

SC

Mast climbing
work platforms
References worldwide



SCANCLIMBER®
by Tractel®

SC8000 Transport Platform on the Eiffel Tower

The historical Eiffel Tower underwent massive renovations on its first level in an effort to update that level's viewing pavilion and make the area more appealing to visitors. Bateg was the main contractor of the project renting the transport platform from Scanclimber's customer Sky Acces.



The platform design for the Eiffel project started from Scanclimber's twin mast SC8000 mast climbing work platform. The idea was to use as many standard components as possible to make the product on schedule and save costs for the customer.

Scanclimber designed a solution using two twin mast SC8000 units with an additional middle platform extension placed between them. This provided a 24.1 x 6.6 m floor area and 9 tonnes of capacity. Finally, this mast climbing work platform was approved as a transport platform.

In the final product, more than 90% of the platform was made of standard components. Considerable cost savings were achieved and spare parts were readily available.

Masts

In each corner of the platform there was a mast, in fact, one mast was a cluster of three standard SC8000 masts. The four mast clusters stood on the platform's four corners. The masts were bound together with specially developed triple mast connectors.

As the platform stood in the middle of the Eiffel tower, the lowest

possible anchoring points were 50.6 m above the ground level. Each of the 60 m high masts were tied only once, because the first floor of the Eiffel tower was at the height of 57 meters, just 7 m above the anchoring level.

The City of Paris required protection of the Eiffel Tower frame due to its historic nature. As the frame could be damaged, welded or even marked, by the Scanclimber - the platform anchor fixings, anchors were fastened to the Eiffel Tower with special clamp fixings.

With its size of 162 m² the platform's huge sail + added mast surfaces. The mast sections had to be designed

with enhanced stiffness and their groundings were 12 m deep. Thus the platform could be in operation even during wind speeds of up to 20 metre/second and could withstand up to 44 metre/second when out of operation. The wind speed in operation exceeded the standard SC8000 figure with 30 %.

Foundations

The foundations weighed 25 tonnes each, and are made of two parts: the insert, which sat below the ground level, and the top plate which was bolted onto the top of it. The foundation was set with concrete and the mast bases were welded onto the foundation's top plates.

Aesthetics played an important role in this project. The appearance of the platform with the masts was expected to merge into their surroundings as much as possible. The mast clusters and the platform stayed in aesthetic harmony.

Due to time constraints and concerns that moving the platform in the day would cause too much noise pollution, the original plan was to raise the platform once early in the morning and then drive it down in the evening. The noise was cut with the clever design by 25 % and the speed increased by 33 %.

Bateg was able to go up and down not only once but 3-4 times in a day.

The site worker's safety

For the site workers' safety, railings at a height of 2 m were placed around the platform during the time it was used. There was also a hard roof above the control station to protect the operator from falling objects. The 3.2 m wide platform loading door could only be used at the ground level. The loading door was automatically locked until the platform returns to ground level.

Hydraulic ramps (2 m long, 3 m wide), with a 1500 kg capacity, at each end of the platform were used to move personnel, materials and equipment between the platform and the first floor of the Eiffel tower. The ramps were prevented from opening until the platform had reached the first floor.

A landing door (2m high) was bolted onto the Eiffel tower at the first floor. The landing door could be opened only from the platform side. For additional safety an emergency opening was provided from the floor side as well.

The visitors safety

Work on the platform and the Eiffel tower pavilion went on and at the same time the public queued up beneath it and used the Eiffel visitor's lifts to visit the other areas of the building. All work tools had to be securely fastened when they were not in use and the work area, including the platform, was completely secured with 2 meters netting.



IB Tower, a Unique Landmark of Kuala Lumpur, is standing tall

The Petronas Twin Towers are not the only high rise buildings in the city of Kuala Lumpur. There are several other tall buildings in the city which exceed 200 meters – the IB tower is one of them. Upon completion it is the fourth tallest building in Malaysia.



Designed by **Sir Norman Foster** of London, the IB Tower consists of 60 floors of offices, services and apartments. It is located along Jalan Binjai, near the Kuala Lumpur Conventional Centre (KLCC). The tower's stunning design, which is striking and visually appealing, will be hard to overlook when travelling on the main roads in the city.

Scanclimber's partner in South-East Asia, Scan-Rent Sdn Bhd Malaysia was awarded the contract to supply mast climbing work platforms for the cladding work on the IB Tower building. The initial platforms were shipped in June 2013 and dismantling started in December 2014.

The challenges

In the first phases of negotiations we

were facing some serious questions in the IB Tower project:

- The height: the building is very high (275 meters) and has a specially designed shape
- The location: Kuala Lumpur City Center is very crowded, congested and there is very limited space for loading and unloading
- The cladding panels: the 6 meter long, vertically slanting cladding panels were very heavy and big, which made the use of suspended platforms and scaffolding practically impossible

The solution

Instead of suspended platforms and scaffolding, the customer decided to use mast climbing work platforms. Key reasons for choosing MCWPs were:

improved work safety, possibility to drive two platforms on a single mast, speed of erection, unobstructed access, possibility to transport heavy cladding panels precisely to the installation position and speed of the platforms. The installation at the IB Tower included:

- 40 units of Scanclimber Kosmos SC4000 platforms were shipped, which are installed on 22 masts
 - 4 masts with one platform per mast
 - 18 masts with two platforms per mast
- Tallest mast: 275 m
- Total length of the mast: 6 000 meters on a single building
- Total quantity of the mast sections: 4840 pieces (1250x700x700 mm)
- 6 kilometers of power cable = 24 000 kilograms

Huge projects mean huge and increasing figures and volumes. At present there are 3800 mast sections at the IB Tower work site, but the number is increasing (to 4840) as the construction and cladding advances.

The total weight of the power cable is 24 tons. The cables are 90, 150 and 300 meters long.

Since speeds are 6 and 12 meters/min, it takes 23 minutes to reach the top with the faster machine and 46 minutes with the slower one.

The total weight of the mast sections is 396 880 kilograms. It takes 55 truckloads to transport the mast sections to and from the site = 110 in total. And that is just the mast sections.

The anchoring question was solved with the triple anchoring system, which made the 34 meters distance between the anchors possible.

Customer and our comments and experiences on the project

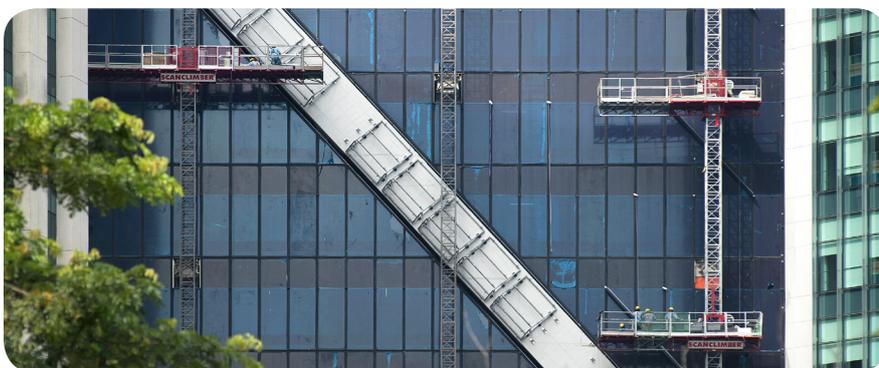
Below we have compiled the comments and feedback on the project from both our partner and the customer.

Positive:

- The customer has been very happy with the Mast Climber installation. Especially how they helped in installation of the heavy and large (6 meters in length) vertically slanting cladding panels by using multi-platform systems
- The MCWPs have been very reliable, with a very small number of technical troubles
- Ease of use of a Multi-platform system (two MCWPs on one mast)
- The speed of 12m/min machines
- Drawings and calculations have been very good. The customer has not wanted to discuss the solution
- The cabling solution: 300 m of height and two machines on one mast - no technical issues

Negative:

- Logistics: the site is in the busy center of KL, we had a time slot between 10 AM to 5 PM to load and unload the trucks
- Erections of the machines: 70% of the mast erections are done manually since the crane is mostly occupied with other tasks.



Developer	Main Contractor	Cladding contractor	Machine rental company
IB Tower Sdn Bhd www.ibtower.com	Daewoo Engineering & Construction Co., Ltd. www.daewooenc.com	PMB Façade Technology Sdn Bhd www.pmbfacade.com	Scan-Rent Sdn Bhd www.scan-rsb.com

The Facts

- Jobsite: Ilham Baru Tower (IB Tower)
- Website: www.ibtower.com
- Location: Kuala Lumpur, Malaysia
- Project: 275 m
- Products in use: 44 Scandlimber SC4000, 6 km of mast, Scandlimber Multiplatform extensions

Renovation gives 90 more years to the Pietarsaari water tower



The historical brick water tower in Pietarsaari was taken out of use for several months in May 2014 during the extensive renovation.

The water tower was built over 80 years ago and had become dilapidated. The tower was designed by **Lars Sonck**, perhaps the best-known Finnish architect of the national romantic period. Even though Sonck created seven different designs for water towers, only three of them were ever built. In addition to Pietarsaari, Sonck's water towers can be found in Rauma and Hyvinkää.

The idea of renovating the water tower had been under way for a long time and, at the end of 2012, preparations were started and a renovation report was ordered from the engineering office IdeaStructura Oy.

"The tower has both cultural and historical significance as an essential part of the Pietarsaari cityscape, and it also has a functional purpose in equalising the pressure in the Pietarsaari wa-

*ter system," says **Markku Valkonen**, Managing Director of the Pietarsaaren Vesi waterworks.*

The water tower in Pietarsaari was cast-in-situ on a hill. There are ring beams around the ferroconcrete columns, supporting a water tank of 500 cubic metres and stiffening the brick walls built on site.

The work begins

The construction company Rakennusliike A. Salonen from Kokkola is responsible for the renovation. The work began in May–June. **Asko Reinikainen** acted as site manager at the construction site.

Ramirent delivered the work platforms to the construction site in July. Ramirent delivered scaffolding, mast climbing work platforms and scissor lifts to the construction site. Cooperation with Ramirent worked very well. "Everything has worked out great with Ramirent, and I'd give the highest grades to **Marko Nissinen** at Ramirent

in Kokkola", says Reinikainen.

Mast climbers instead of scaffolding

The original plan was to use scaffolding to repair the tower, but because the site manager at the construction site had had good experiences with mast climbers, the scaffolding was exchanged for two SC5000 mast climbing work platforms. This measure saved an estimated two months of time and avoided the need to work in mid-winter.

When asked about why the decision to use mast climbers was made, Reinikainen answered: "There were many reasons, and the most important was occupational safety. Mast climbers have an excellent feature: the working height can be adjusted precisely, which was especially important in the chipping and drilling work. In addition, by using extensions the work platform could be adjusted to match the outer radius of the tower exactly."

” At the construction site, occupational safety has been issue number one



Interior work too

It was also possible to make significant use of the mast climbers in the work done inside the tower. The mast climbers were used to transport the jackhammers and hydrodemolition machines up and pass the hoses through the windows. When shotcreting, the machines and materials were first transported up using the mast climbers, and the hoses were used to pump the concrete to the location.

Of course, the mast climbers were also used in the exterior work: masonry, removal and installation of the columns, grouting, removal of windows and glass bricks, as well as the removal and construction of the steel roof.

The work was organised in shifts so that one machine was used for exterior work while the other was used for the interior.

Mast climbers were utilised during several stages

Regarding the usefulness of mast climbers in renovation, Asko Reinikainen says: “It increased efficiency by a great deal in the exterior work. The machine was a great help in the work done on the interior of the tank. The mortar stations and bags could be taken up

and the pumping could be done easily straight from the work platform.”

“In the same way, the quality of work could be assessed easily on the work platform,” Reinikainen adds.

But there were also unforeseen issues: “Because the tower is narrower at the top, the work platform had to be fitted to the upper section, and the work on the lower section had to be done using scissor lifts.”

The mast climbers were used in the range of 10 m – 50 m

The decision to use mast climbers was made after the final calculation phase, when the contract negotiations were started. According to the estimate of Rakennusliike A. Salonen, the time saved compared to the use of scaffolding was two months. Two days were needed to move the mast climbers. They were only moved once.

When talking about occupational safety, Reinikainen touches wood and says: “There have been 0 workplace accidents at this site!” The mast climbers played their own part in it. At the construction site, occupational safety has been issue number one at the site meetings. Everyone had their own personal harness and wore it at all times.

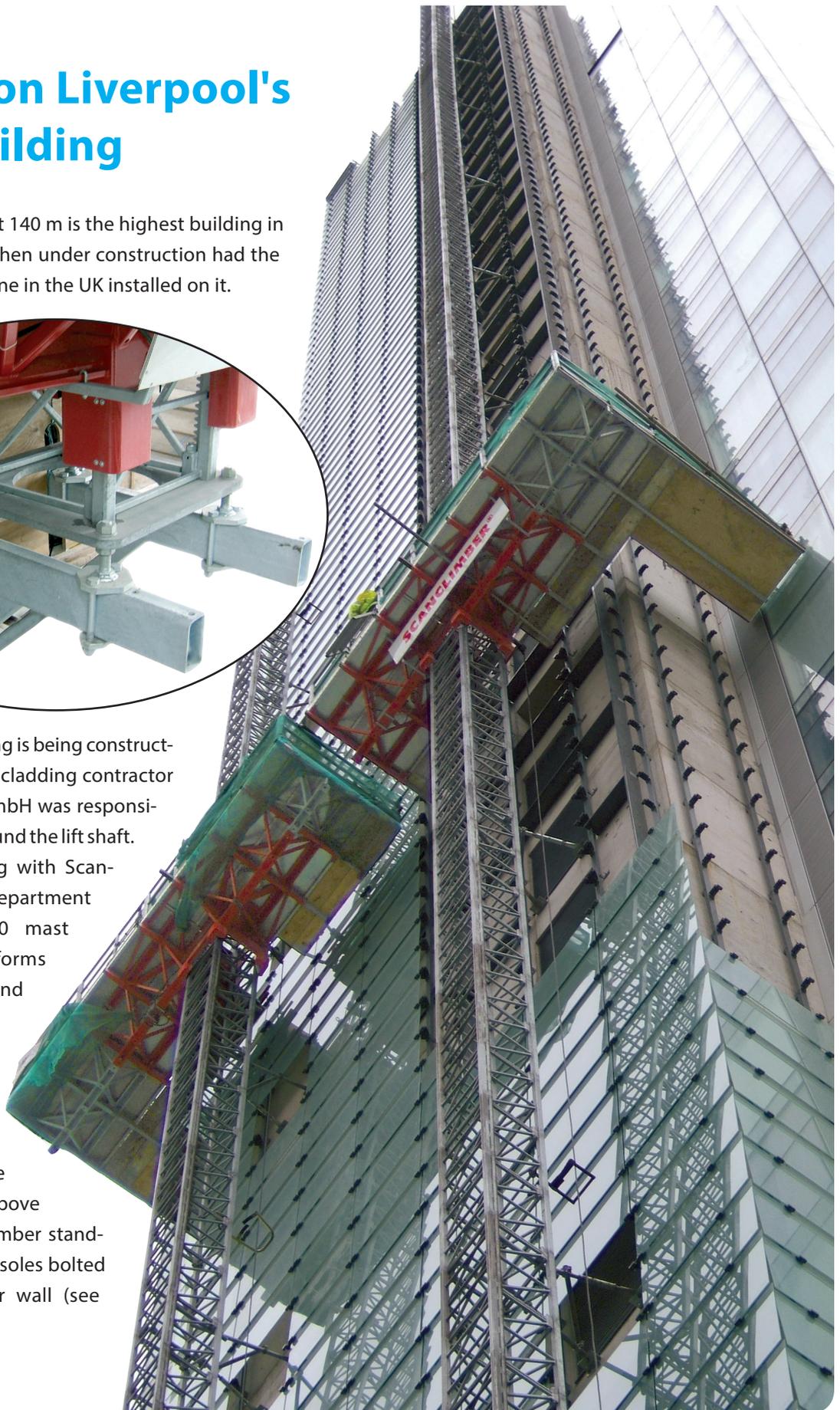


SC5000s on Liverpool's tallest building

The West Tower at 140 m is the highest building in Liverpool and when under construction had the tallest tower crane in the UK installed on it.



The 40 floor building is being constructed by Carillion and the cladding contractor Barvon Curtain Wall GmbH was responsible for the cladding around the lift shaft. Brogan Group working with Scanclimber engineering department installed two SC5000 mast climbing work platforms with offset platforms and extensions 2.2 m long around the facade. To add to the complexity of the installation the 110 m high platforms had to be installed some 10 m above the ground on Scanclimber standard adjustable wall consoles bolted to the concrete shear wall (see picture above).



Outstanding Engineering from the Arctic Circle

Water Tower renovation in Oulunsalo, Northern Finland



” There was really no other option for this job than using Scancrawler mast climbers

A special renovation task took place in Oulunsalo where the project was a water tower. The façade and roof of the water tank on the top of the tower had fallen into disrepair. The original metal cladding was corroded and needed replacing. The roof covering had to be renewed as well.

Ramirent Oy had the challenge to deliver suitable machines for the task. Workmen needed access to the circular water tank façade between 45 to 50 meters high. *“There was really no other option for this job than using Scancrawler mast climbers”*, says **Risto Mällinen** from Ramirent Oulu. The shape of the tower set special requirements for mast anchoring and platform extensions. No anchors could be mounted below the water tank, so the location of the first anchor was to be at an incredible minimum height of 45 meters. Working together with engineers from Scancrawler Oy, Ramirent found the best solution for the project. The anchoring challenge was resolved by using Maxianchors. Maxianchors, unique to Scancrawler are a much

stronger anchoring system than the traditional methods, and gives more opportunities for engineering special access solutions. In this case two SC5000 mast climbing work platforms were used with two Maxianchors per mast. The first anchor was mounted at 45 meters and the second at 48 meters. *“Even though the first anchor was so high, the work platform was very stable, comfortable and safe for the work”*, tells Mällinen.

Both machines had 13.7 meter long platforms. The circular shape of the work platform was made up with standard telescopic extensions up to a maximum length of 2.5 meters. In this way the work platform had exactly the same shape as the water tank, and the gap between the platform edge and the tank was both small and safe. *“This configuration was exactly what we needed here”*, tells Mällinen. Two Scancrawler SC5000 units were used on the jobsite to get half of the water tank wall area completed. After finishing the first half, the machines were moved to the opposite side of the tower and the rest of the tank wall was installed.



Massive Scanclimber project in Florida, USA

” *This is reportedly the largest Scanclimber project ever performed, worldwide.*

Sunbelt Rentals, headquartered in Charlotte, NC (USA) recently participated in a massive hotel/convention resort project in Orlando, Florida by renting a total of 65 Scanclimber mast climbers to the general contractor, Welbro Building Corporation. This is reportedly the largest Scanclimber project ever performed, worldwide.

Rosen Shingle Creek is one of the largest full-service convention resorts in Central Florida. The resort features 1900's Spanish Revival style architecture, with high-carved arches accented by natural earth tones. The 230-acre resort will offer 1.500 guest rooms and suites, plus 250.000 square feet (~24.000 square meters) of convention and meeting space. An 18-hole championship golf course is located adjacent to the hotel.

The multi-sided hotel ranges in height from 80 ft. (~25 m) to 160 ft. (~50 m). The 65 Scanclimber mast climbers provided complete access to the hotel exterior for specialty contractors during several phases of construction including window installation, painting, insulation, and exterior finishing. They were positioned side-by-side 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.

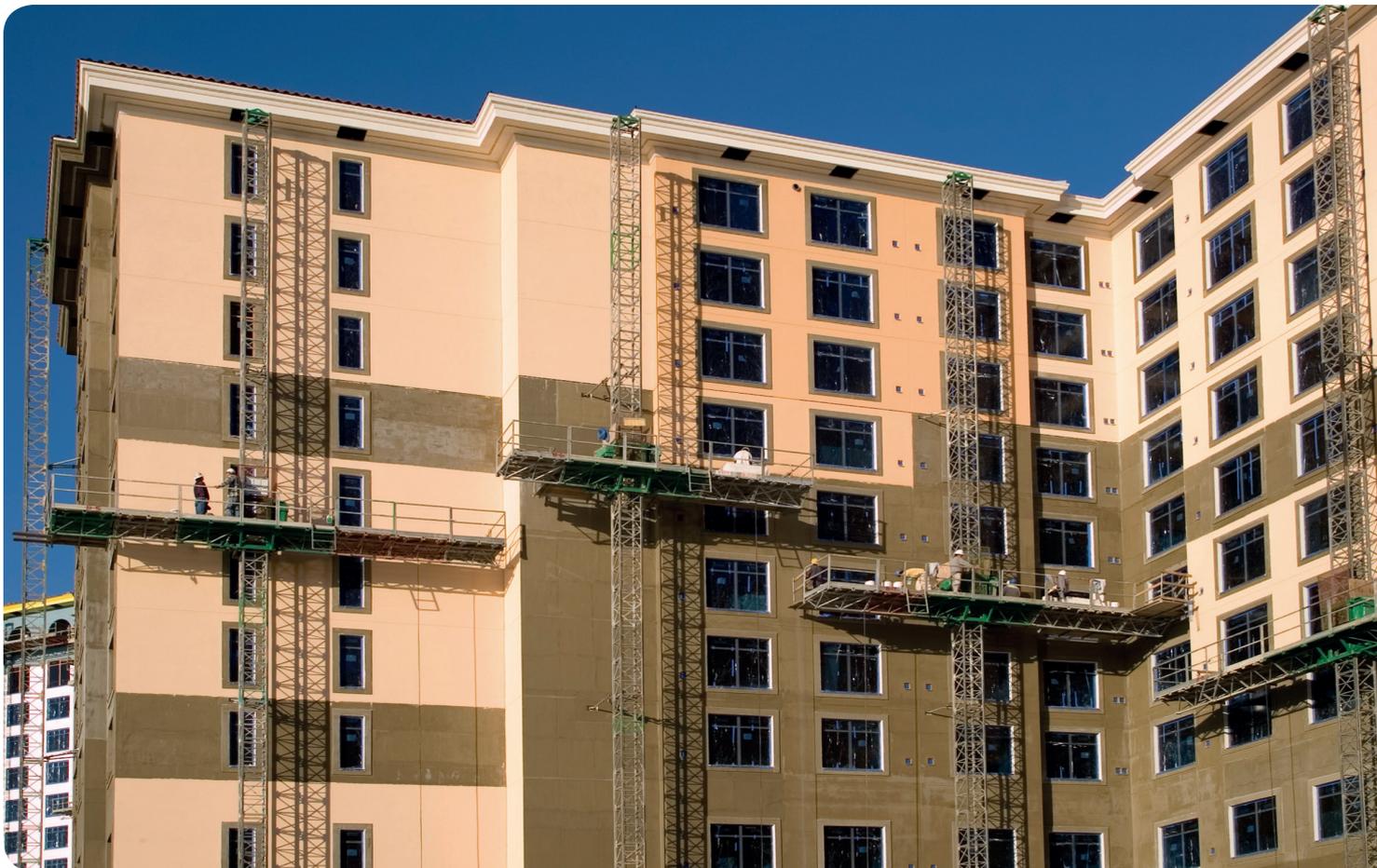
Sunbelt Rentals provided a turnkey installation of the mast climbers at Rosen Shingle Creek by providing the design, erection, and power generation. Three 350 kW diesel-driven generators from the Sunbelt fleet, along with 220V



Photos courtesy of Mark Pfaff, Sunbelt Rentals

30-amp power distribution, were provided to power the mast climbers. "This was a great selling point for us, being able to provide everything needed," says **Phil Bohenkamp**, Sunbelt Sales Manager, Mast Climber Services. Sunbelt also provided extensive traditional scaffolding and other equipment throughout the project.

Leon Clement, Site Manager for Welbro Building Corporation, sums it all up: *"Sunbelt Rentals has been excellent to work with on this project. They have provided exceptional response times, whenever we needed service."*



Photos courtesy of Mark Pfaff, Sunbelt Rentals

SC5000 proves its worth in bricklaying

After a number of successful assignments with the Scanclimber SC5000 mastclimbers, used for bricklaying, VMC Pitzner A/S in Denmark was contacted regarding brick and carpentry on the third stage of the Fionahus in Copenhagen harbour. The time schedule was very strict, and the assignment ended with an order for 13 units erected as 5 twin mast and 3 single mast climbers.

The large payload of the Scanclimber

” *Using Scanclimber SC5000s for bricklaying is heading for a great future in Denmark as rumour spreads across the market like ripples in water*

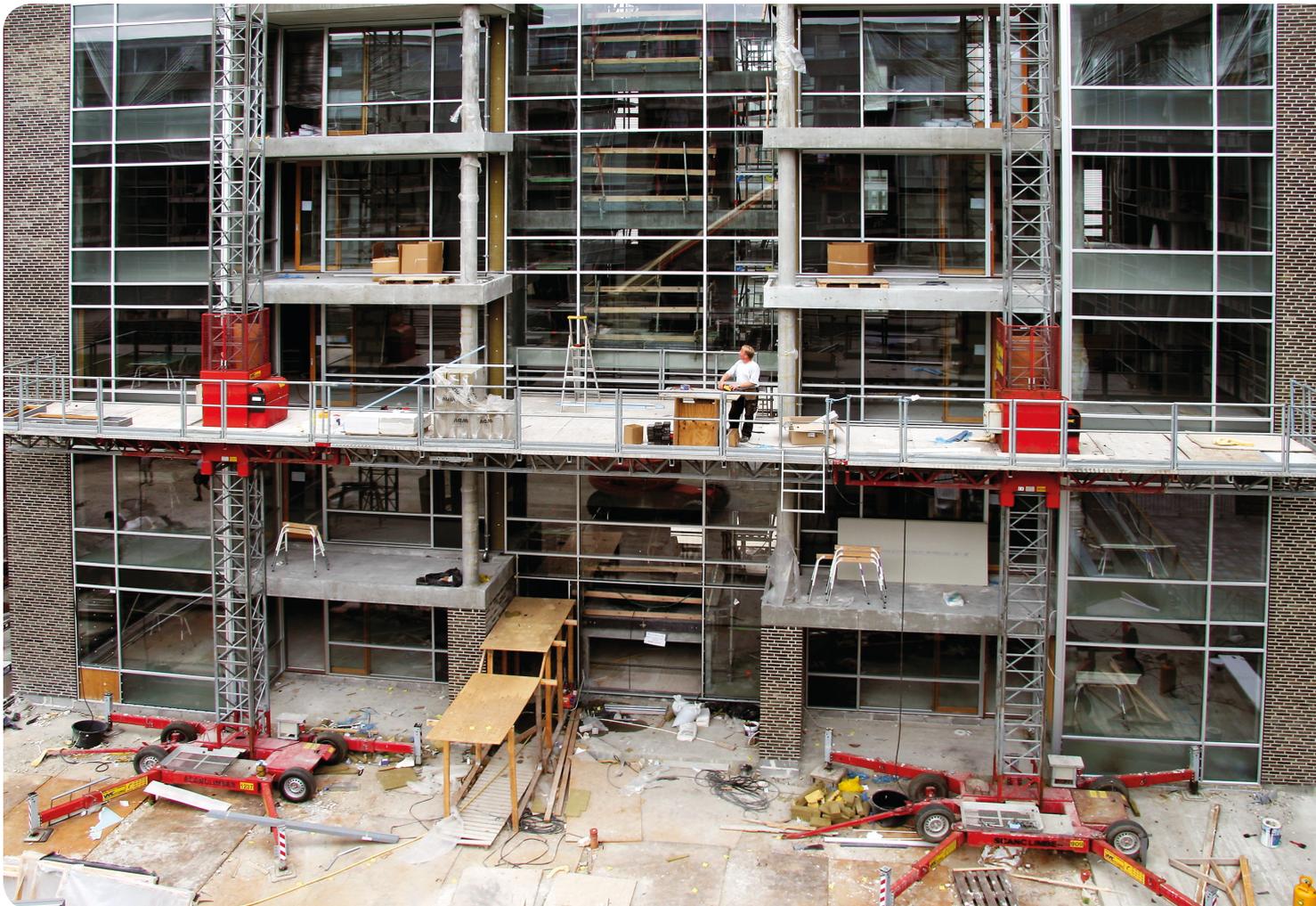
SC5000 mast climber makes it well suited for bricklaying, where the high carrying capacity is ideal for the heavy building materials. Additionally, the long telescopic extension capability of the Scanclimber SC5000 gives great flexibility: It is possible to build the climber round corners and into recesses in the buildings.

The fully adjustable telescopic consoles allowed VMC to accurately position an additional extension within a large recess in the building façade.



The assignment has been finished and the users have been very satisfied with the Scanclimber solution.

"Using Scanclimber SC5000s for bricklaying is heading for a great future in Denmark as rumour spreads across the market like ripples in water from bricklayers who have already used the equipment", says Søren Thomsen from VMC Pitzner. At the moment they had five other bigger assignments, where Scanclimber SC5000 mast climbers were used for bricklaying, and several offers were pending for future projects.



Scanclimber spans Manchester project

Permasteelisa (UK) chose Scanclimber mast climbing platforms to install terracotta tiles to the façade of Sir Robert McAlpine's Hardman Street project in the centre of Manchester.

Working at close to 30 m height two Scanclimber SC5000 single mast machines were erected with a top anchor permitting the entire works to be completed without any penetration of the weather façade dramatically reducing the installation time and improving ease of access.

One SC5000 unit worked at a platform length of a massive 17 m eliminating the need for a second mast and drive unit as normally required with lesser manufacturers but still retaining a payload of 1000 kg.

The second SC5000 unit working at 13.7 m was fitted with an interlocked sliding platform extension to the length of the machine which allowed the contractor to access areas normally excluded from fixed platform equipment.



Two further Scanclimber SC4000 mast climbing platforms were erected on shear walls on the project in conventional format but anchored at the standard Scanclimber anchor pitch of 12.5 m intervals again reducing the number of anchors required and both erection and dismantle costs.

Safety was assured on the project by the incorporation of Scanclimber's standard overspeed brake on all machines and the fitment of debris netting to the full perimeter of each machine deck.

Brogan Group, Scanclimber's partner company in Manchester, looked after the erection and dismantling of the machines as well as the regular maintenance and inspection visits throughout the project.

High standard in Gibraltar

VMC Pitzner A/S delivers Scanclimbers and manpower to the mounting of luxurious balconies in Europort, Gibraltar

High requirements for quality, safety and accuracy have brought Scanclimbers and manpower from VMC to Gibraltar.

One of the major Danish builders – MT Hoejgaard – was the main contractor on the comprehensive renovation of a large Danish-built hotel in Europort. In order to install almost 100 luxurious balconies another Danish company – Ringsted Bygningsentreprise – had been chosen as subcontractor delivering balconies in a light aluminium construction. The mounting of the balconies required working at extreme heights and in order to “reach the skies” safely and in due time, Scanclimber platforms and technicians from VMC were hired in.



In the beginning of January, VMC sent the first SC4000 mast climber to Gibraltar together with two specialised technicians who mounted the machine in single mast format. Within a few days, the working platform was ready and the mounting of balconies could begin.

The success of the first platform was repeated, when the next Scanclimber landed in Gibraltar three weeks later. In February, the Danish technicians moved the first Scanclimber and in the same process extended it to reach a height of nearly 60 meters and a length of 9 meters with a special 5 meter extension.

Challenging heights demanded a specialised solution to reach the goal: a highly professional conclusion on a fantastic building.

SC4000 at Europe's oldest bascule bridge

The Herrenbrücke in Lübeck was opened in 1964 as a replacement for the older swing-bridge. It was the oldest bascule bridge in Europe. In August 2005 the bridge was replaced by the Herrentunnel and the bridge was dismantled between mid September and mid December 2005. For this purpose a mast climbing platform, type Scanclimber SC4000 was mounted on the fold up carriage-way parts of the bridge.

To fix the platforms special anchoring had to be used: the tarmac surface in the area of the anchoring plate above the steel construction was removed and the anchoring was then directly welded to the bridge structure. Following, segments of the bridge were taken off from the SC4000.

The original plan to lift up the complete fold up bridge by a floating crane was aborted due to the enormous weight of the individual component parts, amongst which was the 500 ton counterweight. So, each of the fold up elements was reduced into ten pieces with the aid of the Scanclimber platform, then each of the pieces were



SC4000 lying with 7° slope used as single mast transport platform



removed using a telescopic mobile crane, loaded onto transport and removed.

The time for disassembly of one bascule bridge element took approximately 5 days. Using the Scanclimber work platform particularly proved of value as alternatives regarding reconstruction were not economic due to the enormous expenditure of time.

Due to the good planning by job site manager **Mr Schlütermann** of Siloco's, our Hamburg Scanclimber rental partner, a short start-up time could be realised between the first meetings, planning of the assembly, preparing the statical calculation and last not least the delivery of the machine.

Scanclimber arrived in Australia

The first SC4000 units were installed at site in Brisbane, Queensland. The distributor of Scanclimber in Queensland, HiReach Rentals (Australia) Pty Ltd,

who is one of the leading access companies in Queensland, secured its first rental for Scanclimbers at a high rise building site in Brisbane.

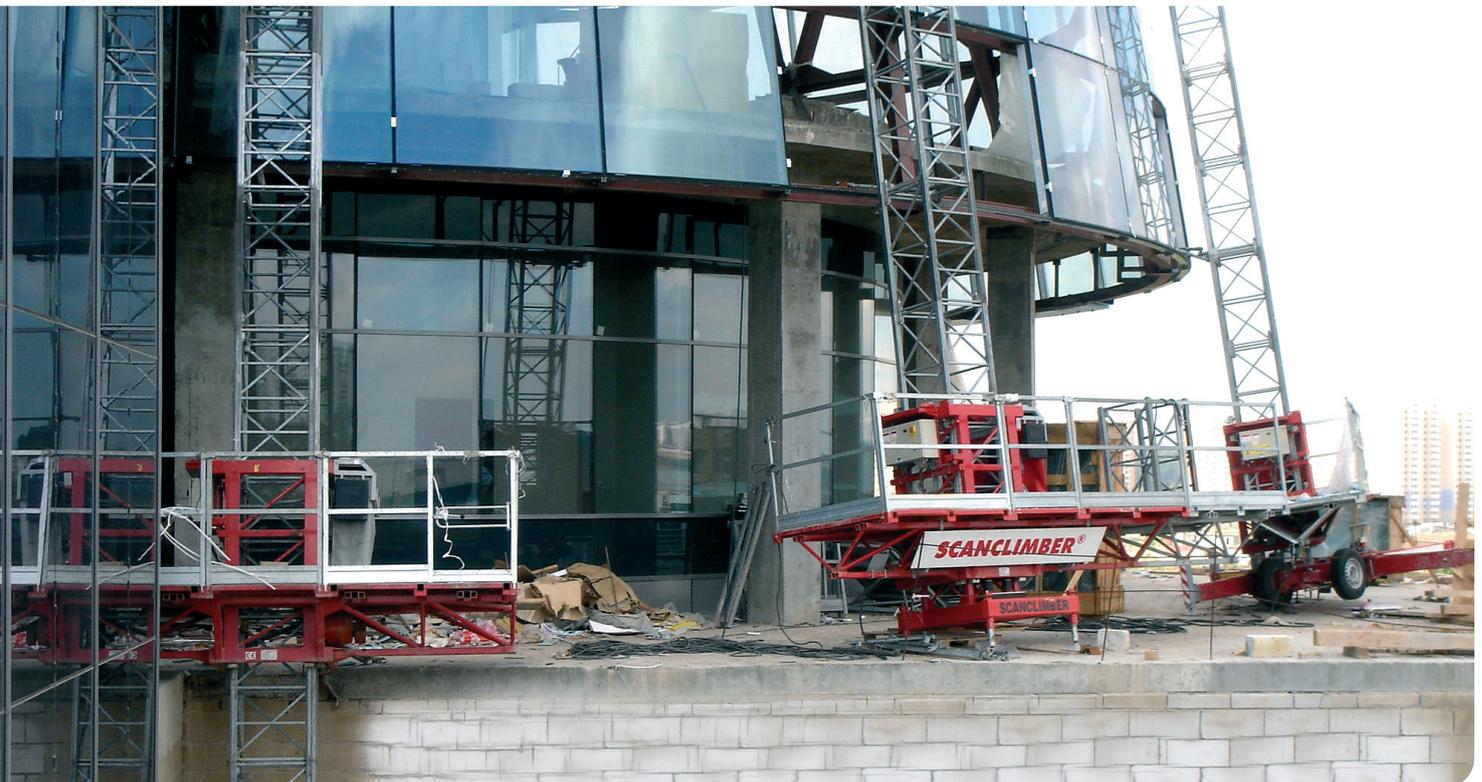


Scanclimbers chosen for Russian façades

SC4000 is very popular among Russian façade companies

Russian façade companies have got hands full of work. Fortunately, there are Scanclimber working platforms to help them. One of the latest objects was a Moscow Region House of Government that is located just on the Moscow Ring Road MKAD next to the Krokus Exhibition Centre. 8 units of SC4000 were used concurrently on this object with max 80 m height. Both wheel chassis and mini chassis found their place on this quite typical Moscow object.

The construction business in total is very emerging business in Russia. As well private and public sectors are actively investing on new facades. Glass is one of the most used materials in face works.



SC4000 work platforms on mini chassis and on wheel chassis mounted in an angle according to the wall

Scanclimbers at a 150 meter high residential tower



The construction site of the high-rise building Montevideo Tower in Rotterdam, the Netherlands, was operated by an international building company Besix.

31 Scanclimber SC4000 and SC5000 work platforms were surrounding the building to provide access towards all the bricklayers and other workers who have to accomplish the outside of the Montevideo tower.

All kind of configurations - single masts, twin masts and even one triple mast - were erected to reach every corner of this beautiful and modern building. The 150 meter high and 43 storey tower is today the tallest residential building in the Netherlands.



MCWP Product Range We Offer Today

	SC5000	SC6000	SC8000	SC10000	
Technical Data					
	Single mast	Single mast	Single mast	Single mast	
	Maximum platform length / loading capacity	4.1 m / 2700 kg	4.1 m / 3300 kg	4.1 m / 4500 kg	4.1 m / 6000 kg
		7.3 m / 2300 kg	7.3 m / 2900 kg	7.3 m / 4100 kg	7.3 m / 5600 kg
		10.5 m / 1900 kg	10.5 m / 2700 kg	10.5 m / 3700 kg	10.5 m / 5300 kg
	13.7 m / 1500 kg	13.7 m / 2100 kg	13.7 m / 3250 kg	13.7 m / 4000 kg	
	16.9 m / 1000 kg	16.9 m / 1400 kg	16.9 m / 2800 kg	16.9 m / 3100 kg	
				20.1 m / 1800 kg	
	Twin mast	Twin mast	Twin mast	Twin mast	
Maximum platform length / loading capacity	12.6 m / 5000 kg	13.4 m / 5600 kg	14.2 m / 8000 kg	15.8 m / 10200 kg	
	20.6 m / 4000 kg	23.8 m / 4600 kg	23.8 m / 7500 kg	19 m / 10400 kg	
	28.6 m / 3000 kg	27 m / 4100 kg	27.0 m / 6500 k	24.6 m / 8800 kg	
	35.0 m / 2200 kg	36.6 m / 2200 kg	36.6 m / 4100 kg	30.2 m / 6600 kg	
	40.6 m / 1500 kg	44.6 m / 1200 kg	46.2 m / 1000 kg	35 m / 5600 kg	
				40.6 m / 4300 kg	
				48.6 m / 1500 kg	
Distance between anchors	18 m	18 m	18 m	18 m	
Lifting speed	7 m / min	11.3 m / min	7.2 m / min	8 m / min	
Mast section, hot-dip galvanised	1.25 m / 82 kg	1.25 m / 82 kg	1.25 m / 82 kg	1.25 m / 82 kg	



Scanclimber is the world's technology leader in mast climbing equipment for installations. The company has its corporate head office in Pirkkala, Finland, and manufacturing in Gniezno, Poland. The company employs more than 200 people worldwide. Scanclimber creates value for its customers with high quality, reliable and flexible vertical access solutions.

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by Tractel[®]

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