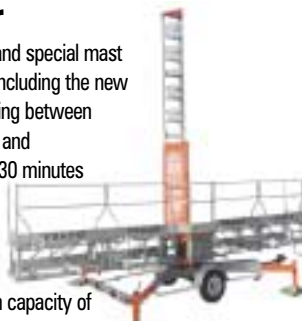
Photos courtesy of Mark Pfaff, Sunbelt Rentals

The 65 Scanclimbers provided wall to wall coverage with infill sections on most corners.

Leon Clement, site manager for Welbro, said : "Sunbelt Rentals has been excellent to work with on this project. They have provided exceptional response times, whenever we needed service."

Bring your own **Mastclimber**

Canadian manufacturer, Fraco is best known for heavy duty and special mast climbers. It is now promoting its lightweight mast climbers, including the new FRSM 1500 model that will be on display at Intermat. Weighing between 1,900 and 2,334kgs it can be towed behind larger cars, vans and 4x4's. Once on site it can be set up by one person in around 30 minutes to its maximum free standing height of 11 metres, without the need for any lifting equipment.



With a platform capacity of 680kgs it is ideal for a variety of applications, including painting, rendering, re-pointing and window installation etc...

The Fraco 1500 tows behind a van and can set up in 30 minutes to 11 metres.

A platform between its equals...

MEC Europe
Maxwellstraat 50,P.O.Box 3121
3301 DC Dordrecht,The Netherlands
Tel.+31 78 65 217 65 Fax.+31 78 65 217 60
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