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MASTCLIMBERS NOT YET THE TOOL OF CHOICE

In any multi storey development the use of material and passenger hoists is a given. However, choosing a mastclimber over other forms of access including the more traditional façade scaffold, is more of an issue. On the surface it appears that in the majority of countries most contractors go unthinkingly with scaffold. Why this is the case is something of a mystery. One has to assume that they have yet to be convinced of the benefits.

On many jobs mastclimbers can save both time and money, while also improving safety. While many contractors have yet to be persuaded, the concept is definitely growing in popularity. An example of this could be seen at the GIS show in Piacenza, Italy this month, where two new manufacturers, Altek and Gamaplac, both from Southern Italy, showed their new products. They hope to challenge the existing manufacturers and help expand the overall market.

ALTEK

Altek was formed 18 months ago by design engineer Giuseppe Nappo - who spent much of his career with GCSrL Peiner System, originally the Italian licensee of Peiner tower cranes which now makes its own range of cranes - and rental industry veteran Rossano Ricciardi.

Keen to establish a new family business, Nappo teamed up with Ricciardi to find a potential market where they thought they could bring something to the party and decided that mastclimbers and hoists fitted that bill, allowing them to leverage their tower crane knowledge and experience. Nappo's son Geremia has also joined the business.

For their first product they kicked off with the Sistema G-32 mastclimber, employing a fully modular approach. The G-32 can be assembled as a single mast unit with 1,560kg platform capacity

and platform length of up to 10 metres. It is built from 1.5 metre long by 1.2 metre wide platform modular elements with a one metre long platform mast section. In two mast configuration platform lengths of up to 32 metres can be achieved with a platform capacity of 3,250kg. The maximum unanchored platform height is six and nine metres respectively. When anchored/tied in at every nine metres for the single mast and every 12 metres for dual mast, the maximum height is 100 metres for both configurations.

Lift speeds are 12 metres a minute, but the aspect of which the two founders are most proud is their Smart Control 4.0 feature, an automated computerised system that allows fault finding



The Nappos - Geremia and father Giuseppe



An Altek SK1000A hoist



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ALIMAK CONSTRUCTION HOISTS AND MAST CLIMBING WORK PLATFORMS

The Alimak Scando range of construction hoists are available in a variety of sizes and speeds to meet the need of every construction project. Offering a vast choice of loading capacities and configurations, the Scando range of products is designed for the efficient transportation of passengers and materials.

The Alimak MC 650 mast climbing work platform boasts up to 41.8m in length and payload capacities of 2,230kg - 7,240kg, offering a high-quality vertical access solution for heavy applications. For additional flexibility, it uses the same mast as Alimak's 650 construction hoists.

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ALIMAK

and remote management of all aspects of the machine. The system - which is connected to the electrical control panel - communicates a wide array of information via an onboard display screen which includes all of the platform operating information along with any ongoing faults.



Altek's Smart Control

The automated fault diagnostics flags any errors or damage to both the operator and any nominated remote computers, smartphones or tablets. Smart Control 4.0 can also provide full reports, which include information such as the hours worked and conditions of machine usage such as loadings and travel distances etc helping with planned preventive maintenance programmes.

The first unit was delivered in May 2022 and the company has now also introduced a range of three passenger hoists, with 500kg, 1,000kg and 1,500kg capacities respectively.

The 500kg SK500A has a standard car of 1.0 x 1.5 metres, with a 1.33 x 1.5 metre option which

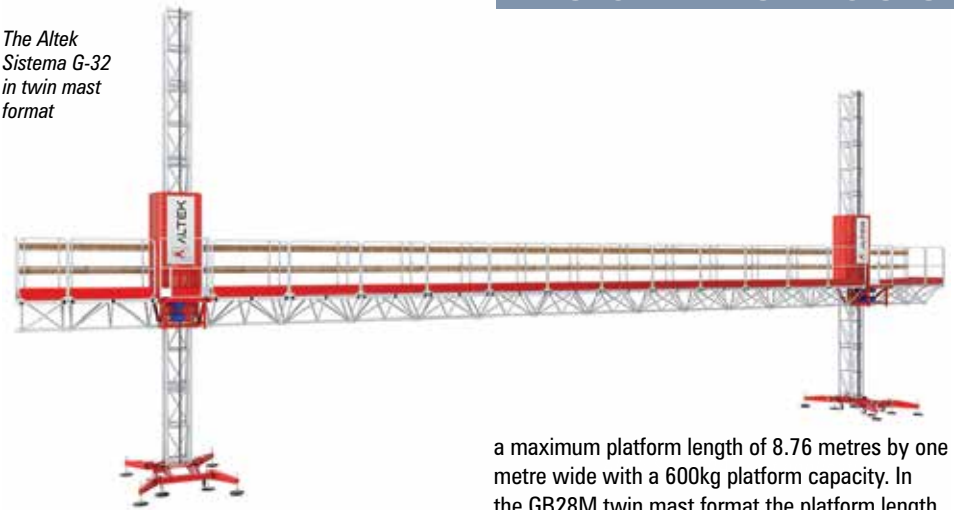
is standard on the 1,000kg SK1000A which has an optional car of 1.2 x 2.2 metres. Both employ a compact triangular section mast profile, feature lift speeds of 12 metres per minute and can be built to a maximum height of 120 metres. The top of the line SK1500A uses the square section G-32



The top of the line SK1500A

mast and features the same car options, lift speed and build height as the SK1000A. The first SK hoist was delivered in December.

The Altek Sistema G-32 in twin mast format



"I met an authoritative veteran of building lifting like Rossano Ricciardi, and the idea of the G-32 with Smart Control 4.0 system took off," says Nappo. "We had planned to create a self-contained system or platform certified according to the technical characteristics of Industry 4.0 for all manufacturers to use, but nobody wanted to follow us on this road. We were constantly told that a mastclimber could never operate to the standards of Industry 4.0 so we decided to do it ourselves."

The outcome is Altek, which has got off to a far better start than the two founders ever imagined. The company has a production unit in Campania, Southern Italy, south west of Naples and Salerno.

"Research and development is in our DNA," says Nappo. "We felt that there was a need to create a product that not only works well and meets all the demands of complex construction projects, but is also production friendly, and easy for us to be able to follow it with the best service, parts supply and maintenance. With 18 months in business behind us we are more convinced than ever that we have achieved that."

GAMAPLAC

Gamaplac is another newcomer to the sector. Based in Bari, southern Italy the company is owned by Giovanni Mastrogiacomo and Cosimo Garofalo who has more than 20 years' experience in the rental industry with Alta Edilizia.

The company is concentrating on producing rack and pinion mastclimbers and hoists. Its first two products include the Golden Bridge mastclimber which can be built in single or twin mast configurations. The single mast GB28B has

a maximum platform length of 8.76 metres by one metre wide with a 600kg platform capacity. In the GB28M twin mast format the platform length can be built to a length of 28.4 metres by one metre wide, although it is possible to build with a two metre width for shorter lengths. Maximum capacity is 1,000kg and the maximum build height when anchored at six metre intervals, is 120 metres. Lift speeds are 12 metres a minute.

The first hoist is the Lift Up 1000 material and personnel lift available in two variations - the 230V with a 1.15 x 1.4 metre platform and 1,000kg capacity, and the 400V with 1.15 x 1.9 metre car with a reduced 800kg capacity. Maximum lift height is 100 metres with seven metres between anchor points, with a 12 metre a minute lift speed. Both mast climber and hoist use a triangular mast profile. ■

Gamaplac's Lift Up 1000 hoist



P40 SUCCESS

One of the most successful mastclimbers in the world is the SAEclimber P40 - a model which features in the first phase of Sheffield's £300 million West Bar project (see page 36). According to SAEclimber it is the unit's versatility of the P40 that has attracted buyers in the UK, Italy, France and the USA.



The unit can be used in single, twin or triple mast configuration up to 60 metres long, inclined for cooling tower renovations, and in a multi mast scenario when working on circular structures such as demolishing a chimney. It can also have two platforms on the masts allowing more effective working.





ZERO EMISSION HOISTS, CRANES AND MASTCLIMBERS

The pressure to reduce the impact of construction equipment on the environment is beginning to promote new technology, that is not only cleaner and quiet but can also save money. Mark Darwin visited the largest private construction project in Sheffield, UK, to find out more.

The first phase of Sheffield's £300 million West Bar project is being managed by contractor Bowmer + Kirkland which is using a new method to power the entire site including the equipment with the highest electricity usage - four hoists, 40 mastclimbers and two tower cranes.

The power comes through three shipping container size 'battery energy storage systems' from AMPD Energy - each weighing more than seven tonnes. There is currently no mains power to the project, and it will not be installed until after the buildings have been completed. If the initial results are indicative of the savings, this method of powering job sites could prove to be one of the biggest game changers in construction in modern times.

West Bar will provide 93,000 square metres of mixed use space. This includes 47,000 square metres of new Grade A workspace, residential apartments, new high quality public areas and multi storey car parking, along with new retail and leisure space. It also will provide much needed new housing, all supporting up to 8,000 new jobs.

The development's client is Urbo (West Bar), a joint venture between Urbo Regeneration and

Pevel Securities - the development arm of Bowmer + Kirkland. The project is now more than a year in, and construction is well underway on the curved steel frame of the first 15 storey 9,000 square metre office building - No 1 West Bar - which is expected to be completed by next June. Construction is also well underway for the two residential blocks called Soho Yard to provide 368 build to rent apartments, this is where the mastclimbers and hoists are located. A second 19 storey 9,000 square metre office building will also be delivered together with a new 450 space multi storey car park with around 300 cycle storage spaces and electric car charging points.

Phase One will integrate with the remainder of the development which includes offices, car parking, cafes and further residential properties along with extensive public open space.

Proposals have also been developed to transform and 'green' the whole West Bar neighbourhood. Wildflowers, bulbs, grasses and trees have already been planted as part of the £3.6 million 'Grey to Green scheme', which includes downgrading highways in the immediate area, while improving pedestrian and cycle routes in a bid to make the whole area more attractive to



Senior site manager Charlie Falkingham (L) with assistant crane manager Tom Carter on site with the AMPD Energy battery energy storage systems

residents, those working there and investors. All of which fits perfectly with Bowmer + Kirkland's new zero emission battery system.

"We believe that we are the first contractor to use battery energy to power most of the equipment on a site," says B+K project manager Jonathan Gisbourne. "This is the biggest change to the way construction is carried out in the last 50 years."

The project Initially used Punch Flybrid (flywheel aided) generators however, Dave Shooter, the

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MASTCLIMBERS & HOISTS

group's crane manager, was keen to push for even more power and CO2 savings and was brave enough to trial AMPD Energy's battery energy storage system. Although new to Europe, they have been proven in places with electricity supply issues such as Hong Kong.

The batteries were installed in February this year and in the first two weeks of operation cut CO2 emissions by 27 tonnes.

Last year C&A covered B+K's adoption of the Punch Flybrid system and the huge savings it made in powering its tower cranes. However, the development and availability of the AMPD battery storage system provided an opportunity to go even further and much sooner than expected.

"Our crane department has worked tirelessly with specific suppliers and site teams to change attitudes, guaranteeing that we are at the forefront of adopting sustainable power for tower cranes, mastclimbers and hoists," says Shooter. "On average we run around 20 tower cranes and 200 mastclimbers on our sites at any one time - all of which were powered by big diesel generators. The impact of using the latest technology is illustrated by the fact that from January to July this year, we saved 450 tonnes of carbon and 172,000 litres of fuel from the Flybrid product alone!"

"Working with the equipment supplier Select, we wanted to investigate the possibility to use battery power on site and as a result are probably the first company to power two tower cranes from one battery unit on a trickle charge using a mains grid connection - this saved 98 tonnes of CO2 in just three months."



The control panel on the AMPD Energy battery storage system



The site uses four Alimak Scando 650 hoists

"That pilot scheme was so successful that we decided to use the battery set up on the West Bar site, but here we are powering the tower crane, mastclimbers, hoists and temporary site supply two buildings via only two batteries on trickle charge saving 27 tonnes of CO2 in the first two weeks of operation. The third battery powers the site offices. We are now looking into using solar panels to trickle charge the batteries - a five 3.2kW panel 16kW set up - reducing carbon emissions even further. With about 10 hours of sunlight, we could turn the generator off for an additional seven hours a week.

On the lookout for further savings the team is also trying to utilise the hot air that is pumped out of the battery packs by their air conditioning system.

"We have thought of ducting the battery's hot expelled air into the site's three drying rooms which would save the 12kW currently used to power the three areas. This is a double saving because it lowers the load on the battery as the rooms are constantly on through the winter and therefore reduces the amount the battery needs to be charged."

"It should be remembered that there is no main

electricity power at all on the site, even the commissioning will be done using battery power. It is now possible to run the buildings at night on battery power only - they would also cover for any power outages or issues. On new sites we are more than happy if we can get a 40 amp supply which means the battery system can charge at 20 amps all day long."

EQUIPMENT

The site currently has four Alimak Scando 650 hoists, 40 SAE P40 mastclimbers and two Wolff tower cranes - a Wolff 166 hydraulic luffer and a Wolff 180 rope luffer. Surprisingly the biggest draw on electricity are the four hoists. The SAE mastclimbers are already doing their bit to reduce power consumption having been designed to require two amps less power per unit at start up. The site has 40 mastclimbers - a mix of singles and twins with around 60 drive units between them. But why so many?

"The project specifies brick/masonry slip cladding," says Gisbourne. "Had it been traditional masonry it would have been constructed using tube and fitting scaffolding, but to meet the budget the brick slip system was chosen. Mastclimbers are the best access method for

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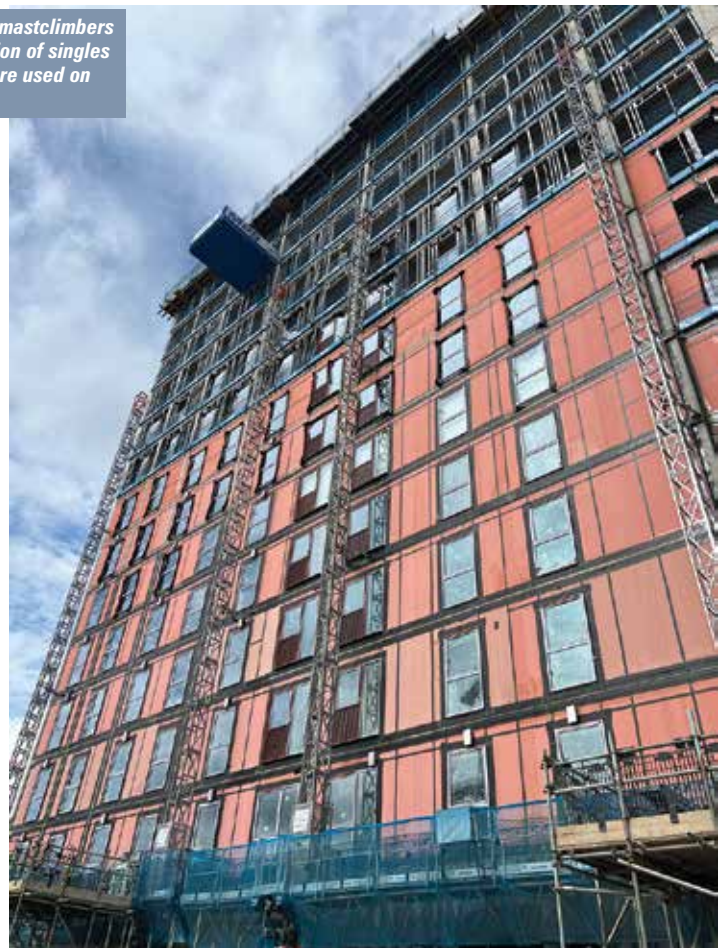
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A total of 40 mastclimbers - a combination of singles and twins - are used on the site



installing these as the platforms are at the correct level for installing the cladding on each elevation.”

“All the site equipment used - mastclimbers, cranes and hoists - is rented, B+K has no plant to own its own having sold all its equipment years ago. Mastclimbers are rented from a variety of suppliers including Lyndon SGB - part of BrandSafway - BFT Mastclimber and Apollo Cradles - so as not to be overly reliant on one supplier and it also adds a bit of competition.”

“Most of the mastclimbers on the site are new, through a supply agreement with Lyndon SGB which provides the SAEclimber P40 machines,” said Shooter. “They were chosen due to requiring less electricity on startup. Saving two amps on 60 drive units saves a fair amount of electricity.”

The P40 uses a square mast but is lightweight, while remaining very stable in single mast format and being quick to erect and easy to use. The single mast has a maximum anchored height of 200 metres, a maximum platform length of 12 metres and a 1,600kg platform capacity. The twin mast has the same anchored height but a maximum platform length of 32.1 metres with a 4,000kg capacity. Elevation speed for both is either six or 10 metres per minute.

The four Scando Alimak 650 FC 32 passenger hoists are supplied by Reco Hoist. The base is fully enclosed with swing type landing doors for safe access and egress to the floor levels. The 650 FC 32 has a maximum capacity of 2,400kg and a lift speed of 42 metres a minute. The internal dimension of the car is 1.5 metres deep, 3.2 metres wide and 2.3 metres with a 1.49 metre wide entry door. Power consumption is 39kVA.

“On tower cranes we looked at the power

consumption of the three main fleets of cranes we use - Terex from Select, Wolff cranes from HTC/Wolffkran and Jaso from Falcon - and we can tell which crane is the most electrically efficient by the size of generator it needs. We then look to put a Flybrid to reduce the size of the generator even further. While some cranes are more power hungry than others, they may be cheaper to rent. However, when the cost of fuel is added by using and renting a bigger generator it may work out to be more expensive. We have been doing these calculations at tender stage for many years.”

In order to change attitudes and habits, the B+K crane team organised a number of pilot trials of the Flybrid and the battery technology, involving all parties to demonstrate reliability and ability to reduce fuel consumption and cut emissions. To support this, the team formulated a self-populating carbon spreadsheet and included all combinations of lifting equipment to demonstrate to site managers the savings. It proved to be instrumental in persuading them to adopt the new technology. Equipment was then tested to its operating limits, made possible by the technical experience and dedication of the company’s crane team to drive innovation.

Flybrid and battery technology is now a standardised offering across Bowmer + Kirkland sites and its project managers are on board with this technological innovation. Using sustainable energy systems to power equipment across the UK the company has saved 1,270 tonnes of carbon and 488,000 litres of fuel.

B+ K director Matthew Cruttenden said: As the company strives for our ‘zeroby40’ target, our group crane team has been instrumental in changing attitudes and increasing awareness



and understanding of the sustainable energy sources available. Our operational staff now understand the possibilities open to us to protect the environment, reduce our emissions and save money. Our development and collaboration with specialist suppliers has revolutionised the way we power our sites - who would have thought we could power an entire site with a couple of battery units on trickle charge?” ■

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