Doka **Xpress**

The Formwork Magazine | Issue 01 | 2015

High-performing combination of Automatic climbing formwork

Japan

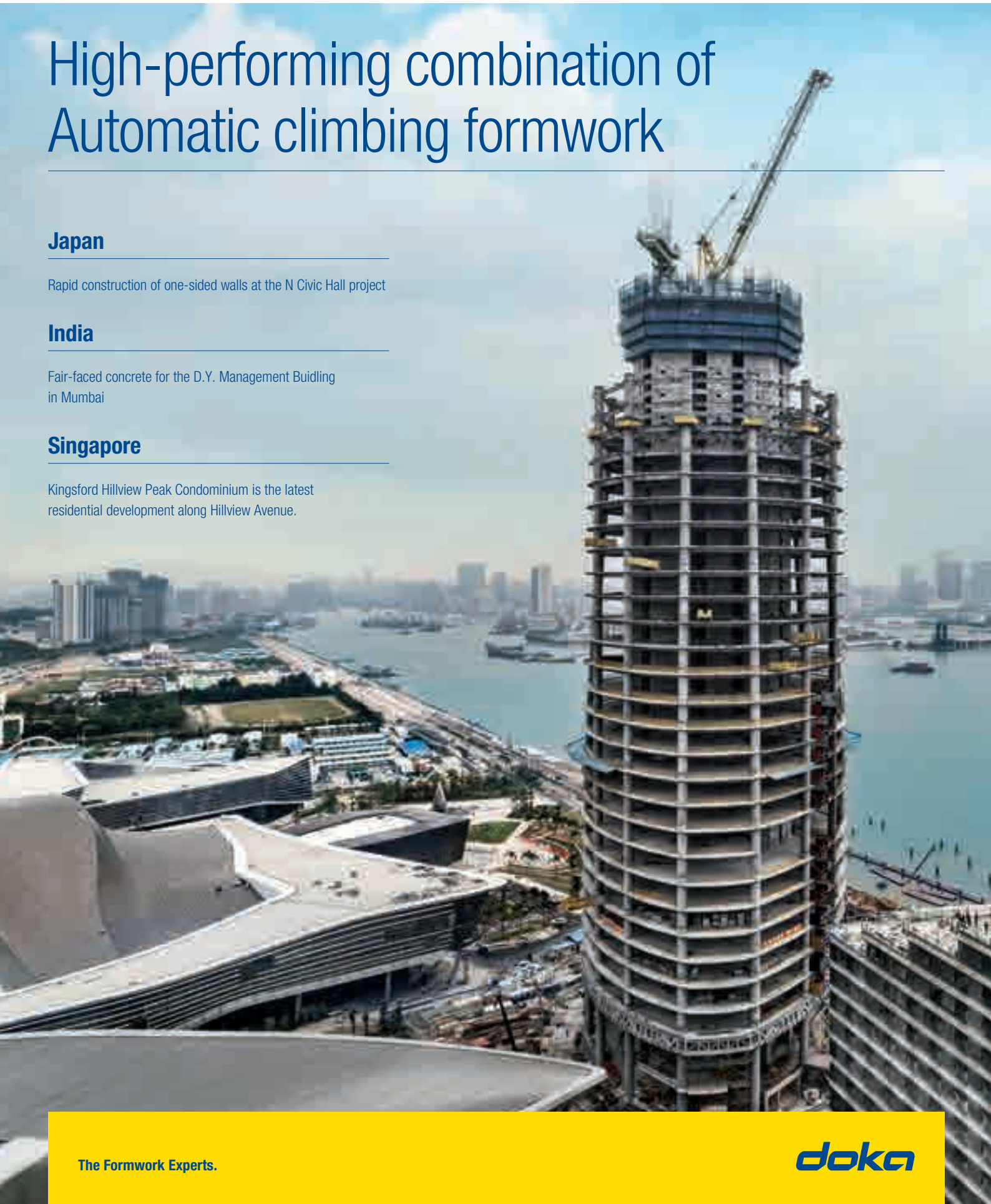
Rapid construction of one-sided walls at the N Civic Hall project

India

Fair-faced concrete for the D.Y. Management Buidling in Mumbai

Singapore

Kingsford Hillview Peak Condominium is the latest residential development along Hillview Avenue.



Editorial

Dear customers,
dear readers,

building faster, more efficient and safer – this is the objective of contractors and formwork experts alike. As a leading international supplier, Doka's aim is to live up to this claim in all parts of the world. We want to put to work the know-how accumulated during thousands of projects where it can be put to good use – on site with our customers. For this reason we continuously adapt our solutions to your demands. One example is our new monolithic formwork Doka OneGo we developed especially for our EAP markets.

Another is acquiring the formwork technology department from Australian building contractor Grocon. As a result, our customers working with the Lubeca Jumpform enjoy the additional benefits of a lightweight platform system. In turn, Lubeca customers have access to the entire Doka portfolio.

Finally, we also continue working on aligning our structures. Here, too, we take our cue from market requirements. Starting immediately, India will be part of "our EAP region".

I am delighted to use this edition of "Xpress" as an opportunity to introduce you to a variety of solutions we were able to implement in collaboration with our clients on site – so you can build faster, more efficiently and more safely.

Sincerely,

Johann Strunz
Managing Director Overseas
Doka Group

Index

Doka News

Linking the islands ▸

Along the east coast north of Doha, the capital of Qatar, a new modern city with waterways and man-made islands will be rising from the lagoon. In order to link the islands pedestrian bridges have to be built. For two 120 m long bridges Doka supplies Load-bearing tower Staxo 40 and Large-area formwork Top 50.

Flying high ▸

Ağaoğlu Maslak 1453 will be a new district in Istanbul. For the five highest skyscrapers Doka created the formwork solution. By the way self-climbing formwork is going to celebrate its premiere in Istanbul and is used to build the cores. Dokaflex and Load-bearing tower d2 are used to build the floors, Column formwork Top 50 for the walls.

◂ Interconnecting solutions

Hauma Railway Station is a megaproject in the Israeli capital and involves the building of a central underground station for the new high-speed rail link between Tel Aviv and Jerusalem. For several interconnecting tunnels and other structures Doka's Load-bearing tower Staxo, Large-area formwork Top 50 and Heavy-duty supporting system SL-1 were used.

▲ Using earth retaining members instead of supporting construction frames Doka established a new construction method.

Rapid construction of one-sided walls

Since there are many earthquakes in Japan, the number of large-scale and highrise buildings that adopt a base isolation structure is increasing. Particularly, this structure is becoming essential for public buildings such as hospitals, schools, and government office buildings. This is also the case with the N Civic Hall.

Base isolation devices are installed in the pit formed under the building. Therefore, underground peripheral walls are often designed as one-sided retaining walls isolated from the building body. As a formwork solution for such underground peripheral walls, Doka Japan used to propose Framax panels combined with Supporting construction frames.

New construction method

Doka devised unitization using general-purpose earth retaining members instead of supporting construction frames and established a new construction method that enables building and stripping of formwork in narrow spaces. This earth retaining unit formwork is used for the large-scale construction of the underground peripheral walls of N Civic Hall.

An earth retaining unit consists of two Framax universal panels (1.2 m x 2.7 m) connected sideways, an earth retaining member (H-section is 250 x 250 mm) connected to each panel, and reinforcing members attached to them. The legs are fixed by driving two M20 post-construction anchors into the slab for each earth retaining member and using customized shoes. The head is fixed by welding a weldable coupler to the soldier pile or Soil Mixing Wall core of H-section steel and clamping the coupler with the multi-purpose waling on the top of the earth retaining unit by using a tie rod.

Simultaneous, fast and effective work progress

Because of the short construction period, the construction of the building body started before the underground peripheral walls were completed. Since the adoption of the earth retaining units saves labor constructing underground peripheral walls, the constructor was able to transfer excess labor to the form construction work for the building body, contributing to the shortening of the body construction period.

On-site support

Doka Japan had a thorough consultation with the workers before the start of the construction and worked together with them in on-site instructions. Thereafter, Doka has been receiving orders for the construction of similar underground peripheral walls. //

by H. Suzuki, Doka Japan

The Facts

Project: N Civic Hall

Location: Nagano city, Japan

Client: N city (Nagano city)

Constructor: JV of Maeda Corporation and Iijima Kensetsu

Building use:
Government office and theater

Number of storeys:
2 underground and 8 above ground

Structure classification:
reinforced concrete structure and partially steel structure with base isolation structure

Site area: 13,004 m^2

Building area: 5,784 m^2

Total floor area: 28,462 m^2

▲ An earth retaining unit is 2.4 m in width and 2.7 m in height.

▲ Suzuki Hiromi, Managing Director of Doka Japan and his team

Exclusive interview with the Managing Director of Doka Japan

In terms of construction, how would you describe the current landscape in Japan?

The demand for construction work has been growing sharply due to various factors. They include increased investment into public construction projects as a pump-priming measure initiated by the Abe administration (Liberal Democratic Party) formed at the end of the year before last, the Great East Japan Earthquake reconstruction works getting into full swing, and the promotion of construction projects ahead of the 2020 Tokyo Olympics. This demand for construction is expected to continue for the next five years.

In the meantime, the deflation that shaped the construction industry for the last ten years caused many people to leave their jobs, get laid-off from work or close their businesses due to low earnings and continues to spur a lack of construction

materials and labor today. The problem shows no sign of abating.

The whole industry is facing a challenge as to whether it will be able to meet these demands in the construction sector and contribute to society while maintaining healthy levels of safety, product quality, work processes and prices.

Do construction methods nowadays differ from those in the past?

It can be said that a major transformation in construction methods has just begun. It feels like people have started active discussions, research, and trials on how we should compensate for the aforementioned lack of construction materials, experienced workers for the conventional methods, and construction workers. These solutions include labor- and material-saving methods, the use of cross-trained workers and foreign workers.

What is the business outlook for construction in Japan?

As I mentioned, the number of construction projects will continue to increase for at least the next five years. Especially major public infrastructure developments (such as roads, railroads, administrative offices, hospitals, police departments, schools, harbor facilities, etc.) as well as building logistics facilities, redevelopment of commercial areas, and home investment in the private sector are expected to remain steady.

What are some of the value-added services Doka Japan has been providing to its clients?

Every project is unique and calls for individualised solutions. From formwork planning to ready-to-use service and formwork pre-assembly on-site through to transport, formwork instructor and customer service, we offer high-performance services in all project phases. Thus, Doka helps clients to achieve effective, safe and reliable implementation of their formwork assignments. Besides that we provide one-stop solutions for shoring systems. Our systems are very practicable by combining conventional formwork construction methods tailored to the unique construction methods and structures in Japan.

What are your visions for Doka Japan?

It can be said that the high level of demand for construction is a tailwind and the lack of skilled workers and labor a headwind for Doka's business. However, the key to our growth is how we are going to tailor solutions that will accommodate what the market requires. I think it is important to improve our skills with a client-centered attitude; actively and consistently putting in effort while carefully choosing structures, points, and products to be applied. In doing so, I believe that securing and nurturing human resources will be the most important factors.

How long have you been in the construction industry?

I have been in the construction industry since 1983, for almost 32 years now.

What are some of the most interesting projects you have undertaken? And why?

I remember almost all of the more than 60 projects I was involved with during the last 31 years because I had memorable moments and stories in each of them. But I would say that the projects that left a strong impression were the challenging ones that presented many difficulties.

What is your favourite hobby?

My favorite hobbies are stream fishing, watching movies, playing golf, and having "Sake" with different people.

What is your philosophy in life?

Borrowing Yozan Uesugi's phrase, it is "where there is a will, there is a way". No matter how big or insurmountable challenges appear – in personal or professional life – if people are truly convinced of their aims and approach them actively and ambitiously, then nothing is out of reach. //

"No matter how big or insurmountable challenges appear, if people are truly convinced of their aims and approach them actively and ambitiously, then nothing is out of reach."

Suzuki Hiromi
Managing Director, Doka Japan

▶ The layout of the core tube assumes the shape of an irregular hexagon.

The Professional

"From the design of the climbing formwork to the implementation of the project and the use of the formwork, Doka has helped us solve all kinds of construction problems, saved us a lot of construction time, improved the efficiency of our machinery shifts, and provided strong support during our project construction."

Jin Feng, Project Manager,
Shanghai Baoye Group Corp. Ltd.

High-performing combination of Automatic climbing formwork

The Central Business District Landmark Tower Project at Zhuhai Cross Gate is Doka China's first core tube project using both internal and external wall climbing platform systems.

Upon completion, Zhuhai Cross Gate is projected to become a new city center in Zhuhai. It will serve as a service center on the west bank of the Pearl River estuary, an important window for developing the Pearl River Delta region and a platform for cooperation among Guangdong, Hong Kong and Macau. Thus, it plays a vital role in driving regional economic development.

The project is located in Wanzai, Zhuhai, facing Macau across the sea. Phase I construction works of Zhuhai Cross Gate CBD Exhibition Business Project Complex include the international conference center, phase I of the international exhibition center, international standard Grade A office building, a super star hotel, an international standard five-star hotel, an apartment hotel, commercial office buildings, and other related facilities.

For the construction of the Landmark Tower Building, slated for accommodating offices and a hotel, Doka supplies a high-performing and economical formwork solution that includes Automatic climbing formwork. The total construction area of the tower comprises 146,828 m^2.

Hexagonal core tube structure and varying ceiling heights

The Landmark Tower Building consists of a concrete core wall and a steel frame structure around it. Doka products are used in the core tube of this project, which assumes the shape of an irregular hexagon with a north-south and east-west length of about 30 m. With increasing height, the core tube's outer wall gradually tapers from the bottom to the top.

The standard floor height of the core tube is 4 m and 4.6 m. Therefore, the designed maximum casting height of the Large-area formwork Top 50 is 4.65 m. The casting height on floors M2, 8, 15, 34-37 and the top floor (level 58) exceeds 4.6 m. For floors higher than 7 m, it is not practical to complete the structure by pouring the concrete only once. Therefore, a process with two rounds of pouring was adopted. For floor heights between 4.6 m and 7 m where pouring once is enough, the upper part of the formwork system was extended to complete pouring, which greatly saves labor and time.

Combined formwork solution

In order to meet the requirements for material conservation and a binding number of reinforced bars on site, Doka's Automatic climbing formwork SKE100 is used inside the core to form a construction platform to accommodate the large number of reinforcing bars and volume of materials along with space for concrete casting and other requirements. Shaft platform is deployed inside the elevator shaft, while the Automatic climbing formwork SKE50 comes into play outside the core tube. The inside core tube is divided into three climbing areas, while the outside climbs as a whole. Doka's automatic climbing formwork saves on crane use and minimizes the requirements for personnel. It also helps in keeping system utilization time low and thereby costs as well.

Providing an automatic climbing solution featuring a combination of SKE50 and SKE100, Doka fully satisfies the client's various requirements for construction. An on-site technical engineer from Doka provides comprehensive training and guidance. This not only helps construction workers on-site to safely and proficiently operate Doka's products, but also greatly increases construction speed, thereby delivering economies of scale to the client.

Safety first!

For weather conditions that include frequent typhoons and rain in the project region, Doka developed safety protection in the form of a perforated steel sheet thereby ensuring both ventilation and durability. The corrugated sheet plate is used as the platform plate for stability and safety. The fully enclosed protection is installed above 0-floor platform to prevent against falling objects from above, thereby greatly improving safety on the construction site. //

by Mark Ma and Nina Zhang, Doka China

The Facts

Project: Phase I Project of Zhuhai Cross Gate CBD Exhibition Business Complex – Landmark Tower

Location: Wanzai, Zhuhai City, Guangdong Province

Client: Shanghai Baoye Group Corp., Ltd.

Building height: 324.2 m

Floors of building: 74 above ground and 2 floors underground

Floor height: standard 4 m and 4.6 m; some floors higher than 4.6 m

Systems in use: Automatic climbing formwork SKE100 and SKE50, Large-area formwork Top 50, Shaft platform

▲ Combining Automatic climbing formwork SKE50 and SKE100, Doka fully satisfies the client's various requirements for construction.

▲ Fully enclosed protection is installed above 0-floor platform and ensures safe working-conditions.

Practical Tip

As a common practice, plywood is screwed on beams from the front leaving imprints on the concrete. To address this concern, Doka offers the special screw bracket allowing plywood to be fixed from the back.

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

Fair-faced concrete

D.Y. Patil Management Building is a management institute coming up in New Mumbai which has been designed by the world-renowned architect with a fair-faced concrete concept.

The Facts

Project: D.Y. Patil Management Building

Location: Navi Mumbai, India

Customer:
Padamshree Dr. D.Y. Patil University

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

▲ The shape, size, tie-hole pattern and form-facing of Top 50 elements can be adapted to suit any requirements.

For the ten-storey institute building, Doka delivered high-performing formwork solutions and provided dependable support to the construction operations with a package of services.

Pathbreaking solution

The institute building has been designed with fair-faced concrete concept having constraints of predefined surface patterns and in endeavour to achieve the same, D.Y. Patil relied on Doka's experience in projects with fair-faced concrete.

Large-area formwork Top 50 with Dokaplex formwork sheets was the right choice for casting varying heights of columns, lift-core walls and retaining walls while maintaining right pattern not only in terms of plywood but also in tie-rod holes. In order to remove the imprints of screws used to fix the formwork sheets to the Top 50 frame, special screw brackets were introduced. Thus, the formwork sheets can be connected from the back, leaving no imprints on the concrete face. Moreover, Doka-OptiX, a specially designed release-agent was sprayed on the formwork sheets to realize bright and low-pore concrete surface. To cast the varying thickness of slabs at height greater than 5 m, Doka proposed using the high-performing Load-bearing tower Staxo 40. The systems sturdy frames are availbale in three different heights, are easy to handle and provide safe working conditions. //

by A. Khandelwal, Doka India

▲ Construction works are well underway and have already reached the second level.

Twin-houses built in a one day-cycle

With Doka OneGo, Doka offers a state of the art monolithic formwork solution that allows customers to unleash their productivity. 2014 saw the market launch of the system in Latin America. On a building site in Jaboticabal, Brazil, Doka OneGo is already in use.

In total 500 m² of the monolithic formwork are in use for the construction of 264 twin-houses in Jaboticabal, Brazil. Every day a new twin-house is built. The one day-cycle comprises the stripping of the previous casting step, the set up of the formwork and the pouring.

The construction company uses self-compacting concrete (SCC) to further speed up the construction progress. The easy and smooth forming and stripping processes as well as the light weight of the elements compared to competitors have been highly commended by the construction team. That proves that Doka OneGo lives up to its slogan “Go Fast. Build Smart!”.

Walls and slabs in one go

Doka OneGo is a high-performing formwork system designed to cast walls and slabs quickly in a single pour. Its lightweight aluminium panels and optimized forming sequence deliver greater efficiency on site. The monolithic system is ideal for a wide range of use including single-family houses, apartment complexes, highrise residential and other highrise buildings. All building elements such as walls, slabs, columns, beams, stairs as well as door and window openings can be formed with Doka OneGo.

Go to www.doka-onego.com and learn more about the formwork system and its advantages. //

The Facts

Project: Residencial Vida Nova

Location: Jaboticabal, Brazil

Contractor: Magma

Subcontractor: i9 tec

Go Fast. Build Smart! Twin-houses are being built at daily intervals in Jaboticabal.

Doka OneGo time lapse in Jaboticabal

▲ For fast and practical stripping the wall panels can be easily separated from the slab panels.

Doka's Steel Girder formwork is used in conjunction with MF240 climbing platforms to construct the second 9 m tall lift of each pylon.

Following the curve

The Portland-Milwaukie Light Rail Bridge, located in Oregon, United States, is part of a light rail project that will extend 11.8 km and connect the campus of Portland State University to north Clackamas County, south of the city.

The area in the immediate vicinity of the rail line is expected to add one million new residents by 2030, and the new infrastructure is a critical component in managing that urban growth. The 525 m long bridge spans the Willamette River and will serve light rail trains, pedestrians, and cyclists. It is being built by the Kiewit Infrastructure Group.

Geometrically challenging

The structure is a four-pier cable-stayed bridge, with two piers on land and two in the water at the towers. Cables are attached to four diamond-shaped pylons, each standing 55 m tall. The pylons reduce in size with each lift, being 4.88 m wide at their footings and 2.8 m at their tops, so formwork solutions utilized on the project had to be adaptable with each lift. Kiewit worked with Doka to engineer these solutions; in all, Doka provided 174.7 m^2 of Steel Girder formwork and 131.9 m^2 of Top 50 formwork.

Customized solution

For the lower lifts Doka provided Steel Girder combined with custom fabricated steel panels. The custom panels were utilized on the challenging and non-standard areas. Custom steel panels were fabricated for elliptical footing and 9.1 m tall custom "V" panels were used for the pylon front face. Doka's MF240 climbing platforms were utilized to access the formwork on the second 9.1 m tall steel girder lift. These same MF240 platforms were then reused on the subsequence Top 50 upper lifts.

For the upper lifts Top 50 formwork was used. Due to the changing geometry of the pylons at each lift, Doka provided drawings detailing where and when to cut the gangs to accommodate the constantly changing shape. The amount of rebar used in the concrete resulted in a decision to use tieless Top 50 formwork; this reduced the amount of labor required to patch tie holes and prevented any inference between the ties and rebar. Using a C15 Vertical Waler as strong back enabled the pours to be completely tieless.

The pylons also required a slight angle change at elevation 43.2 m. Various formwork options were explored using MF240, with the final solution being full platforms that could be cut back each lift as the geometry changed. Climbing formwork MF240 was used as an access platform. This crane-lifted formwork permits controlled, regular working cycles on all tall structures. It is extremely easy to set up, and can be tailored to meet a wide range of different requirements. This highly flexible option provided optimum adaptation with only a few individual components for the project. Another challenge was that Kiewit required a cut-out in the forms to accommodate the connections for the cables. The bridge has a projected opening date of fall 2015. //

The Portland-Milwaukie Light Rail Bridge will be distinctive in the United States, carrying light rail trains, buses, cyclists and pedestrians.

The Facts

Project:
Portland-Milwaukie Light Rail Bridge

Type of project: Pylons

Location: Portland, Oregon, USA

General contractor:
Kiewit Infrastructure Group

Height: 55 m each pylon

Systems in use:
Steel Girder, Large-area formwork Top 50, Climbing formwork MF240

Project start: June 2011

Opening date: Fall 2015

Used by: rail trains, pedestrians, cyclists

The Professional

"From 9.1 m tall lifts with steel and custom formwork on the lower levels to tieless Top 50 with constantly varying shapes on the upper levels, Doka faced many challenges on this project. We were able to combine a European technology for the upper lifts with American methodology for the lower lifts. In this way, Doka was able to offer a complete package that could not be surpassed."

Chris Lewis, Engineering Manager, Doka USA, Ltd.

The Challenge

To design and supply a formwork solution that would accommodate the diamond shaped pylons' constantly changing geometry. The pylons reduce in size with each lift being 4.88 m wide at the footings and 2.8 m at the top.

The Solution

A combination of American and European technology was found to be the best solution. Doka's Steel Girder form was used to construct the lower "V" shape of the pylon in 9 m lifts and Large-area formwork Top 50 was used in conjunction with the Doka MF240 climbing platform system to safely construct the changing geometry of the upper lifts.

▲ The lake‘s retention capacity is more than doubled thanks to the increased masonry dam height.

Sophisticated formwork solution in the Alps

As part of the energy transition with focus on renewable energy sources, three pumped-storage hydropower stations are under construction in Switzerland. The largest plant is the Nant de Drance/Emosson pumped-storage power plant in the canton of Wallis. This ambitious project high up in the mountains is formed using Dam formwork D15.

The Challenge

Raising masonry dam height by 21.5 m without the option of anchoring to the opposing formwork.

The Solution

The construction project is formed using Dam formwork D15 that transfers any forces generated by the casting process into the previous casting section by way of a static triangle design.

The Professional

“The easy operation of Dam formwork D15 is extremely impressive. Lifting requires 50 % less time than originally scheduled. Working this way saves a tremendous amount of crane capacity.”

Arnaud Neisius, Construction Manager, GMI Groupement Marti Implenia

GMI Groupement Marti Implenia is looking at a total of EUR 600 million for erecting the shell. The overall rock volume in cubic metres to be excavated amounts to 1.6 million m^3, with the concrete volume approaching 360,000 m^3. In order to manage this demanding task, operations continue 24/7 on 350 days per year.

The dam is stacked up rapidly

A key element for building the Nant de Drance pumped-storage power plant is boosting the height of its masonry dam. This undertaking will add 21.5 m to the 55-m high arched masonry dam completed in 1955, thereby more than doubling the storage capacity of the artificial lake. At its crest, the existing gravity dam is roughly 170 m long. The lake‘s retention level is boosted by 20 m thanks to the increase in dam height in 2012.

Peak performance to match the impressive peaks aloft

The measures to raise the masonry dam are implemented in four six-month periods of summer from 2012 to 2015. To ensure that after the winter

▲ The gravity dam exhibiting a roughly 170 m long crest is built with the tried and proven Dam formwork D15 from Doka.

The Facts

Project: Pumped-storage power station Nant de Drance

Type of project: Raising height of masonry dam

Location: Wallis, Switzerland

Builder: Nant de Drance SA

Construction work performed by: GMI Groupement Marti Implenia: Marti Tunnelbau AG and Implenia Bau AG

Concrete volume for vertical stacking: 65,000 m^3

Crest length: 170 m

Masonry dam height: 77 m

Work to raise height: 2012 to 2015

Start-up: as of 2018

Systems in use: Dam formwork D15, Large-area formwork Top 50

break pouring work could be started at full speed in early summer of 2013, the concrete system was still set up at the foot of the wall in autumn of 2012. According to the construction schedule, it takes two building seasons to complete the addition to the dam height. The casting sections to be climbed are 1.50 m high. The entire concrete volume of the new dam will add up to 111,000 m^3, with 46,000 m^3 part of the remainder of the old wall and 65,000 m^3 part of the new addition.

Tried and proven Doka dam formwork in action

Arge GMI selected the tried and proven Dam formwork D15 from Doka to shape this project. Frequently, anchoring the forces generated by large volume concrete structures to the opposing formwork is not an option. The solution is to transfer them into the concrete block below via static triangles by means of anchors. This way the Dam formwork D15 ensures that the forces generated are transferred safely and reliably. Doka dam formwork D15 is easy to adapt to sloping wall surfaces and kinks in the walls. Formwork and dam scaffold are raised as one unit from one casting section to the next. This task can be managed without spending much time, thereby providing savings on crane use and capacity. A shear key is embedded in the front of the blocks. It was also supplied by Doka Switzerland.

Special features of Dam formwork D15 are enormous form-tie tensile forces of 150 kN permitted, ease of anchoring to the structure and also the choice of formwork elements. Additional noteworthy characteristics are ease of adjusting slope and height and high safety standards. Apart from Dam formwork D15, Doka Schweiz also delivered the formwork for both inspection galleries. For this purpose Large-area formwork Top 50 was selected. //

Largest construction project in Canada

Increased energy demand in Canada is met with comprehensive investments into power station expansions. One of the major projects is the hydro power station “Muskrat Falls” being currently under construction in Newfoundland and Labrador. The 824 megawatt hydroelectric generating facility will consist of a powerhouse with four turbines, three dam structures, six spillway piers, separation and retaining walls. Doka supplies all formwork materials including Large-area formwork Top 50, Load-bearing tower Staxo 100 and Dam formwork D22. Beyond that Doka offers comprehensive training prior to project start as well as on-site service for the duration of formworking. Doka Engineers assemble the required formwork systems on-site, thereby ensuring rapid utilisation and smooth workflow from the very start.

▼ The spillway area of Muskrat Falls is getting ready for pouring.

The right combination of Doka systems ensures rapid construction progress.

High-scoring residential project

Kingsford Hillview Peak Condominium is the latest residential development along Hillview Ave in Singapore. The facility will offer a quiet, safe and spacious living environment.

▼ Kingsford Hillview Peak Condominium will cover a total floor area of 3,065 m² and comprise two 165 m high towers and one measuring 216 m.

The project comprises two 11-storey blocks of 165 m height and a single tower block accommodating 26 storeys and rising up to 215 m. In total 512 units will be built and range from 1-, 2-, 3- and 4-bedroom apartments to penthouses. The development is a highly anticipated new address which stands out from the rest of the area with its curvilinear lines and planes covering a total floor area of 3,065 m².

Formwork solution meets customer requirements

The client, Kingsford Construction Pte Ltd., wanted to keep costs low and simultaneously achieve a high constructability score. Doka's extensive experience and high-performing formwork solution allowed it to rise above the competition. Not only was the client's budget met but also a higher constructability score that would have been impossible with conventional construction methods.

For constructing columns and shear walls, Doka supplies Large-area formwork Top 50 and Folding platform K, thereby ensuring high workplace safety. Staircases are formed using the Shaft Platform in combination with the Large-area formwork Top 50. Dokamatic table and Dokaflex 1-2-4 are deployed for forming slabs. The combination of these systems enables cycles of 10-15 days.

Effective implementation of formwork assignment

Building Kingsford Hillview Peak Condominium,

The Facts

Project:
Kingsford Hillview Peak Condominium

Location: Hillview Avenue, Singapore

Contractor:
Kingsford Construction Pte Ltd.

Start of construction: July 2014

Completion scheduled for: Nov 2016

Total floor area: 3,065 m²

Systems in use: Large-area formwork Top 50, Folding Platform K, Shaft Platform, Dokamatic table with shifting equipment, Dokaflex 1-2-4

Services: Training, Formwork Instructor

The Challenge

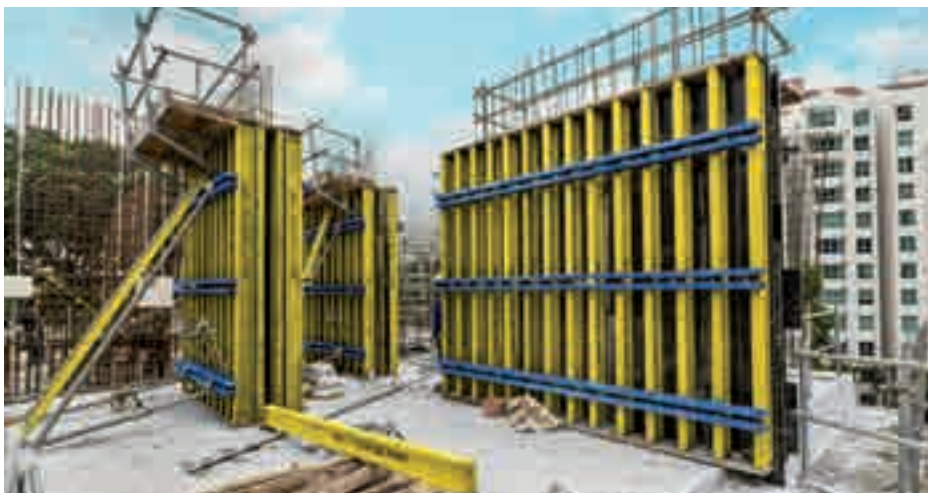
Meeting the client's requirements for keeping costs low and raise the constructability score.

The Solution

Doka developed an economical and time-saving formwork solution to achieve the client's goals and ensured efficient construction progress by offering Trainings and on-site Formwork Instructors.

the client uses formwork systems instead of conventional methods for the first time. Due to the crews' lack of experience with formwork systems, construction works did not progress very efficiently at the beginning. Doka bridged this gap by offering comprehensive training sessions and on-site Formwork Instructors that soon had the site crew thoroughly familiarized with the Doka products. Doka's Field and Training Service helped workers in moving construction works forward efficiently; as a result, the client will be able to complete work on time. // by Tricia Chan, Arwin Mendoza and Joey Teo, Doka Singapore

▼ Constructing the columns and shear walls with Large-area formwork Top 50 cuts equipment and labor costs.



Practical Tip

Adapting the props
Some simple steps and just a few blows of the hammer are all it takes to fix, change or remove the props. Using the integrated quick-acting prop connector, tableforms are very quickly adapted to any of the different jobsite tasks.

▲ Dokamatic table allows for economical forming of slab areas.

Practical Tip

Xbright in two variants

Depending on the requirements, users can choose between two different design variants, with frames that have either polycarbonate or mesh inlays. The wind-impermeable, non-see-through yellow polycarbonate inlays make possible a new quality of working, at any structure height. The tough plastic inlay is translucent, providing good natural day-lighting inside enclosed work decks – even beneath floor-slab formwork. The frames with the close-meshed inlays are both translucent and air-permeable.

▲ Variant with polycarbonate inlay

▲ Variant with mesh inlay

All-round protection in a new light

The newly developed framed enclosure Xbright for the Protection screen Xclimb 60 can be deployed on all highrise projects to provide all-round protection at any height. Xbright can be fitted either with a new translucent but wind-impermeable and non-see-through polycarbonate inlay, or with a mesh inlay.

The gapless Framed enclosure Xbright for the Protection screen Xclimb 60 makes for safe working conditions on the site, shielding the crew in the top levels of the rising structure from the wind and the weather. The self-climbing system is simple to adapt to varying layouts and inclinations, enabling it to be used on even very complex highrise projects.

In the same way as all other Doka safety systems, Xbright is easy to plan, use and operate. It is firmly linked to the structure at all times, ensuring safety even in windy conditions. Horizontal and vertical sealing strips prevent any items from being dropped, even while the screen is being raised.

All the benefits of the protection-screen system

The dimensionally stable frames are based on the field-proven grid logic of Doka's framed formwork system Frami. They can be assembled on a modular basis, both on their sides and in the upright, to make large protection-screen units. The cross boreholes in the frames make it a quick and easy job to link the large-format system components. Other accessories can also be attached very quickly in the same way. Adjustable floor-mounted supports allow the system to be adapted to varying facade inclinations. The working platforms can be relocated to facilitate safe working, even when varying storey heights are encountered. The modular design concept of the large-format frames saves time and cuts costs. //

▼ In a new light: As well as protecting workers from fall hazards and the weather, the Framed enclosure Xbright, with its yellow polycarbonate inlays, provides good natural daylighting of all work decks.

▲ Protection screen Xclimb 60 with Framed enclosure Xbright was pre-assembled and used at a project in Sydney CBD.

▶ Safe working conditions at all heights at the South Beach Project in Singapore were assured by Protection screen Xclimb 60 with Framed enclosure Xbright.

◄ In the past, Doka and Lubeca already worked on the same structures, albeit independent of each other. One such example is the Omkar Worli project in Mumbai, India.

Doka to expand in EAP region

With the acquisition of the formwork technology department of the Australian construction company Grocon, Doka established a new subsidiary under the name Lubeca Pty Ltd. In doing so Doka is developing a stronger presence as well as entry into emerging markets in the Middle East and East Asia.

On its way to becoming a global player, Doka managed to expand market share in central European core markets step-by-step and develop new overseas markets. The company's geographic expansion continued in 2014 as well. Recently Doka acquired the formwork patent for "Lubeca Jumpform" along with employees and a project portfolio from the construction company Grocon. At the same time Doka established a new subsidiary with registered offices in Melbourne.

"Jumpform"-solution

Lubeca's range of operation is far-reaching, extending from the primary Australian market to Singapore, Malaysia and India all the way to the UAE. In these markets the Automatic climbing formwork "Lubeca-Jumpform" is the chosen formwork system in many building lots. Its technical capacity is convincing as it ensures rapid and efficient work processes while providing a high level of safety. Hence the new automatic climbing formwork system is highly competitive and predestined for emerging markets as well as markets where safety, high load-bearing capacity and short forming-times are very important. The system is used primarily in residential construction and for building concrete cores of office towers and tall multi-purpose structures.

Valuable complement

The integration of the Lubeca platform system offers customers an expanded product portfolio and therefore provides an even greater competitive edge for Lubeca and Doka. Lubeca customers will continue to be able to benefit from the advantages offered by "Jumpform". At the same time they are able to access the added range of wall and floor systems as well as complementary formwork services from Doka wherever the Lubeca portfolio needs to be supplemented. "Consequently both Doka and Lubeca benefit from this integration. Our diversity offers customers a broad range of formwork systems and ideal solutions for any customer requirement and structure. This acquisition is a valuable complement", says Johann Strunz, Managing Director Overseas, Doka Group. In the future, construction companies will be able to obtain formwork systems from Doka and Lubeca in a way that is even more precisely targeted to their needs. //

"Consequently both Doka and Lubeca benefit from this integration. This acquisition is a valuable complement."

Johann Strunz, Managing Director, Doka Group Overseas

Fast system operation

"Lubeca Jumpform" is a high performance self-climbing platform used in the construction of concrete cores of highrise buildings that secures fast, efficient and safe building progress utilised by all trades.

The entire platform is lifted hydraulically in only a few operational steps at the push of a button. For the repositioning procedure, long stroke heavy duty hydraulic rams are used, which allow for the system to climb from floor to floor in a continuous process to achieve fast progress. Further information: http://www.doka.com/lubeca

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.

Christian Unger
Doka Australia
Date joined: July 2014
Designation: Managing Director Doka Australia
"I am proud of working for Doka, a leading company of Austria, the country where I was born and spent the first 25 years of my life. I am proud of being part of the Doka team in Australia, the country where I spent the other 25 years of my life. What more can I say? I am truly excited and look forward to all the challenges ahead."

Jonathan Derbyshire
Doka Australia
Date joined: October 2014
Designation: Senior Sales Representative
"It's great to be on board with a powerhouse such as Doka. I am really looking forward to pushing the brand further forward and being part of the growth strategy to make Doka the number one formwork supplier in Australia. I look forward to working with and being part of the team."

Shane Glanville
Doka Australia
Date joined: July 2014
Designation: Head of Finance and Controlling
"I am excited to join Doka and the opportunity to contribute my years of experience to the team. I also look forward to further developing my skills whilst the company develops and grows in Australia. The role of the finance team is to provide excellent services to our colleagues and our customers."

Gerry Chen
Doka China
Date joined: June 2014
Designation: Project Manager
"I am excited to learn, grow and improve my skills with Doka."

Kate Yang
Doka China
Date joined: March 2014
Designation: Financial Accountant
"Doka is an excellent and very interesting company. As accountant, I am mainly responsible for the company's financial transactions."

Lyn Zhang
Doka China
Date joined: May 2014
Designation: Commercial Officer
"I joined the team as a Commercial Officer. In this role I am responsible for import and export of all operations, purchasing and project handling."

Simon Huang
Doka China
Date joined: May 2014
Designation: Engineer
"It's very interesting to see the drawings turn into a product."

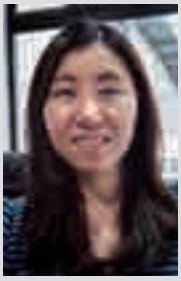
Dileep Raj. G
Doka India
Date joined: August 2014
Designation: Sales Engineer
"I am a very energetic, organized and balanced person. I am always committed to getting things done in the best possible way and maintaining professional relationships with clients."

Midhunraj C.R
Regional Engineering EAP, Calicut, India
Date joined: July 2014
Designation: Project Engineer
"I am a structural engineer with experience in the RCC design; the formwork design is new to me. It is an interesting sector and I learn really fast about the static design of formwork. I really enjoy my job and I am happy to be part of Doka."

Laneesh kk
Regional Engineering EAP, Calicut, India
Date joined: July 2014
Designation: Junior Project Engineer
"Alone we can do so little; together we can do so much."

Hiroaki Terashima
Doka Japan
Date joined: April 2014
Designation: Salesman
"I am committed to learning and gaining Doka product knowledge and skills that will help me contribute to our team."

Christ Evert Ervina Pangout
Doka Malaysia
Date joined: September 2014
Designation: Warehouse Admin Assistant
"I am glad to work in this organization and having been given the opportunity to learn new processes and products as well as a new set of skills."



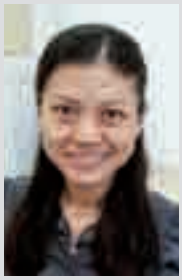
Jess Boey
Doka Malaysia
Date joined: August 2014
Designation: Senior Operation Executive
"I am glad to be a team member of Doka. I have learned about many new processes, new products and I am impressed by the internal systems."

Mohammad Nasim Akhtar
Regional Engineering EAP, Malaysia
Date joined: August 2014
Designation: Formwork Design Engineer
"I am flexible and take great pride in working in a team. I like to motivate people around me to give their best. I am very excited about new challenges and the knowledge I will gather at Doka. I am looking forward to getting to know a work culture that is new to me. I'd like to thank Doka for the opportunity to further develop my skills."

On Meei Leng
Doka Malaysia
Date joined: August 2014
Designation: Head of Operations
"I am proud to be a Doka employee!"

Rachit Jain
Regional Engineering EAP, Malaysia
Date joined: August 2014
Designation: Formwork Design Engineer
"I am very happy to be given the chance to work at Doka as a Design Engineer. I want to add value to the organization with full dedication and creativity. I want to thank Doka for giving me this opportunity. I am looking forward to growing in the organisation."

Cheng Sim Ann Charles
Doka Singapore
Date joined: July 2014
Designation: Head of Operations
"In the Operations team we have a diverse group of colleagues working hand in hand to achieve a common goal. Leading this team and seeing improvement each day is fulfilling. My goal is to develop the team further, to help the team to perform with increased productivity and improve the quality of their work."



Ally Tan Yee Shin
Doka Singapore
Date joined: August 2014
Designation: Material Planner & Logistic
"Doing well in material controls adds to company profits. By ensuring that sufficient material is available, I support the order process and on-time deliveries to sites. I am also responsible of reducing dead and non-moving stock in our yard."

Lim Lee Lian
Doka Singapore
Date joined: April 2014
Designation: Operations Executive
"During the first weeks in my job, I found that there are many challenges which I enjoyed taking up while learning to use Doka's systems. The friendly and very professional colleagues around me inspire me to learn from them and develop my career at the firm."

Prince MD Zahiduzzaman
Doka Singapore
Date joined: April 2014
Designation: Technical worker
"I like to repair and service Doka materials because this is how I can guarantee that our materials are of high quality. Currently I handle all returned materials and delivery preparations. I take care of spare part requests and monthly quality inspections as well. I also operate the forklift."

Yang Youdong
Doka Singapore
Date Joined: October 2014
Designation: Yard Supervisor
"What I like about my job is the English speaking environment and the management system. I believe I can learn a lot here. I want to be efficient and productive at work. I want to become more familiar with Doka's system and contribute to the company."

Raymond Chang Kei Loon
Doka Singapore
Date Joined: July 2014
Designation: Technical worker
"I want to further develop in my current job at Doka and I am willing to study to upgrade my skills. I want to learn more about assembling Doka formwork systems."

In brief

News, dates, media, awards

ARCHIDEX 2014

ARCHIDEX, the 15th International Architecture, Interior Design & Building Exhibition, Malaysia – so far the largest tradeshow of its kind – was held at the Kuala Lumpur Convention Centre from 25 to 28 June 2014. A total of 550 exhibitors were present and 33,000 visitors made their way to the exhibition. During the four-day event, Doka presented its products and services to more than 600 visitors attracted by its 18 m² booth.

Premiere participation at OneBuild 2014

For the first time Doka participated in the OneBuild 2014 – Malaysia International Building, Construction and Infrastructure Technology Exhibition – held from 16-19 July in Kuala Lumpur. On 27 m² Doka exhibited a mock-up of Doka OneGo, Dokamatic tables and Framax systems.

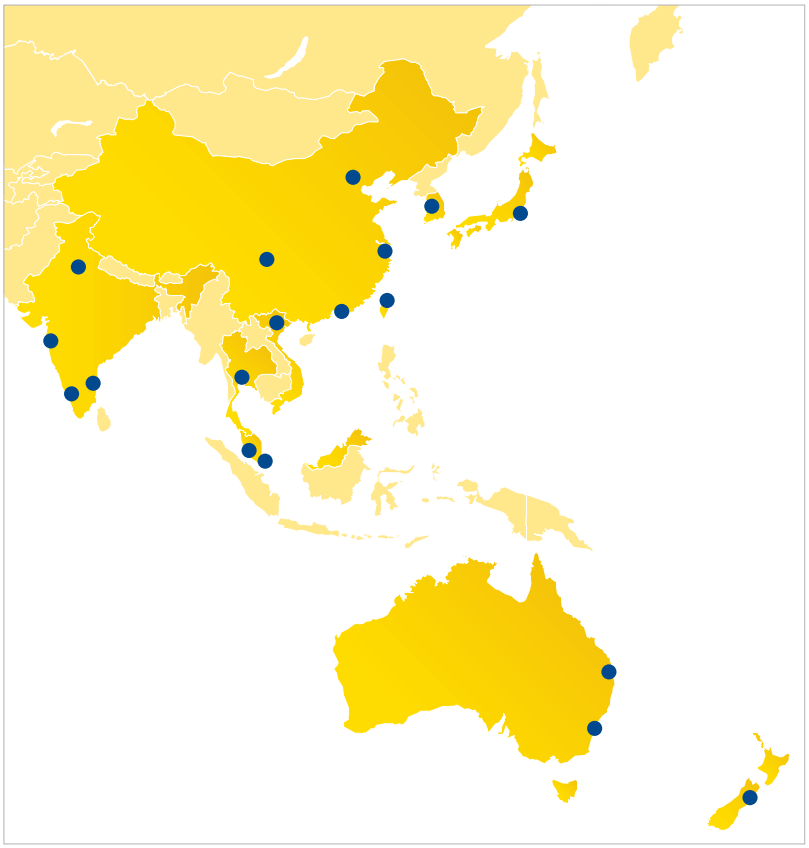
Pink Ribbon Cancer Fundraising Breakfast

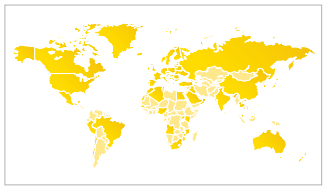
On October 10th, the Engineering Department of Doka Australia hosted a Pink Ribbon Breakfast. Cancer Council's Pink Ribbon campaign is a nationwide fundraising initiative to raise awareness and funds for prevention programs, support services and world-class research into women's cancers. The event at the Doka branch was a big success.

Doka East Asia & Pacific Regional Office

Doka Formwork Pte. Ltd.
9 Gul Circle #01-01
Singapore 629565

T +65 6690 0620
F +65 6690 0643
singapore@doka.com
www.doka.com





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

Branches in East Asia and Pacific
- Doka Australia
- Doka China
- Doka India
- Doka Japan
- Doka Korea
- Doka Malaysia
- Doka Singapore

Authorized Agents in East Asia and Pacific
- Acrow Ltd – New Zealand
- DEC Engineering Corp. – Taiwan
- Subway Engineering & Supply Co. Ltd – Thailand
- SPECO (HK) Co / Chi Thang Construction Engineering and Trading Co.,Ltd – Vietnam

www.twitter.com/doka_com
www.facebook.com/dokacom
www.youtube.com/doka

Impressum: Doka Xpress is a publication of the International Doka Group. **Publisher:** Doka GmbH, Josef Umdasch Platz 1, A 3300 Amstetten, Austria.
Editorial office: Sandra Lang, Esther Ong, Jürgen Reimann. **Layout design:** COMO GmbH, Linz.
In some cases the site photos show the situation during formwork assembly and are therefore not always complete from the point of view of safety.