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# Problem solving capability

The popular expression "It does what it says on the tin" does not apply to Apollo Cradles. True, the company began life 25 years ago as a cradle or suspended work platform/swing-stage rental company, but it has expanded in recent years to offer a wide range of temporary access solutions, including mastclimbers and bespoke solutions for challenging contracts.

Based in Barnsley, South Yorkshire, the company was founded and is run by Kevan Herbert with operations director Darren Brady - recently appointed chairman of the IPAF UK & Ireland mastclimber work group. Mark Darwin met with them to find out more...

"Apollo Cradles has a safety ethos that runs right from the top, through the company and onto site," says Herbert. "Working at height does have an inbuilt risk, but everything is done by the book, we do a lot of staff training and we always ensure the correct equipment is used. We

think we are now one of the safest companies in our sector - numbering every item of lifting equipment and each has safety calculations and thorough examination certificate - no-one else does it in as much depth as we do. We have completed thousands of contracts - including some very complicated jobs for example working at the very top of the Forth Road Bridge over live traffic - and we do everything we can to make sure people go home at the end of the day."

#### Scaffolding background

Herbert started out as a scaffolder, working for several companies but



Darren Brady (L) and Kevan Herbert



This work platform - used for maintenance in the old 457ft deep Number 7 ventilation shaft for the Standedge Tunnel in the Pennines - uses four electric motors and wires attached to suspension beams across the top of the shaft

primarily GKN. "My boss at the time was promoted to manager of the cradle division and being a workaholic I learnt a lot covering for him when he was away. Unfortunately the cradle division closed because it wasn't making enough money, and being in the thick of things I knew why. I was 27 at the time and although I was offered a good job running a big site I wanted to continue with cradles. I did a deal to buy some equipment from the company that purchased the GKN cradles, allowing me to start my own business which has grown into today's fleet of 400 cradles and 200 mastclimbers." "The industry continually changes and you have to be ready to embrace it. Major legislation changes in 1999 affected how we operated and more changes are coming through. We are currently looking at providing comments to some amendments to the LOLER regulations which will be

discussed at the next SAEMA (the Suspended Access Engineering and Manufacturing Association) meeting (he is a committee member)."

Apollo is one of the few companies in the sector that combines suspended platforms with mastclimbers and has the advantage of offering alternative solutions as many contracts benefit from a mixture of both in order to offer the most cost and time effective solution.

"We may go to a cradle job and say that mastclimbers are more suitable, vice versa or a mixture of both. There are even jobs where we hang cradles from mastclimbers - particularly specialist jobs when working over water such as Hunterston nuclear power station repairing the water intake jetty."

Apollo mainly works in the UK but will work further afield, and recently quoted for a few jobs in Australia, working on a cooling tower and the Sydney Harbour Bridge.

**X Beams**

"If we did win the work we would send our own equipment to Australia but we will have to wait and see," says Herbert. "We do sell some of our own design aluminium beams in Australia. We have registered the design of the X Beam - the strongest 750mm deep scaffold beam in the UK - and we also have a 1.5 metre deep beam. Both beams can be married to the mastclimbers to give a lifting solution for materials handling."

"The X Beam came about because we were looking to manufacturing a beam design under license, but when working on the Forth Rail Bridge about 10 years ago, the design of the approaches to the bridge looked like the ideal design for the X Beam which we then made and tested. The final product was 30 percent stronger than the beam we were planning to manufacture."

"We now market the aluminium Apollo X Beam to scaffolding companies as well as using it in



*Specialist angled mastclimbers were used at Coventry University Engineering and Computing facility to allow safer working while the building with angled facades was clad*

*The Xscape Yorkshire building required the external elevations to be covered with cladding and sheeting. For this task, suspended cradles were chosen as the best method. Utilising the I-beam framework of the building, suspension rigs were attached and the access cradles were suspended*



our own cradles and platforms. The deeper beam is only used when scaffolding needs to be integrated with large spans - up to 60 metres depending on the load - for example there are some in use at Waterloo Station, London supporting public walkways. During tests a 30 metre

span with 10 tonnes suspended in the middle, the beam deflected just 150mm and returned to its original shape when not under load. To test the shear strength we cantilevered it 15 metres and it managed eight tonnes on the end before failing."

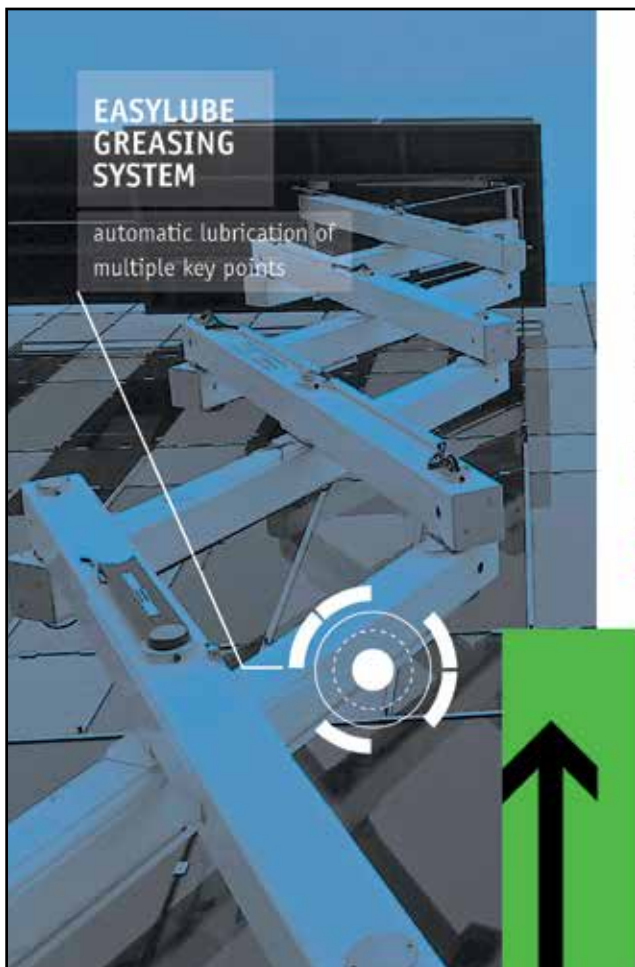
The all aluminium beams are manufactured by Apollo at its head office facility in Barnsley, where it also manufactures bespoke platforms.

*X Beams are used to support full scaffold where pavements won't take the weight*



**The UK market**

The number of mastclimbers in the UK market has dipped. In spite of this mastclimbers are growing in



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Four platforms were installed on the Erskine Bridge over the river Clyde in Scotland (two at each side). The leading platforms on each side allowed the removal of the old runway beams with the materials handling system while the two following platforms provided access for fitting new runway beams.

popularity particularly Chinese built units.

"Yes there are more Chinese made machines, but we would not purchase them for a number of reasons," says Brady. "The only item we have bought from China are counterweights, because you can't really get them wrong. Our mastclimber fleet is all Spanish-made Goian machines. The Goian products have German motors, gearboxes and racks and are made in Spain. We mainly use the GP40 model which is capable of a 35.88 metres span in twin mast format and 13.12 metres with a single mast. Even at these spans the unit has a good load capacity."

"I decided to get into mastclimbers because I had lots of cradles but was losing work to mastclimbers," says Herbert. "However the rental rates are so low that it does not make financial sense to buy new machines. So I decided to look for good quality second hand units at the right price. Overall the Goian machines are good quality and at the right price. I did look at Chinese equipment but could not make the figures work even with the Chinese prices, but also there was no guarantee of the quality."

Apollo began investing in mastclimbers during the recession, taking advantage of companies closing down and selling off equipment - particularly in Spain. The fleet was built up in batches over the last four years, the first

being 60 units, followed by 40 and then 50. There are 50 more machines waiting to arrive into the UK. Brady was brought in to run the mastclimber fleet having previously worked in the industry for 19 years.

"It has taken about five years to find the right quality, low use mastclimbers at the right price," says Herbert. "Some might say I was either brave or stupid, buying 200 mastclimbers in the depths of the recession, but I was missing out on contracts by not having them and the Goian equipment we have now is right in every aspect - the right quality, the right range and sizes, the right tie-spacing and right safe working loads to give the customer exactly what he needs at the right price. We also added a new depot a few miles from the Barnsley head office to store, maintain and run the mastclimber business. Now we have a good bunch of qualified and experienced guys who carry out the maintenance, equipment checks and thorough examinations, making sure every piece of equipment is 100 percent."

"In 2010 I wasn't too bothered with what the rest of the industry thought of our spending spree, I was thinking about customer demand. Mastclimber rates are now moving up, but still a long way off what they should be, and a lot less than they were 10 years ago. They would have to increase by 25 percent just to get back to 2007 levels. In 1995 when I started in the industry it was

Steel repairs are carried out then blasted and painted with a containment platform which moves to allow river traffic through



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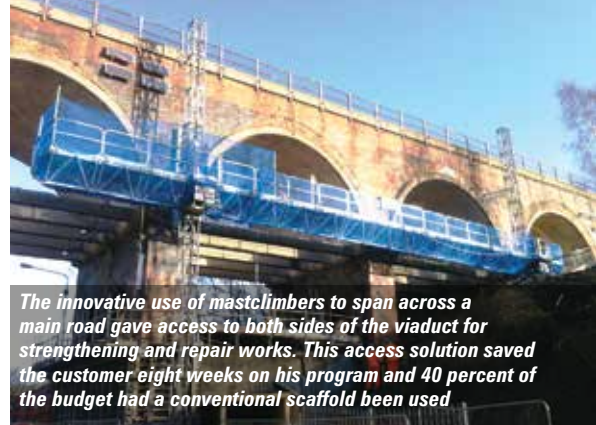
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The 14m wide X Beam platform gives access to full elevation, and into the recess for cladding repairs



A winch on the monorail system under the X Beam



The innovative use of mastclimbers to span across a main road gave access to both sides of the viaduct for strengthening and repair works. This access solution saved the customer eight weeks on his program and 40 percent of the budget had a conventional scaffold been used

normal to get £300 per week for a single mast machine, now it is more like £200."

"Competition is the main reason for the low rental rates. There is plenty of work around at the moment and many unusual projects. One of these requires the design and manufacture of special brackets to allow the machines to work on a 12 degree slope. An area that is becoming more popular is to use mastclimbers to install external cladding panels. Because we manufacture the X Beam we can provide a solution with a mast climber that is specific to us. By fitting a winch on a monorail under the beam which spans between the masts, it can move along the façade and lift in panels, removing the requirement to use a tower crane or mini crane on the roof."

**Why not scaffolding?**

I met with Kevan Herbert and Darren Brady at the NEC, Birmingham, adjacent to the Resort World site which is using a combination of Apollo mastclimbers and X Beams. "Resort World is a five star hotel with multi-screen cinema, shopping centre and casino with funding from Malaysia," says Brady. The main contractor is Galliford Try and we are working for Lakesmere,

"Mastclimbers are quicker to erect, they need less ties into the façade and don't need modifications," he adds. "We installed the entire material handling and access system in just four days from ground level to the top. Scaffolding would have taken three to four weeks with three times as many men. Overall mastclimbers are around 40 percent cheaper than scaffolds. Certain contractors are now looking at scaffolding as a last resort, they would rather use cradles, mastclimbers or special platforms rather than deal with the cost and hassle of using traditional tube and fitting scaffold."

"The standard platforms on this contract are 1,525mm wide and can be increased by a slide system to 2,400mm or wider with special

providing mastclimbers to install up to 400kg insulated façade cladding panels. This is where the unit comes into its own and solves manual handling issues. The roof structure prevents a small crane from working from above but the beam and monorail track allows the panels to be installed between the twin mast climber masts."

designs. Platform capacity is about 2,000kg enough capacity for runway beam with vacuum unit to lift the panels. This is the third job we have carried out using the monorail system," says Herbert. "No-one else has a system with a capacity like this. The 750mm deep beam on this job is in a box-type configuration and is rated at 500kg even though it can take five tonnes."

**The future for mastclimbers**

"We need to get the rental prices where they need to be," says Herbert. "Demand is beginning to outstrip supply, which will push rates up. At this point the industry needs to invest heavily in equipment, people and training. Our success is because we have people who are passionate about what they do. We currently have about 65 people and cover the UK and some work in Ireland."

"I started in 1995 as an electrician repairing mastclimbers with A-Plant starting from the ground up," adds Brady. "It was a hard but enjoyable job and we need to attract more into the sector. Many experienced people have left the mast climber industry, and those that remain are getting older. The industry needs young blood but you can't tempt the best youngsters into the business when they can get more in less demanding careers. Legislation making people liable for accidents etc.. also puts people off entering

the sector - the money is just not there for people to accept this risk."

**Suspended platforms still busy**

Suspended platforms are also quite busy in the UK, fuelled by the volume of work in London, although cities such as Manchester, Sheffield Liverpool and Leeds are all getting busier.

"Cradles are used mainly on maintenance contracts, rather than new builds, such as concrete repairs, painting, cladding, replacement windows. Most buildings do not have a built-in cradle support system, so the art is having equipment and personnel to do the rigging on the wide variety of roof types. The X Beam system is really good for rigging," says Herbert. "The cradles provide a bigger proportion of revenues and are a better return on investment, but mastclimbers are catching up."

"However the biggest change was the introduction of the management of the Health and Safety regulations which meant everything had to have a Method statement and Risk Assessment. In the cradle industry in 1979 you were expected to put yourself at risk - working on roofs, from ladders without harnesses or safety equipment etc. Now you have to have a handrail, proper access, skylights highlighted etc... it has made a huge difference, however I don't know of one cradle operator falling off."



Hunterston nuclear power station jetty repairs



Resort World, NEC Birmingham



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# No snags for Brogan

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mastclimbers

**UK-based specialist access rental company Brogan group is using its new anti-snag cable device on one of its largest ever projects in North West London.**

*Brogan is supplying scaffolding, mastclimbers and hoists including 90 heavy, medium and light duty mastclimber drive units in 55 positions and six hoists*

The company is supplying all the access requirements including scaffolding, mastclimbers and hoists to a large development in North West London including 90 heavy, medium and light duty mastclimber drive units in 55 positions, and six hoists (five single and one twin unit). The £64 million project involves the redevelopment of a retail site into 379 apartments in four, six-storey buildings, shops and a 450 space basement car park.

The main contractor was looking for a single subcontractor to cope with all the access requirements for the development with any access site issues addressed by a single site supervisor. Although a fairly straight-forward contract, space restrictions on the ground meant that some of the mastclimbers had to be mounted onto raised 'gallows brackets', while other platforms have three metre cantilever extensions.

Some of the mastclimbers were also fitted with a new 'anti-snag' cable device devised by Brogan. "With a mastclimber there is always the issue of the electrical cable to the platform motor hanging freely down to the floor, unable to be put in a cable guide," says Jim Casey, Brogan's mastclimber and hoist operations manager. "A while ago a main contractor asked us to develop a system to prevent the risk of this cable snagging - if it gets caught it can cut off the power as the mastclimber moves higher. 50 metres of cable is also heavy and can be a danger when it falls."

Brogan has designed and fabricated a simple but clever mechanical device which threads the electric cable through the monitoring box with a spring loaded pulley and micro switch which stops the machine rising further when the cable tension increases - i.e. if and when the cable becomes trapped. The system then only allows the



*Some of the mastclimbers are fitted with a new 'anti-snag' cable device devised by Brogan*

platform to be lowered in order to sort out the problem.

Brogan group was originally a scaffold subcontractor but has invested heavily in the latest mastclimber and hoists to

complement its existing fleet. Since the start of the year it has added 35 hoists - including a number of higher capacity goods/passenger machines to cater for growing client demand - as well as 70 mastclimbers.



## Netherlands contracts for Böcker

German crane and access manufacturer Böcker has several mastclimbers working on the Amadeus building in the centre of The Hague. Its Maxi-Climber platforms are being used to install a stone facade in both the single and twin masted format. The main advantage over scaffolding is fewer anchor points, although erecting a full scaffold to a height of 51 metres would also have been much more expensive. The Böcker mastclimbers are fitted with 250kg capacity crane arms, used to lift and help fit the facade panels. The new residential and commercial complex is named Amadeus, because Wolfgang Amadeus Mozart is said to have lived there when he was a small boy. The striking building will provide 2,600 square metres of retail space and 76 apartments with underground parking.

*The Böcker mastclimbers are fitted with 250kg capacity crane arms, used to lift and help fit the facade panels*



*Work to jump the hoists in progress. The unique design of the mast made it possible to meet the challenging conditions of the unique job site*



## A place in the sun

Three Alimak Scando 650 FC 32/32 II passenger and material hoists with dual hoist platforms have been used in the construction of three, 140 metre high solar receivers/boiler towers at the Ivanpah Solar Generating Facility in the Mohave Desert, California - currently the world's largest solar thermal power plant. With a payload of 3,200kg and a lift height of 140 metres the hoists provide access for both men and materials during the construction by Bechtel Power & Bechtel Equipment.

The 1.5 metre wide, 3.2 metre long, 2.3 metre high platforms can travel at 54 metres a minute and are large enough to transport site workers and palletised materials to the work height. The machines are anchored to structural steel at approximately 12 metre intervals with the mast allowed to extend 12 metres above the deck for access when the modular components were hoisted.

Ivanpah Solar Power facility covers more than 4,000 acres and will produce 390 megawatts of electricity for more than 140,000 customers, by using more than 173,500 software controlled heliostats (mirrors) that track the sun in two dimensions and reflect sunlight to the three boilers that sit on top of almost 140 metre tall towers. The high temperature steam is then piped from the boilers to a turbine where electricity is generated.



*The work platforms not only needed to reach up to 30 metres, but they also needed a capacity of 5.5 tonnes on the 15 metre by 2.5 metre platform*

## Chernobyl access

Canadian mastclimber manufacturer Fraco has supplied two custom-made, free-standing mobile ACT-8 mastclimbers, capable of travelling at 11.9 metres a minute to work on the safe confinement shelter over the damaged nuclear reactor at Chernobyl, Ukraine. The cover is made of 25,000 tonnes of steel and measures 108 metres high, 162 metres wide and has a length of 257 metres.

The work platforms not only needed to reach up to 30 metres, but they also needed a capacity of 5.5 tonnes on the 15 metre by 2.5 metre platform. The solution was to use a twin mast concept on a heavy steel motorised base, with each mast comprising a cluster of four regular masts to provide the required rigidity to resist the torsional stress without anchors, and provide the extreme factors of safety required on site. The cover is being constructed around 600 metres away from the reactor where radiation levels are significantly lower, it will then be moved slowly into position on rails.

*Fraco has supplied two custom-made, free-standing mobile ACT-8 mastclimbers, capable of travelling at 11.9 metres a minute to work on the safe confinement shelter over the damaged nuclear reactor at Chernobyl, Ukraine*



## De Markthal, Rotterdam

Work is currently well underway on the final phase of the Market Hall - De Markthal - project in Rotterdam. Formed in the shape of a horseshoe, the building is 70 metres wide by 120 metres long, with a 40 metre high central arch. The roof structure includes up of 228 apartments and maisonettes that will look down on the market stalls below.

Both ends feature a glass façade with a transparent cable network grid measuring 34 metres high and 42 metres wide. The façade is divided into 26 vertical and 22 horizontal cables with glass panels in between. Alimak Hek suggested the access solution for installation and tensioning the steel cables and the subsequent installation of the structural glass façade using mastclimbers. The challenge was the lack of places to anchor the equipment to the ends of the building - the first available anchor point is at 35 metres. To be able to cover the entire width of the façade, the decision was taken to put into place two, twin-masted HEK MSHF mastclimbers, alongside one another, with each mast position mounted on a large base frame. The cable network has now been installed and linked together at the intersection points. After a period allowed for settlement, a start will be made on fitting the glass panels and cementing the joints.



# New Astro hoist

US-based Spider has launched a new generation Astro E2200 traction hoist for use with suspended working platforms/swing stages. With a 1,000kg capacity the hoist is aimed at heavy construction applications, industrial installation and maintenance projects particularly in elevator shafts. Safety mechanisms are integrated into the body of the hoist, eliminating the risk of omission or poor installation. Spider claims that the new hoist has the longest duty cycle in its class, while load dependent traction extends the life of the wire rope. The modular design

allows the hoist to be customised to meet the client's elevator installation needs with just a few, simple modifications of the controls, pendant or mechanical interface.

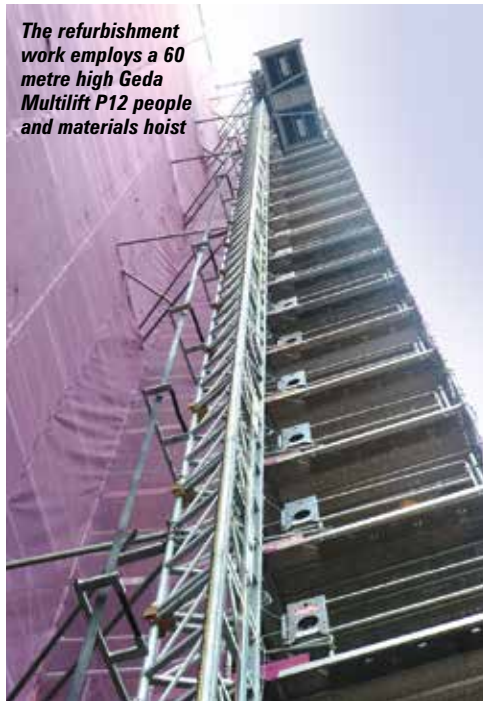
With a 1,000kg capacity the hoist is aimed at heavy construction applications, industrial installation and maintenance projects particularly in elevator shafts.



# Reglazing the Lipstick

The "Lipstick" building in the heart of Gothenburg, Sweden - which was completed 25 years ago - is undergoing a facelift, with all the external glass panels being replaced.

*The refurbishment work employs a 60 metre high Geda Multilift P12 people and materials hoist*



**C&A**

**mastclimbers**

*The distinctive red and white Lipstick building is having its external glass panels replaced*

The Skanskaskrapan is a 22-floor red and white building designed by the late Ralph Erskine and is occupied by Skanska, Sweden's largest construction company. Built alongside water and with poor ground conditions, the 86 metre high building sits on 90 metre long driven piles for stability.

The refurbishment work employs a 60 metre high Geda Multilift P12 people and materials hoist, supplied by rental company Stavdal and local partner BVM. The compact, pre-installed basic Multilift unit is delivered on site as a complete unit and no base is necessary. With a lift speed of up to 40 metres a minute, the hoist can carry 1,500kg or 12 people, and its 3.2 metre long platform also provides safe transport for delicate glass elements. Despite its load capacity only a few anchors are needed with the single mast.

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