

Doka Xpress

The Formwork Magazine | Issue 02 | 2015

Comprehensive solutions for better results

Australia

Launch of Protection screen Xclimb 60

India

Omkar 1973 – an iconic landmark in the heart of Mumbai

Malaysia

Customized solution for triangular building shape in Kuala Lumpur



Editorial



**Dear customers,
dear readers,**

Welcome to our latest edition of Doka Xpress. I am very excited to bring you the latest news from the world of Doka with a particular focus on Asia Pacific this time. In this diverse region, Doka is once again living up to its motto of being “the formwork experts” providing solutions anywhere we have offices and branches. In this edition, you will find many exciting accounts of how Doka has been supporting contractors in executing their efficiently, safely and quickly. From iconic landmarks in Mumbai, India, with the Omkar 1973 project, to the complex Parcel 3 project in Kuala Lumpur, Malaysia, Doka has the ideal solution for any job.

Additionally, you would notice a strong focus on our Australian organization. This portion includes an insightful interview with our Managing Director, and some of their current projects. Safety solutions such as the innovative Bright Screen Brisbane clearly show that Doka has custom solutions for the most demanding requirements. As announced in our previous edition of Doka Xpress, in Melbourne the Lubeca Jumpform system is providing proven added value for the customer by eliminating the need for costly scaffold or mast climbing platforms.

I trust you would find the reports we have selected for you are both insightful and interesting. We would be delighted to feature your projects and achievements in one of our future editions!

Sincerely,
Andrew Hunt
Regional Director, East Asia & Pacific

Index

Customized solution for non-standard shapes	03
Interview with Managing Director of Doka Australia	04
Bright screens cover Brisbane’s inner-city	06
Iconic landmark in the heart of Mumbai	08
Total solution for better results	10
X marks international hub in Abu Dhabi	12
Doka Supporting construction frames dispenses with cranes for construction	14
Collaboratively developing the best solution	16
New faces in East Asia & Pacific	18
In brief	20

Doka News

Premiere at Korabelny Channel crossing ►

At the heart of what is currently the biggest infrastructure project in St. Petersburg lies the 620 m long cable-stayed bridge across the Korabelny Channel. For the pylons with their sophisticated shapes Doka supplied crane-lifted and automatic climbing formwork systems. During construction of the main piers the Heavy-duty bracket HDC celebrated its premiere.



◀ Formwork expertise on rail

As part of the expansion of the “Westbahn”, a double-tracked freight train bypass is under construction in St. Pölten, Austria. The site crew realized the complex requirements with two Doka tunnel formwork travellers which adapt flexibly to the tunnel cross sections and ensure fast and economic construction progress.

Xclimb for safer jobsites ►

Doka’s Protection screen Xclimb 60 with Xbright sheeting provided for safe working conditions during construction of the 18-storey Hyatt Place project in Chicago. As the lot was hemmed in by adjacent highrise buildings, all screens were delivered pre-assembled and thus could be installed in just two days.





The Facts

Project: Parcel 3 project

Project type: Office tower

Location: Kuala Lumpur, Malaysia

Contractor: Ensignia Construction

Building height: 233 m

Number of storeys: 56

Systems in use: Dokamatic and Dokaflex tables, Large-area formwork Top 50, Climbing formwork MF240, Shaft platform, Protection screen Xclimb 60

◀ For the unusual triangular shape of the highrise building and the atypical slab areas Doka developed a tailor-made formwork solution.

Customized solution for non-standard shapes

Located in the prosperous Mid Valley district of Kuala Lumpur, the Parcel 3 project will be the latest part of the large Mid Valley City complex.

Just as its twin towers, the 56-storey highrise office tower will have an unusual curved triangular shape and will be reaching 233 meters in height. Neighbouring on one of the most popular shopping malls in Kuala Lumpur, the project will undoubtedly become a new successful commercial centre.

Ensignia Construction, the contractor, has shown their trust in Doka solutions at a very early stage of the project, as the contract was signed one year before the estimated delivery date. Doka was appointed to supply Dokamatic tables, Large-area formwork Top 50, Climbing formwork MF240 and the Shaft platform for quickly achieving height.

Stunning building shapes

The non-standard shape of the building presented a big challenge for the Doka Malaysia team. Many atypical slab areas meant that the Dokamatic tables would not fit in these custom areas. Therefore, an alternative way to form slabs was required. As the Dokamatic tables are square, they are combined with Dokaflex tables in the atypical areas. This allows for slab-forming in the curved shape of the structure.

Just like the irregular shape of the building, developing a solution that climbs the elliptical core wall presented another challenge in this

project. Doka Engineers put forward Large-area formwork Top 50 as the most suitable system, as it can be easily adapted to any shape and size of the structure. Furthermore, the curved plywood panels were custom-fabricated for the jobsite. Doka Engineering has also proposed the timber beam packing solution in order to avoid any quality discrepancy with the waling. In tandem with Climbing formwork MF240, the customized Top 50 system proved that any challenge can be met when attempting to reach the greatest heights.

Added value and high level of confidence

As Ensignia Construction was very impressed by the solutions Doka provided, they demonstrated the ultimate trust in Doka formwork systems. After utilising the Doka systems successfully on the site, the customer recently awarded a contract to Doka for supplying Protection screen Xclimb 60. Preference was given to the perforated trapezoidal sheet because it will ensure high-level safety for workers and protect the jobsite from wind pressure and direct sunlight. Moreover, the specifications of the building require custom-fabricated support shoes, which were provided without delay by the Doka Malaysia team. Once again, Doka showed that no matter how complicated the requirements, Doka will develop the most suitable solution. //

by Wee Hau and Anna Piliipenko, Doka Malaysia

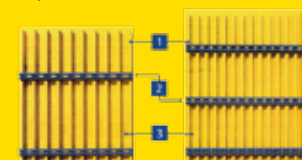


▲ In the non-typical and curved slab areas Dokaflex tables are in service.

Practical Tip

Top 50 in detail

Doka formwork beams H20 **1** and the steel walings **2** can be spaced closer together or further apart, depending upon the expected loads. The form-facing **3** is freely selectable to meet widely differing requirements.





▲ The Doka Formwork Australian Team

Interview with Managing Director of Doka Australia

How did you become interested in construction?

I have been interested in construction since my early teenage years, mainly stimulated by my father and grandfather, who also worked in the construction industry. I started my construction-related education at the age of 14 at the Federal Technical College for Advanced Civil Engineering in Austria, before graduating from University in International Business. Working on challenging projects with the right people has kept my passion for the construction industry alive until the present day.

Why formwork?

In my mid 20s I focused on special formwork solutions and methods because it enabled me to reach my goal of working overseas for my employer at that time. Since then, I have always been engaged in formwork-related business around the world.

How long have you been in the construction industry?

I have never changed industries so I could say I have

been involved with the construction industry for my entire working life – for 34 years now.

How long have you been with Doka?

I joined Doka Australia on July 7, 2014.

What are some of the most interesting projects that you have worked on? Why?

I define interesting projects by the ratio of degree of challenge initially and then eventually by the degree of success. That approach ensures a steady supply of interesting projects.

What challenges does Doka Australia face at the moment?

Doka Australia is a relatively new player in the Australian market and our biggest motivation is to build trust as well as a satisfied customer base. The quality and functionality of our products along with our willingness to provide superior customer service and support is starting to get recognised and will ensure further long term business relationships. At the moment our challenges are to establish a

reliable customer base for our newly established Melbourne branch and to adjust Doka Australia's structure to changing market conditions in 2015.

How successful has the brand been so far in introducing itself as a Lubeca partner? What activities are planned?

Our sales team has already achieved remarkable success by acquiring a number of projects for Lubeca in various states. Our aforementioned success is supported by the efficiency and flexibility the Lubeca systems provide to our customers.

What are your visions for Doka Australia?

Our quality products coupled with high-level engineering skills and customer service will be the focus for our ongoing marketing strategy. It is these essential components of our business that will form the basis for long-term relationships with our customers. We are still in a phase of expansion and need to align our strategy carefully. Our new Melbourne branch as well as our plans for opening a branch in Western Australia next year will support our intentions in that regard. Eventually, Doka Formwork Australia will be among the top formwork suppliers in Australia.

What is the key difference between Doka and the other companies in Australia?

Quality and service are two main trademarks distinguishing us from many other formwork suppliers in Australia. In addition, we believe we have a stronger culture of positive team spirit compared to our competitors. It's this team spirit that is often reflected in our positive customer feedback.

What is the business outlook for construction in Australia? What trends should Doka Australia be prepared for?

The business outlook for Australia is generally positive



“True success is the result of team work combined with a healthy mix of individual entrepreneurial spirit, motivation and integrity. At Doka Formwork Australia we determine our strategic and operational decisions as a team. Only then can the whole team identify with the tasks at hand and engage in a self-motivated and proactive way – both as a group and individually.”

Christian Unger
Managing Director, Doka Australia

but there are strong variations in economic strengths from state to state. Hence we need to consider those variations and demands. Overall we aim to focus on providing our customers with enhanced service, safety and quality. At the moment, positive trends are clearly visible in construction of commercial and residential developments in states with a higher cost of owning and renting property. In some states, activities related to infrastructure and mining are not at desired levels but we will be prepared for the eventual change in dynamic in those sectors.

On a lighter note, what is your favourite hobby?

I love skiing. I have a long-lasting interest in Roman and Greek architecture and, at some stage in my life, I plan to write a book.

What is your philosophy in life?

Be honest to yourself and to others and do not look for excuses. There is always a solution, no matter how big the challenge. //



◀ The Management Team (clockwise from top left: Shane Gianville, Christian Unger, Jan Pienaar, Leila Sadler, Lerize Du Toit)



▲ The yellow framed panels and the simple method for connecting these together, keep site-erection times short.

Bright screens cover Brisbane's inner-city

The Professionals



“Protection Screen Xclimb 60 with perforated sheets is very robust and can withstand high wind pressures. The yellow perforated sheet inlays make it possible to work at any height. Moreover, the self-climbing system is very simple to adapt to varying layouts and inclinations, even for a very complex highrise project like the Trafalgar Project.”

Noel Rodrigues, Sales Manager and
Thusitha De Alwis, Senior Engineer,
Doka Australia

Doka Australia offers a safe new screen protection solution for the Trafalgar Lane project. Safety is important in more ways than one. It is not just a jobsite obligation; it is also a key opportunity to boost site performance.

Doka Formwork, highly regarded for the safety and quality of its formwork and customer support, launches its new product “Screen Protection” in Australia. Doka Australia continues to go from strength to strength.

Melbourne style in Brisbane

Trafalgar Lane sets a new standard for modern metropolitan living. The fifteen storeys of refined urban living atop a five-floor podium of commercial space and retail opportunities rise above the historic Woollongabba skyline; while uninterrupted street frontage offers both high street and pedestrian appeal. It sits ideally located adjacent to the iconic “The Gabba” stadium and the famous restaurant precinct. Trafalgar Lane is set to enhance the changing face of Woollongabba. Builder and

developer Pellicano's \$86 million Trafalgar Lane project will certainly bring a touch of Melbourne style to Brisbane.

The new mixed-use residential tower (comprising 147 luxury apartments across 20 levels) provides residents access to 1,000 m² of retail space with a ground-level pedestrian link and is scheduled to finish in December 2015.

For construction of the 75 m Tower Building, Doka Australia supports the customer TK Formbuild Constructions Pty Limited with professional consulting and safety expertise during the early planning phase. Doka Australia provides individualised solutions tailored to the needs of the project such as the recently launched Protection screen Xclimb 60 with Xbright frames and perforated enclosure sheeting.

Doka screen challenge

The biggest challenge for this Trafalgar Lane project was the structure of the building. It was not a straight forward square-shaped building; it had a highly irregular shape. "We had to find a solution to close the gaps between screens as well as gaps between precast walls", says Thusitha De Alwis, Senior Engineer at Doka Australia.

Another challenge was to work as a team with members from three different countries. The individual parts had to be ordered from Amstetten, Austria, and on-site as scheduled after spending more than 12 weeks aboard freight ships. "The logistic complexity of a project like this was immense", says Doka Sales Manager, Noel Rodrigues. "To date, everything worked out to the satisfaction of all concerned. This is a concerted effort by all team members, with special reference to engineering, operations, supervisors and on-site personnel – "teamwork works".

Doka's protection screens meet customer requirements

The Protection screen Xclimb 60 is cost-efficient and flexible. This unique system, the first of its type in Australia, is easy to adjust to varying external factors and customer preferences.

Doka Australia regularly designs corner solutions for screens pointing to the inward direction of the building to provide safer edge protection. These returns are usually 600 mm; however, due to complexity of the perimeter of the Trafalgar Lane building, Doka designed returns up to 1,200 mm to close the gaps to the building. This required additional measures for the floor supports to resist the increased wind loads from the returns.



▲ Safe working conditions during construction of the Trafalgar Lane project are assured by the Protection screen Xclimb 60.

Furthermore, it required an amended installation sequence to cater for the protruding returns. Doka proposed that the customer uses electrically-operated compensators to prevent the returns of the screen hitting the ground during lifting. "Working as a team with our customer made it possible to implement a corner solution to close the gaps and provide a safe work environment for the workers at the site", says Thusitha. "I am very delighted to see the solution on site."

Doka's Xclimb 60 screens are permeable and translucent, allowing daylight to pass through. This enables safer working with minimal need for artificial lighting. Additionally, using Doka Xclimb screens eliminates the need for "follow-on-scaffolders" to dismantle scaffolding as the demolition progresses. Like all Doka safety systems, Xclimb 60 is easy to plan, use and operate in all weather conditions – including strong wind and rain.

Customer-focused

Doka met the customer's various requirements for construction by providing an economical and safe solution. TK Formbuild is extremely satisfied with the end product and also with Doka's complete service from concept design to assembly and installation of the screens. Formwork instructor Jean Pierre Du Toit has provided comprehensive training and support on-site. This not only helps construction workers to safely and proficiently operate Doka's protection screens, but also increases construction speed, thereby delivering economies of scale to the customer.

Lindsay Frodsom, the General Director of TK Formbuild sums it up briefly, "We are already talking about Doka's involvement in future projects." //

by Nelli Hegi, Doka Australia



▲ All gaps are closed off to prevent tools or small things being dropped, thus providing a safe work environment.

The Facts

Project: Trafalgar Lane

Type of project: Mixed-use residential building

Location: Woolloongabba, Brisbane, Australia

Customer: TK Formbuild Constructions Pty Limited

Building height: 75 m

Scheduled completion: December 2015

Number of storeys: 15 storeys atop a five-floor podium

Systems in use: Protection screen Xclimb 60 with Xbright frames and perforated enclosure sheeting

Services: Consulting, Formwork instructor, Pre-assembly service on-site



Practical Tip

The Doka Formwork instructor is a specially trained and experienced practitioner who explains the crew how to use the formwork effectively and safely. His on-site support ensures the best possible use of resources, and that construction moves ahead efficiently.



The Challenge

Developing a safe and efficient formwork solution for the irregular shape of the building including several services.



The Solution

Protection screen Xclimb 60 with Xbright frames providing for high-level workplace safety and a comprehensive package of services meet the customer's requirements.



▲ Wall formwork Top 50 was designed to perfection in order to obtain the concrete pattern designs set by the architecture.

Iconic landmark in the heart of Mumbai

The Challenge

Developing a formwork solution that allows the crew to cycle the vertical and horizontal formwork independently at the same speed, thus meeting the tight schedule.



The Solution

Platform SCP 400 for the core, Automatic climbing system SKE50 for the columns and Dokadek 30 for the slabs allow for a fast construction process.

Omkar Realtors and Developers, a brand synonymous with luxury and fine taste, envisions changing the Worli skyline through its premium development Omkar 1973. The project will become a new landmark encompassing three skyscrapers that together exceed 800 meters in height.

Set on a generous 4.5-acre property, this massive project is built using the best technologies across the world. For one of the towers, Omkar Developers is relying on Doka's Self Climbing Platform 400 (SCP 400), Protection screen Xclimb 60, Automatic climbing formwork SKE50 and Panel floor formwork Dokadek 30.

Achieving 6-day cycle

Like a diamond identifiable by its unique number, the project is named 1973, which is the latitude 19 and longitude 73N – a unique aspect of its location. Each tower has been designed uniquely, with a large core area in the centre surrounded by approximately

19 massive columns. Columns and core wall are connected by the slab cast in between. Thus, finding the right formwork solution was the key: it had to allow the crews to cycle the vertical and horizontal formwork at the same speed in order to meet the tight schedule.

The central core of the building is designed to be self-supporting which allows the core to proceed ahead of the slabs and columns. Doka's Platform SCP 400 was selected for the task because it offers faster cycle times: 6-day core jumping cycles have been achieved with this system already. The core wall is divided into two zones, which allows for smooth workflows in rebarring, closing, pouring, stripping etc. in one zone and climbing in the second zone. Moreover, the solution is designed so that it allows for the adjustment required for reducing wall dimensions for both wall formwork and exterior platforms. Platform SCP 400 provides a safe and efficient way to construct highrise cores: it provides the space for all of the site equipment needed and is enclosed on all sides for a safe, weather-shielded work environment at any height.

The tower's perimeter columns are also critical and need to be looked at separately. The heavily reinforced columns are constructed ahead of the slabs by three to four floors so that work on the slabs can continue without interruption. For these columns, Automatic climbing formwork SKE50 is used because it can accommodate the changing dimensions of column with increasing height. Moreover, large working decks have been provided on the top to allow for storage of reinforcing bars and ease of placing. Thus far, 4-day jump cycles have been achieved for the columns.

Pacing the slab with core walls

The floor slabs are the final formwork element critically important for accelerated construction. The speed of decking slabs defines how quickly the construction proceeds. Omkar required a quick, light-weight, labour-efficient system to keep up with the automatic climbing systems on cores and slabs. A drop head panel system, Dokadek 30, was the chosen solution because it was designed for combining standard and customized panels, in order to cover the 100 % slab area without any infill zones. The curved balconies with drop beams in this project also required use of an integrated unturned spandrel beam, which in turn provides a complete formwork solution for slab and balconies and hence increases productivity on site.

Working safely

To provide protection to the tower surrounds as well as ensuring a safe working environment even at a

height of over 300 m, Omkar required perimeter screens to be fitted to the formwork systems. At the top building-levels, a 'gapless' enclosure anchored to the structure at all times means that all work can be carried out protected from climatic influences and with utmost safety. Doka Xclimb 60 protection screens were selected to cover the complicated perimeter of the towers. The protection screens' high degree of preassembly simplifies planning and makes for a highly economical solution. As Xclimb 60 has been fielded here as a self-climbed system, fast resetting times are possible without crane assistance.

Overall, this combination of core, columns, slab systems and protection screens with the logistics network enables a workflow that is consistent, continuous, safe and speedy. Sophisticated technology, ease of operating and handling, high-end performance and safeguarding features of all the systems have a greater contribution towards a robust construction. //

▼ The tower has been designed with a large building core being surrounded by massive columns.

The Facts

Project: Omkar 1973

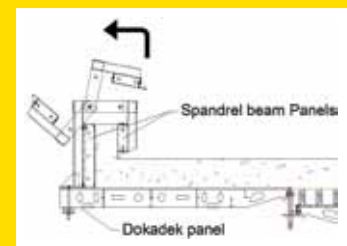
Location: Worli, Mumbai, India

Developer: Omkar Realtors

Systems in use: Platform SCP 400, Large-area formwork Top 50, Protection Screen Xclimb 60, Panel floor formwork Dokadek 30, Automatic climbing formwork SKE50

Practical Tip

For up-stand beams, an integrated unturned spandrel beam formwork is used because it makes work much faster at the site.





▲ The project is rapidly rising up thanks to Doka climbing, floor and wall formwork systems.

Total solution for better results

The Facts

Project: Lot 194 Project

Location: Kuala Lumpur, Malaysia

Customer: MCC Overseas

Building height: 235 m

Number of storeys: 55

Lot 194 Project in Kuala Lumpur is a perfect example for a highrise building fully equipped with Doka formwork systems.

There could not have been any better location for the Lot 194 Project than in the heart of Kuala Lumpur, the capital city of Malaysia and opposite the world-famous Petronas Towers. The 235 m tall highrise building will feature 55 floors of luxurious residences and the elegant W Hotel.

slab forming on two typical floor heights, 3.5 m and 3.8 m, while Table Lifting System TLS provides crane-less and convenient relocation of the tableforms. As crane-support is limited, this has become the ideal solution.

High-performing solution

Initially, the customer's preference was to use aluminium formwork, with which they had more experience. Doka Engineers reviewed the practicability of the system on this project and came up with a more suitable formwork solution for the Lot 194 Project. MCC Overseas was convinced and decided on a solution including Dokamatic

The customer MCC Overseas decided on Doka to supply the entire formwork solution for this remarkable project, from ground level right up to the top level. Among the systems used in constructing the Lot 194 Project are Dokamatic table, Large-area formwork Top 50, Climbing formwork MF240 and Protection Screen Xclimb 60. The Dokamatic tables make for quick and smooth



The Solution

Doka developed a cost-efficient and less time-consuming formwork solution including a combination of climbing, floor and wall systems.



▼ Safe working conditions are assured by the Protection screen Xclimb 60 with a perforated trapezoidal sheet.



table in combination with Dokaflex 1-2-4 and Load-bearing tower Staxo 40 for atypical floor heights. For fast and consistent climbing of the core wall for this highrise building, Doka recommended to use crane-lifted Climbing formwork MF240 and Shaft platform combined with Large-area formwork Top 50. The process of building the structure formation progressed as planned, as the majority of the casting floor heights did not exceed 3.8 m, except for the atypical floor heights exceeding 6 m, where a two-cycle pouring process was deployed.

Better safe than sorry

Like every highrise project, Lot 194 project requires maximum safety at the site. For this reason there was no doubt that Protection screen Xclimb 60 was the perfect finishing touch to the solution provided by the Doka Malaysia team. The customer chose the perforated trapezoidal sheet to not only ensure high-level safety on the site but also offer comfortable conditions for the workers. The sheet is translucent and also wind-permeable, thus providing ventilation that is crucial during construction works in a hot climate such as in Malaysia. One of the trapezoidal sheets depicted

the logo of a Gecko as if climbing up along the swiftly rising building, thereby demonstrating Doka's competence in any highrise project. //

by Wee Hau and Anna Pilipenko, Doka Malaysia



▲ The Lot 194 Project is built opposite the world-famous Petronas Towers in the heart of Kuala Lumpur.



Practical Tip

Fast repositioning without idle times

The Table Lifting System TLS makes possible a non-stop repositioning cycle which accelerates the entire construction sequence:

- no time is lost waiting for the crane
- repositioning can continue even in high winds of up to 72 km/h
- efficient repositioning is possible at the push of a button in automatic operation mode
- the site crew are protected at all times by the all-round fall arrest barriers





▲ Doka Abu Dhabi developed a customized formwork solution for the expansion of the international airport in Abu Dhabi.

X marks international hub in Abu Dhabi

The Professional



“In the past, I collaborated with Doka on several projects similar to the Abu Dhabi Midfield Terminal Building. Doka is a reliable partner for this project. With its know-how and technical solutions, the team significantly contributed to us achieving our milestones. Doka practitioners provide support directly on site; even materials required on short notice are delivered quickly.”

Huseyin Misirlioglu
Senior Project Manager, TAV

The Midfield Terminal Complex at Abu Dhabi International Airport is currently one of the Emirate's most impressive construction projects. At the same time it represents the core of the Abu Dhabi Economic Vision 2030. Doka is on-site with its high-performing formwork systems to support the air traffic hub expansion.

The new terminal complex is erected between the airport's take-off and landing runways and expected to open in 2017. Once completed, the expected number of passengers processed is between 27 and 40 million annually. The Abu

Dhabi Airport Company (ADAC) hired Joint Venture TAV-CC-Arabtec to assume the role of project contractor. Construction is well under way on part of the complex – the Midfield Terminal Building. The airport terminal is 1.1 km long overall and



▲ Doka's on-site project support ensures optimum use of resources and efficient construction progress.

covers 700,000 m². From the perspective of architecture, the structure's unusual X-shape is truly eye-catching. It will be visible from a distance of 1.5 km and become a striking landmark in the Emirate of Abu Dhabi.

Floors, walls and columns sourced from Doka

The colossal piers demand the expertise and know-how of Doka. They are designed to accommodate up to 65 aircraft and able to handle planes as large as the A-380 Airbus megaliner. Doka's Abu Dhabi branch won the customer over with an economical and time-saving formwork solution tailored to the unusual shape and the tight 15-month schedule for cast-in-place concrete construction.

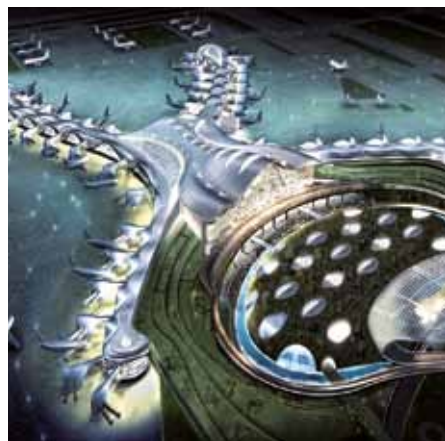
The Load-bearing tower Staxo 40 scores big when it comes to forming the floors that require a total of 11,000 m² Doka floor formwork. The lightweight shoring system stands out for its exceptional ease of handling, quick assembly and maximum adaptability. The solution for supporting walls and columns is provided in form of the Large-area formwork Top 50. The pre-assembled formwork system meets all architectural requirements with respect to form, size and form-tie pattern. In addition 6,400 m² Framed formwork Frami Xlife are in use.

Efficient project management

Doka designated a project coordinator to ensure a smooth workflow throughout all stages of the

project. A team of technicians and a formwork instructor are on-site to instruct the crew in using the formwork safely and effectively. Crucial ingredients for a smooth workflow and successful project are daily coordination of formwork delivery to the site and on-site distribution of materials. In addition, the team at the Doka branch are also forging ahead intensely on the project.

The Midfield Terminal Complex is not the only project in the aviation sector where Doka's expertise is sought. Construction of the international airports in Muscat and Salalah in Oman, the King Abdulaziz International Airport in Jeddah, Saudi Arabia, or the New Doha International Airport in Qatar are additional projects where Doka demonstrated its skills in developing solutions. //



The Facts

Project: Piers, Midfield Terminal Complex, Abu Dhabi International Airport

Location: Abu Dhabi, United Arab Emirates

Construction company: Joint Venture TAV-CC-Arabtec

Construction start: December 2013

Scheduled completion: 2nd half 2017

Systems in use: Framed formwork Frami Xlife, Load-bearing tower Staxo 40, Large-area formwork Top 50

Services: Formwork planning, Formwork instructor, Site logistics, On-site engineering support

The Challenge

Providing a formwork solution tailored to the structure's unusual X-shape and the tight 15-month schedule for cast-in-place concrete construction.



The Solution

Doka developed a customized formwork solution comprising Framed formwork Frami Xlife, Load-bearing tower Staxo 100 and Large-area formwork Top 50. A project coordinator, a team of technicians and a formwork instructor ensure efficient construction progress.

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◀ With its unusual shape the new airport terminal will become a prominent landmark in Abu Dhabi.

Doka Supporting construction frames dispenses with cranes for construction

The Facts

Project: Hefei No.2 Subway Line, Guangde Road and Longgang Avenue Station

Type of project: 2 stations

Location:
Hefei City, Anhui Province, China

Constructor: China Railway
14th Construction Bureau Co. Ltd.

Systems in use:
Supporting construction frame

Doka formwork systems were successfully utilised in TJ-06 bid section of Hefei No.2 Subway Line.

No.2 Line of the rail transit in Hefei City, Anhui Province has been in the stage of all-round construction since 2013. Extending across 30.1 km, No.2 Line includes 24 stations. The TJ06 bid section, the civil works between Guangde Road Station and Longgang Avenue Station, is one of the last bid sections to start and has been subject to huge schedule pressure ever since. Based on detailed market research and multiple engineering proposals based on a feasibility study, the China Railway 14th Construction Bureau Co. Ltd. in Jinan City, Shandong Province chose Doka Supporting construction frames. These frames are used for constructing the underground of Guangde Road Station and Longgang Avenue Station.

Customer and project specific requirements

Both stations feature two-layer underground space structures and, in terms of standard segments, they are divided into 11 and 10 subsegments. Each subsegment is 18 m to 25 m long with the pouring height of each side wall layer changing many times in a range from 4.1 m to 6 m as specified by the structural design. The formwork system flexibly adapts to changes in different pouring lengths and pouring heights.

The cut-and-cover method is adopted for construction. As traffic along both sides of the foundation pit needs to be guaranteed, space at both sides of stations is limited and not available for



► Supporting construction frames allow for safely transferring the concreting forces by way of diagonal anchors in cases where it is not possible to tie wall-formwork elements through the concrete.



intensive use of cranes. Adoption of conventional steel support pipes would require massive manpower for installation and removal. Use of common large-size steel formwork also demands a large crane team for construction. The formwork system, however, should be easy to move manually or by small equipment within the narrow space.

Project specific solution

The construction company chose Doka's flexible single-sided wall formwork system in light of the project's characteristics. The system consists of a heavy-duty single-sided supporting frame and timber formwork beams. Each unit is 2.5 m wide, with two protocols for the vertical extensions: 5 m and 6.5 m in height. After the units are assembled outside the stations, they get integrated inside for construction. With flexible arrangement of different units, construction of different-size side walls can be completed in all subsegments using a set of formwork that greatly increases material utilization rate. This method also reduces costs because it



avoids a lot of lossy materials and other construction costs compared with deployment of conventional assembled timber formwork.

The formwork system is also equipped with a special small transport trolley. After completion of one segment, the formwork system is released from the concrete surface by adjusting the screw rod. It is then quickly connected to the transport trolley so that the 6 m high and 2.5 m wide single wall formwork unit weighing approximately 3.5 t is integrally moved to the next construction position by four to five workers or a small traction machine. Its quick and flexible construction mode shortens the construction period of each segment to three to four days. It substantially saves labour cost and greatly reduces construction time compared to conventional formwork.

Safety first

Safety measures are also major concerns of the construction company. The formwork system is equipped with enclosed pouring platforms thus ensuring a high level of workplace safety. It also takes into account structural safety risks for various parties from the beginning of the design. This is the stage for considering centralized setting of anchoring parts and elaborating explicit force control systems that enable clear and simple supervision of a bracket-based construction safety process so that safety risks are effectively controlled.

As of the end of January 2015, pouring of six construction segments at Longgang Avenue Station had been completed smoothly with this formwork system. The excellent quality of the finished concrete products and usability of formwork system are highly commended from various aspects.

Successful utilisation of this formwork system reflects the spirit of various participants in No.2 Line of rail transit in Hefei including the owner, supervisor, designers and construction company: pursue excellence, deliver high efficiency and be bold in making breakthroughs. This is one case where new technology applied should be highly promoted across subway developers. //

by Vincent Zhou, Doka China

◀ The cut-and-cover method is adopted for construction.



Time and cost savings

Fast repositioning of Supporting construction frames

- large repositionable units save crane-time
- and can be wheeled on rollers, for repositioning without crane assistance



Safety Tip

Supporting construction frames offer comprehensive workplace safety

- safe vertical access with the Ladder system XS
- workplace safety on all sides with bracket-based platform construction





Safety Tip

Enabling safe construction works

The Lubeca Jumpform is fully enclosed, which prevents the hazard of falling objects from locations opened up during repositioning. Additionally, the hydraulic safety features in use include a complete backup system and non-return valves and ratchet locks on each ram to assure safe climbing.



Collaboratively developing the best solution

The Facts

Project: Marco Apartments

Location: Melbourne, Australia

Type of project: 2 residential towers

Customer: Crema Construction

Subcontractor: I&D Group

Number of floors: 29 floors each on top of a 12-level shared podium

Systems in use: Lubeca Jumpform

Marco Apartments in Southbank, one of Melbourne's premier suburbs adjacent to the CBD, was Lubeca Pty Ltd's first project undertaken since its acquisition by Doka Group.

The project consists of two residential towers that rise 29 floors above a 12-level shared podium. Marco commands a prominent presence on the Melbourne skyline and offers unobstructed views to the CBD, the Gardens and Art Precinct and out to Port Phillip Bay. The main contractor for the project is Crema Construction, with the structures subcontractor being I&D Group. This was Lubeca's first time working with both Crema and I&D.

Narrow space conditions

There were three main challenges on this project that Lubeca had to work through with Crema Construction in order to give them the solution they needed to achieve their targets for this prestigious job:

- The site has a building adjacent whose wall is on the boundary of both sites. Normally, this is not an issue. However, in this case the external boundary of Marco and one of the cores is separated from this existing building by only 430 mm.

- Both cores have an internal climbing crane with 2 m² tower crane sections. Their shaft widths measures 2.9 m and 2.65 m respectively.
- The external face of the west core is covered by GRC (glass reinforced concrete) panels the customer wanted to install from the Jumpform.

The solution to these challenges was developed in collaboration between the customer, the subcontractor and Lubeca. Led by Lubeca's Project Manager Suresh Hewawithana, who designed and documented the Jumpform systems and worked closely with both Crema and I&D, the three parties developed solutions that met the customer's needs and allowed them to deliver the project in the safe and efficient manner they were looking for.

Addressing the challenges

With the existing building so close to the external face of the core, there were a number of items that needed to be taken into account. In this area the external cladding can not be installed from the beginning of the



◀ The entire platform is lifted hydraulically in only a few operational steps at the push of a button.

project, the wallform panels can not roll back from the wall, the overhead grid work can not extend fully and people can not access the outside of the wallforms in this area. The solution is a multi-pronged approach.

The external cladding and platforms are designed so that they can be installed in stages that matched the in-situ requirements of the existing building. The external shutter is fabricated with captive tie bar nuts so that the tie bars can be installed from the inside of the shaft only in areas affected. The final approach also required design of a new splice allowing the crew to install the overhead grid work as well as the external cladding and platforms at level 8 once they were clear of the adjacent building.

The problem of the cranes inside the shafts was a serious issue. The standard Lubeca wallform panel is 220 mm thick. With a 2,000 mm crane in a 2,650 mm shaft there is not enough room to incorporate the standard panel. The solution was straight forward but not easy to implement. Lubeca had to design and develop a thinner wallform that could still take the full hydrostatic pressure of the 2.9 m concrete pour. Suresh Hewawithana and the team developed a panel only 106 mm wide, leaving enough room for the crane to pass through the system unobstructed and still allowing the space for the crane to sway.

Collaboration – key to success

A key success factor and the biggest difference between Lubeca and its competitors is in the way Lubeca works with the customer to give them a solution that allows for installing the GRC panels designed to serve as the external façade of the tower.

Installing these from the system means that there are no costly scaffold or mast climbing platforms required later on in the project once the system has climbed up. Again, Lubeca worked closely with Crema and I&D to come up with a solution.

It consists of a number of platforms hanging under the external edge of the Jumpform. The GRC panels are then lowered through the system to this level and installed onto the building. A hatch was created through the Jumpform through which the panels were lowered down to the trailing platforms. From there they were transferred to a monorail beam transporting them to their final location to be fixed to the previously poured wall. All of this is done as part of the regular Jumpform cycle, so that as the system climbs that part of the façade is complete.

Marco Apartments is a great example of Lubeca working closely with the customer to provide the innovative solutions required to today's complex buildings and requirements. //

by Adam Halliburton, Doka Lubeca



The Challenge

Developing a formwork solution that suits the 430 mm to the neighbouring building, tight spaces for the cores' internal climbing cranes and installation of glass reinforced concrete panels from the Jumpform.

The Solution

The key to success of the project is the close collaboration between Lubeca, the customer and the subcontractor.



◀ Both cores have an internal climbing crane.

New faces in East Asia & Pacific

Welcome our new employees! We are pleased and very excited to have them as part of our team. We wish them every success in their assignments.



Andrew Hunt

Doka East Asia & Pacific
Date joined: March 2015
Designation: Regional Director, EAP
"I am very excited and proud to have joined Doka. It is clear to me that Doka has what it takes to outperform in East Asia Pacific!"



Shelley De Chavez Pawang

Regional Engineering EAP, Malaysia
Date joined: April 2015
Designation: OneGo Engineer
"I feel very happy working for Doka and I appreciate the warm welcome. I am striving to promote unity and harmony at work and be successful in my new job."



Dally Rodriguez Gammad

Regional Engineering EAP, Malaysia
Date joined: April 2015
Designation: OneGo Engineer
"As a new member of Doka I feel quite challenged with every project. Every day will be a great learning experience for sure in the next years to come."



James Hammett

Doka Australia
Date joined: February 2015
Designation: Senior Project Engineer/ Group Leader
"I am proud to be working for an innovative and professional company where there is a strong focus on customers, a great team spirit and 'can do' attitude."



Errol Hughes

Doka Australia
Date joined: January 2015
Designation: Sales Representative QLD
"I am pleased to be a part of the team. I look forward to furthering my knowledge of Doka's products and promoting Doka to the construction industry."



Stephen Lake

Doka Australia
Date joined: February 2015
Designation: Junior Engineer
"I'm very excited to begin my engineering career within the design team at Doka Australia. I look forward to the exciting challenges I will face."



Nelli Hegi

Doka Australia
Date joined: May 2015
Designation: Marketing Specialist and Sales Support
"My favourite quote is: 'To be successful, the first thing to do is to fall in love with your work.' I love challenges and look forward to working as a team".



Paul Mok Chi Fai

Doka China
Date joined: November 2014
Designation: Site and Operations Engineer
"I am very grateful to be given the chance to join the Doka family and I hope to contribute a lot to the organization."



Sreehari K.M.

Doka India
Date joined: February 2015
Designation: Sales Engineer
"I graduated with B.Tech in Mechanical Engineering in 2009 and worked for several other companies before I joined Doka."



Rajappan Rajamani

Doka India
Date joined: March 2015
Designation: Design Manager
"I started my career with L&T-DOKA India in 1990. Having worked for other formwork companies since then, I am glad to be back. Doka is still the best."



Balamurugan K

Doka India
Date joined: January 2015
Designation: Manager – Business Development
"I am advising our clients to select the right formwork solution. I look forward to acquiring new clients and reaching the maximum market share in my territories."



Rahul Borkar

Doka India
Date joined: November 2014
Designation: Design Manager
"I have more than 12 years of experience in the area of formwork and scaffolding. I will do my best to contribute to the company's success."



Nag Swapan

Doka India
Date joined: March 2015
Designation: Branch Manager, Delhi office
"I look forward to taking up challenges with our technical and logistical support. I want to be a step ahead with delivery times and quality management system."



Shreeniwas Kelkar

Doka India
Date joined: March 2015
Designation: Product Manager
"It is a dream to work for one of the pioneering formwork companies. I bring along 12 years of experience in formwork and concrete technology."



Nilesh Mane

Doka India
Date joined: April 2015
Designation: Maintenance Engineer
"It is a great opportunity to work for Doka India. I am eager to take up new challenges, adopt new skills and to support the team at my best abilities."



Naomi Arai

Doka Japan
Date joined: January 2015
Designation: Project Technician
"I am in charge of quantity survey and quotation work and I work on ways to deliver with accuracy and speed. I am highly committed to the team."



Masako Yamano

Doka Japan
Date joined: January 2015
Designation: CMO Executive
"I hope I can contribute to the growth of Doka Japan by focusing on smooth communication among the operation team and I want to improve my skills."



Kazumi Nasu

Doka Japan
Date joined: January 2015
Designation: Junior Draftsman
"I am eager to learn and absorb new technical skills and knowledge to support smooth operation at job sites."



Doi Yoshihiro

Doka Japan
Date joined: January 2015
Designation: Warehouse Coordinator
"There are still many new things to learn, but I am excited to pick up a new set of skills. I want to add value to the team with full dedication."



Takahashi Mitsuhiro

Doka Japan
Date joined: January 2015
Designation: PAS Coordinator
"Though there are challenges in the area of pre-assembly I am highly committed to picking up the necessary skills to perform in the best possible way."



Inoue Hirotaka

Doka Japan
Date joined: April 2015
Designation: Warehouse Coordinator
"I really enjoy learning new things while working in ware-housing. I want to improve my skills and contribute to the company."



Akasha Hesham

Doka Japan
Date joined: January 2015
Designation: RC Coordinator
"We came by different ships but now we are in the same boat. I want to be successful in my job and improve work."



Jong-Han Choi

Doka Korea
Date joined: January 2015
Designation: Warehouse Assistant
"I am proud to contribute to improving the warehouse. My aspiration is to cooperatively work with others and act responsibly in a positive environment."



Rodolfo Estrada Jr.

Doka Malaysia
Date joined: May 2015
Designation: Head of Engineering
"Ambition defines progress for ourselves. The goal is to work toward a world where expectations are not set by stereotypes, but by our passion and interests."



Yong Siew Seng

Doka Singapore
Date joined: April 2015
Designation: Managing Director
"There is a strong foundation in Doka Singapore – experienced and competent people, coupled with a developed business operation. I will build on that."



Daniel Laszlo Gyenese

Doka Singapore
Date joined: April 2015
Designation: Head of Operations
"I believe that the Singapore market has a big growth potential in the upcoming years. I'm very proud to be part of the great team of Doka Singapore!"



Rajamani Eswaran

Doka Singapore
Date joined: February 2015
Designation: Project Engineer
"It is great to be part of Doka, the Formwork Experts. I am looking forward to learning more about formwork systems and growing with the team."



Hoo San Guan

Doka Singapore
Date joined: April 2015
Designation: Formwork Instructor
"I am excited to contribute to the company's development and at the same time enhance my knowledge as a professional."

In brief

News, dates, media, awards

Doka @ OneBuild Johor Bahru

From 23 to 26 April 2015 the OneBuild exhibition opened its gates in Johor Bahru, Malaysia, for the first time. Doka Malaysia looks back on a successful trade show that increased brand awareness across the country's southern states. A live demonstration of Doka OneGo was among the highlights at the Doka booth.

On a visit to East Asia & the Pacific Region

Once again, Doka's corporate photographer is travelling the world on the look-out for spectacular project shots. From 7 to 13 May 2015 he stopped in Singapore, Malaysia and China for a visit to numerous jobsites. From tunnels to highrise buildings, he stages every project perfectly. Take a look at the cover, page 3 and pages 10 to 15 and see for yourself!

Premiere – East Asia & Pacific (EAP) trained Project Management in Singapore

The first Project Management Compact Training was held in Singapore from July 8th to July 10th. With participants from Australia, Japan, Malaysia, Singapore and Lubeca, the training became an active discussion and exchange for trainers and trainees. After the training, both trainers and trainees concluded with a very positive and promising feedback to "live" project management in the future and drive more projects to success.




Doka East Asia & Pacific Regional Office


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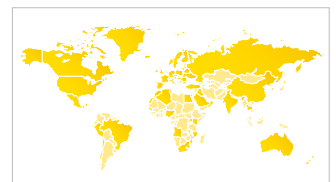
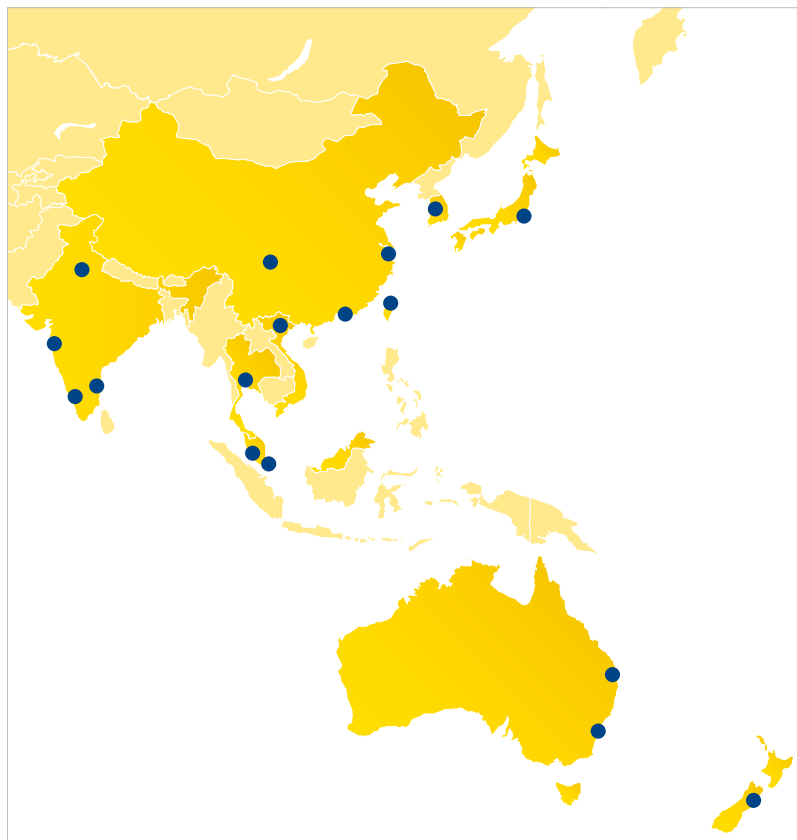
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▲ Doka branches worldwide.

With more than 160 sales and logistics facilities in over 70 countries, the Doka Group has a highly efficient distribution network.

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- DEC Engineering Corp. – Taiwan
- Subway Engineering & Supply Co. Ltd – Thailand
- SPECO (HK) Co / Chi Thang Construction Engineering and Trading Co.,Ltd – Vietnam