

# Doka Xpress

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## Perfect deployment of Automatic climbing formwork



### Australia

Doka Australia supported the winning student team of the Solar Decathlon China 2013 competition.

### China

Chengdu Yintai Center is the first core-shaft automatic climbing formwork project in China's southwest cities.

### Malaysia

Market launch of Doka's new monolithic formwork solution Doka OneGo

## Editorial



### Dear readers;

Growth prospects in the Asia and Pacific construction sector continue to look positive despite political unrest in some countries in the region or further afield.

The demand for construction in the highrise, residential or civil sectors has developed steadily, though at a slower pace due to external economic factors. Experts forecast that contractors will further develop processes to meet the new challenges. Technology, modularization and preassembly will be the game-changing aspects when projects are planned, contracted and built.

Recently, Doka Malaysia has launched the new monolithic formwork system Doka OneGo that makes it possible to pour entire storeys in one go. The "Go Fast. Build Smart!" motto puts the mission of the system in a nutshell. The equipment is of high quality and geared end-to-end toward increasing productivity on monolithic construction projects. Doka OneGo is ideal for speedy assembly and stripping, so it is an efficient and time-saving system solution.

This is interesting news for many developers and contractors keen to save both time and capital investment by using Doka OneGo.

Doka is committed to innovation and we look forward to supporting you in all your projects – be it in the highrise, civil or residential sector.

Doka. The Formwork Experts.

Yours sincerely,  
Gerold Heinrich  
Regional Director East Asia & Pacific

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## Doka News

### Mega-infrastructure project ▶

One of the most important road construction projects in Austria is the 22 km long S10 Highway. This mega project demands near-perfect planning, coordination and implementation know-how. Doka functions as competent formwork partner and supplies sophisticated solutions that result in efficient and safe construction of the many tunnels and bridges.



### Premiere in the Baltics ▶

Building the 400 m long and 15.5 m wide Tartu Bridge, which will cross the Emajõgi River, is part of a large-scale infrastructure project in Estonia. With the Load-bearing tower Staxo 100 from Doka most of the formworking of the bridge is done. For the 55-metre middle section Doka provided a cantilever forming traveler, a premiere in the Baltics.



### ◀ Upgrade for dam

With a formwork solution for the Bergforsens Kraftverk hydraulic power station in Eastern Sweden, Doka Sverige proved its competence in power station construction. In order to increase the total discharge capacity of the dam, a second gated spillway is under construction. Doka supplies Framax Xlife, Large-area formwork Top 50 and Load-bearing tower Staxo 100.





▲ With its zero-emissions house the student team from the University of Wollongong (UOW) came out on top in the Solar Decathlon China 2013 competition.

# Winning ways for formwork specialist

**Doka Australia has commenced the year on a high note.** The fledging formwork branch of Doka won two awards last year and the Managing Director and his team have their sights set on more awards during the coming year.

“Doka took first place in the Queensland Safety Show last year”, states Rainer Spitzer, Managing Director Doka Group Engineering & R&D. The win was followed by a gold medal for the Doka-sponsored University of Wollongong (UOW) student team which won the “Energy Olympics” in Beijing, China, later in the year.

Ms. Leila Sadler, Head of Engineering Doka Formwork Australia said: “We were delighted to support this terrific educational initiative and see Australian students participate in the inaugural Solar Decathlon China 2013 competition. The premise of the competition linked well with the environmental sustainability goals of Doka Australia. We were pleased to provide the university with materials to assist in the building of an eco-house.”

The team placed ahead of 19 others from around the globe. Crucial for winning was their first place in three of the five categories, namely engineering, architecture and solar application. The task of the worldwide competition was to design a zero-emissions solar house. The UOW team chose to refit a modest Australian fibro cottage. Their final product edged out the team from South China

University of Technology, which came second with their E-Concave house. Doka Australia wants to encourage young people to pursue a career in civil engineering and intends to develop stronger links with academic institutions, including the University of Wollongong. “We are currently working on numerous major projects in Australia and would like to work with universities as well. Developing the next generation of civil engineers particularly in the discipline of formwork is vital to the construction sector,” stated Ms. Sadler. As part of their commitment to tertiary education, Doka Australia provided an intern opportunity to a Masters of Engineering (Civil Engineering) student and has plans to offer internships to other students interested in civil engineering this year.

At the Queensland Safety Show held in 2013, Doka showcased its workplace safety expertise and won the best new exhibitor award. Doka chose to display a range of its innovative and new safety products. “Investment in safety delivers benefits to every project and every jobsite. We take pride in working with our clients to offer the best formwork systems for their projects”, stated Ms. Sadler. //

by Josefine Greatorix, Doka Australia



▲ Doka Australia sponsored the student team and provided them with materials needed to build the eco-house.



▲ TG Lim, Managing Director  
Doka Malaysia and his team

# Exclusive interview the Managing Director of Doka Malaysia

## **How did you become interested in construction and how long have you been in the industry?**

I entered the construction industry in 1994 as a project engineer working on the Petronas Twin Tower – the highest building in the world then and still the highest twin tower in Asia today. Back then, the working environment was challenging and tough, but it was an excellent learning experience for me as a young engineer.

That jobsite was the start of my interest in formwork. I had the opportunity to take on several posts, including design engineer, and sales engineer to a technical manager and a sales manager. Gradually I went on to take up management responsibilities as a sales director until my current appointment as Managing Director of Doka Malaysia. Through my many career milestones, I have seen both the construction industry and this company at its

various stages. Looking back, I must say it has been a wonderful journey that has enriched both my personal and professional life.

## **When did you start with Doka?**

I joined Doka in 2008 as a Sales Director in Singapore. It was a humble beginning as there were only three of us at that time. Since then the company has grown exponentially with a Compound Annual Growth Rate (CAGR) of 30%. The journey was long but well worth it.

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

It is difficult to pick out particularly interesting projects because each one is unique. However, one of more memorable ones would have to be Petronas Tower 3 in KLCC.

I was Sales Director with Doka Singapore and also the Key Account Manager when this tender opened. It was a huge project that we really wanted to win but the odds were stacked against us. Firstly, the early part of the project had been handled by a competitor and was well received by the client. Secondly, unlike the other companies, Doka Singapore did not then have logistics support locally – not in sales, not in storage or engineering capabilities. Finally, we knew that we will never be the cheapest supplier as we do not believe in offering sub-quality products.

I remember all the effort we invested and how we never gave up on the project, despite the unfavorable position we were in. As it turned out, the project was a classic example of how we turned the client around and brought them on board. This was a real confidence booster for the team and for me. We continued to deliver on our promises and ended up with a very satisfied client. The project launched us into working with them on a number of other builds.

Another interesting story I recall was the development of a new client – HAB Construction. In 2009, we sold them only two containers of Doka H20 top beams at an exhibition. Today, HAB has purchased over 10,000 m<sup>2</sup> of Dokamatic tables and one set of Xclimb 60 protection screen. This would not be possible if not for the hard work of many people behind the scenes.

### **What are your visions for Doka Malaysia, for example in terms of business volume and staffing?**

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Even though we are a relatively young company, I believe we have a lot of potential for growth. At the Doka OneGo launch, I said that I would like to see us creating more sustainable win-win relationships with our partners – based on mutual trust and respect. We have excellent products and systems and I believe we have the capability to add even more value to our partners' businesses through our team.

We have good people in the organization who are dedicated in their work. This industry can be demanding but I know our people have the enthusiasm and endurance to overcome the challenges.

As far as my "vision" for Doka Malaysia is concerned, I would like to see people smile, especially a successful smile – because that means a great deal.

### **What is the key difference between Doka and the other companies in Malaysia?**

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I like the word *pathbreaking* that we use in the Doka world. When I first heard the word in Doka's Global Management Meeting, R.A.C.E. 2011 in Vienna,

*pathbreaking* was high performing, reliable and inspiring. It sums up what has been in my heart. In fact, you can see the motto is displayed prominently right here in our office. I like to use this word during discussion with my team and I mentioned it during my welcome speech at the Doka OneGo launch recently. Never miss. We have been doing our best to deliver these values to the market.

I like to use the analogy of a world-class chef who openly shares his award-winning recipes. Many people may use the exact same ingredients and follow the same steps but the final product pales in comparison with the creation of a master chef. The fine touches are the most difficult of all to copy.

I believe and I hope these are the touches of Doka Malaysia that differentiate us from the rest. Certainly it requires a lot of hard work but it also means that ultimately we will be highly successful.

### **What is the business outlook for construction in Malaysia?**

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The construction market in Malaysia has been robust for the last few years and with high-profile projects like Warisan Merdeka (over 600 m high), MRT Line 2 and RAPID, I am confident that it will remain vibrant in the near future.

The industry as a whole still faces pressing challenges like low safety standards, a cooling down in the property market and increasing competition. However, I know we can remain a forerunner if we continue to deliver what we promise.

### **On a lighter note: what is your favourite hobby?**

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I like an active lifestyle so I will either work out in the gym or go swimming. I always believe that a strong mind is developed from a healthy body. I enjoy golf as well as it gives me time to slow down and reflect on what is going on around me. In all honesty, I have to admit I am not very good at it even though I've been playing for 15 years.

### **What is your philosophy in life?**

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Two words often guide my life – 'just enough'. I think it is important to find that balance or situational sweet spot where there is an optimum. Nothing is too high that you can never achieve but also nothing too low that it does not stretch you to your limits.

### **To conclude: how would you describe yourself?**

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I think I am analytical and determined person. I set high standards, knowing that it is possible to achieve them. // WH Chang, Doka Malaysia



**"We have good people in the organization who are dedicated in their work. This industry can be demanding but I know our people have the enthusiasm and endurance to overcome the challenges."**

**TG Lim**

Managing Director, Doka Malaysia



▲ When completed, Chengdu Yintai Center will be another landmark building in Chengdu.

# Perfect deployment of Automatic climbing formwork

The professional



**“Doka’s hydraulic climbing formwork system provides a safe working environment and speeds up the construction process. It also contributes much to cutting costs for steel, wood and labor, helping the project to meet green construction requirements”.**

**Jin Liu**, Chief of the Equipment Division, China Construction Eighth Engineering Division Corp. Ltd., Southwest Branch

**Chengdu Yintai Center** is the first core-shaft Automatic climbing formwork project in China’s southwest cities. The center will be a world-class urban complex where people will work, live, dine and shop.

Located in the Tianfu New District of Chengdu, Sichuan Province, China, the center will consist of five super-highrise towers and high-end business premises. Topping out at 219 m, the

55-floor main building will house a luxurious Hilton Worldwide hotel, a shopping center and serviced apartments. Total floor area is about 740,000 m<sup>2</sup>.



▲ The center will consist of five super-highrise towers and high-end business premises. Doka supplies formwork for the highest building.

## The facts

**Project:** Chengdu Yintai Center, main building

**Construction site:** Tianfu New District of Chengdu

**Client:** China Construction Eighth Engineering Division Corp. Ltd., Southwest Branch

**Construction height:** 219 m

**Number of floors:** 4 underground and 51 above ground

**Average floor-to-ceiling height:** 3.65 m

**Construction time:** 16 months

**Systems in use:** Automatic climbing formwork SKE50, Large-area formwork Top 50, shaft formwork

## High-performing formwork solution

China Construction Eighth Engineering Division Corp. Ltd., Southwest Branch contracted to build the Yintai Center, with its 51 above-ground and 4 underground levels. Doka supplied Automatic climbing formwork SKE50, Large-area formwork Top 50 and shaft formwork for the 219 m high building. 16 months were scheduled for the build. Integrated platforms in the climbing formwork system ensure total safety for work in progress and for vertical access, so there is no need for scaffolding. In addition to high safety, the system offers outstanding quality. The formwork climbs with the working platforms. This saves on tower-crane time and significantly reduces the quantity of timber required, compliant with the requirements of green construction.

## Well set up for challenges

The Yintai Center build is the first construction project in Sichuan Province to utilize climbing formwork. This meant new challenges for the contractor and for the government department in charge of safety supervision.

From underground levels to roof, the building has 18 different floor-to-ceiling heights. When it came to sizing the formwork, the Doka (Chengdu) Engineering department examined the design of the building and factored in manpower plus resources, and came up with the ideal solution for the lead contractor.

Initially, the contractor had worried that the many steel plates would obstruct climbing formwork as the build progressed. Doka Engineering, however, earned praise from the client by drawing up a viable layout plan that separated formworking operations from the main work of construction, keeping the climbers away from the embedded steel plates and ensuring economic efficiency. Jin Liu, Chief of the Equipment Division on this build, said: "Technically speaking, the hydraulic Automatic climbing formwork from Doka is the most impressive subcontracted equipment deployed on the Yintai Center project."

The construction subcontractor handles the entire process of assembling, installing and climbing the formwork. Due to the lack of prior experience with climbing formwork, the project planners worried that problems might occur. Doka's after-sales service team dispelled these concerns by offering the comprehensive training and guidance from assembly through to climbing that soon had the site crew thoroughly familiarized with the Doka products, earning a great deal of acclaim from the client's project division.

Doka actively co-operated with the Quality and Safety Inspection Bureau so that its experts could complete their quality assessment of the Doka products. Testing was carried out by an independent assessor and the results showed that in all categories performance exceeded the official requirements by a considerable margin. // by Anna Sun, Doka China



▲ Doka supplies Automatic climbing formwork SKE50 and Large-area formwork Top 50 for the project, cutting down on tower-crane time and speeding up progress on the build.



▲ Both bridges, Studenčica and Trebižat, are part of the new North-South connection along the route through Bosnia.

## Rapid progress at lofty heights

**Travelling between Budapest and Southern Dalmatia** will take less time thanks to the Pan-European Corridor Vc. Doka's contribution to the infrastructure initiative is a formwork solution including a total of ten Cantilever forming travellers for two bridges crossing the valleys.

Altogether the European route 73 is about 702 km long. A1 is an important section of this route in Bosnia-Herzegovina connecting the northern border to the Adriatic. The two bridges, Studenčica and Trebižat, connect the valleys near the municipality of Čapljina.

With a stretch of 555 m in length from one abutment to the other and maximum height of 81 m above the valley, Studenčica is the longer and higher of the two bridges. Four superstructures, each 12.4 m wide and placed at a distance of 120 m from the other, were established on a total of five piers. At a total length of 365 m and 59.5 m maximum height, Trebižat, the smaller pendant required only three piers. Doka developed a safe and fast formwork solution consisting of a total of ten Cantilever forming travellers.

### Fast, efficient and safe

The suggestion by both, the Business Development and Competence Center Bridges, to extend the pouring segment to 5 m, facilitated completion with eight fewer segments thanks to the high-performing Cantilever forming travellers. In the case of a weekly cycle, this means the project was completed eight weeks ahead of time.

By changing the cross slope and tapering the walls of the superstructures each segment was planned individually, thereby eliminating the need to adapt the formwork. Special installation of pieces made-to-measure and a custom solution with re-usable removable elements in the interior formwork prevented loss of large quantities of materials. The Forming wagon is fully equipped with secured

### The facts

**Project:** Corridor Vc.

**Location:** Čapljina, Bosnia-Herzegovina

**Construction company:** Hering (OHL sub-contractor)

**Construction start:** May 2013

**Completion:** June 2014

**Systems in use:** Cantilever forming travellers, Load-bearing tower Staxo

**Services:** Formwork planning, Formwork Instructor



platforms, safe access systems and access to all places on the Forming wagon where work is done. This allowed for safe progress even at lofty heights.

### Precision and creativity

Doka materials came into play for the piers as well. Columns were constructed with the help of the crane-lifted Climbing formwork MF240 and Framed formwork Framax Xlife. Doka Croatia in cooperation with the Competence Center Bridges demonstrated planning precision as well as creativity in order to get the Forming wagons into position at a height of 81 m. Parts of a gantry crane placed on the formwork, lifted the Cantilever forming traveller's floor grate a bit at a time.

Limited workspace on the hammerheads with dimensions of 8 m in length called for a special solution. Whereas the forming wagons weighing approximately 80 t start moving symmetrically in two directions with the cantilever forming principle, Doka's structural engineers figured out a fine-grained custom solution for this project. Thanks to the exact calculations, one of the Cantilever forming travellers first started off from the hammerhead. Then enough space was available for hitching the second traveller to it and offset the balancing act. In order to get around the lifting procedure, the Cantilever forming travellers returned once the width of a span had been completed; they were then repositioned and used again for the next pier. //

▲ High-performing at lofty heights: Ten Doka cantilever forming travellers allowed for rapid and safe construction of both bridges along the Corridor Vc.



▲ For construction of the bridges spanning 555 m and 365 m in length, Doka developed a formwork solution consisting of Cantilever forming travellers that saved time and resources thanks to extended pouring sections.



### The professional

"We have been working with Doka for many years. We were able to finish on schedule once again thanks to our reliable partnership".

**Mario Jurisic**, Project Manager, Hering



▲ Premiere for Dam formwork D35: the new Doka standard system was used for the first time during construction of Dam Sarvsfossen.

## Powerful premiere for D35

**Doka's Dam formwork D35** was used for the first time during construction of a concrete arch dam. The success of the premiere was ensured by pouring sections that are 5 m high, an integrated safety concept and a rapid progress during construction.

### The professional



**“We were able to quickly reposition climbing brackets as well as formwork for the entire dam using only two cranes. This solution combined with pouring blocks 5 m high allowed us to work unbelievably quickly.”**

**Thomas Odde**, Construction Manager,  
Kruse Smith

Using Doka Dam formwork such as D35, it is feasible to form single-sided construction projects such as dams and river power stations without formwork ties. The climbing brackets will transfer all pouring loads into the previous pouring section.

The use of the spindle strut shoe of the Dam formwork D35 allows for inclination adjustments of up to 37 degrees in both directions. As a result, adapting the system to sloping or kink wall areas is a simple process.

### First use in the land of Fjords

The newly developed Dam formwork D35 from Doka with its anchoring tensile force of 350 kN was virtually predestined for the construction of the 150 m long and 50 m high Dam Sarvsfossen in Bykle, Norway. In terms of formwork engineering, the concrete arch dam with its scant structural tolerance of 8 mm per 2 m as well as the dam crests geometry were challenges during the planning process. Using this formwork solution,



◀ Efficient construction progress for sure: closed and generously dimensioned working platforms up to 3.60 m wide ensure safe working conditions in all stages.

◀ The Dam formwork D35 with its anchoring tensile force of 350 kN was virtually predestined for the construction of the dam in Norway.

## The facts

**Project:** Dam Sarvsfossen

**Location:** Bykle (Aust-Agder province), Norway

**Lead contractor:** Kruse Smith

**Start of construction:** September 2012

**Completion:** April 2014

**Systems in use:** Dam formwork D35, Large-area formwork Top 50

**Services:** Engineering, Formwork Instructor

it was for the first time possible to form blocks that are 5 m high. Doka was able to meet the requirements of this project without special constructions or additional measures.

The dam construction consisted of 10 pouring sections requiring the use of a total of 104 brackets of Dam formwork D35 and 660 m<sup>2</sup> of Large-area formwork Top 50. As part of the formwork solution, Doka provided the customer with a logistics plan perfectly matching the use of materials to construction site requirements. As a result, there was no downtime and the construction process was accelerated overall.

### Customised forms

At its base, Dam Sarvsfossen is 6 m to 7 m thick and tapers to 2.5 m at the top. The concrete arch dam was built according to the "leader-follower principle". The first step of this process was construction of three blocks referred to as leader

blocks which serve as base supports. The second step was mounting the formwork between these blocks and to pour CIP concrete in the follower block. In this project the wall formwork consisted of the Large-area formwork Top 50 which can be perfectly combined with the Dam formwork D35. In order to achieve the minimal structural tolerance of 8 mm in terms of formwork engineering, Doka provided the Top 50 elements with the correct radius. The formwork experts produced special moulded plywood which served as a basis for mounting the face sheet.

### Safety as part of the solution

Doka developed a formwork solution that focused on efficient implementation as well as the building site team's safety. Closed and generously dimensioned working platforms up to 3.60 m wide ensured safe working conditions at every stage and thus contributed significantly to an efficient construction process. //



▲ At the beginning of April 2014 the construction of the dam was completed. On April 7, 2014 water was running for the first time.



▲ With Doka OneGo walls and floor-slab can be cast together in a single operation.

### Overview of the advantages of Doka OneGo



Smooth starting of formwork operations



Fast construction progress



Simple adaptation to project specific requirements



One-stop solution



A high number of reuses



Safe working conditions

# Pouring walls and slab in one go

**Doka OneGo** is the state of the art of the monolithic formwork solution that allows customers to unleash productivity. With the new system walls, floor-slab, columns, floor beams and stairs are cast in a single pour.

The motto "Go Fast. Build Smart!" describes the mission of the new, high-performing formwork system Doka OneGo. It was designed for use in residential construction where the same designs are used multiple times. The range of application spans from single family houses, apartment complexes, highrise residential to highrise buildings. "Doka OneGo is a high-quality and high-performing formwork system that is consistently geared to increasing productivity in monolithic construction projects. For this purpose we developed numerous new system features,

all of which facilitate accelerated construction workflows", stresses Johann Strunz, Managing Director Doka Group Overseas.

### Less weight, faster reuse capacity

The entire modular formwork system is made of aluminium, making the formwork extremely lightweight and easily assembled and disassembled manually. The high-quality workmanship ensures high reuse cycles and minimal damage. Only few form-tie points and

floor props are required thanks to the compact nature of the system and its low weight. Perfectly in synch forming and stripping processes and integrated stripping aids support a fast and economical construction workflow. The focus during development of Doka OneGo was especially on efficient and time-saving system solutions: with chamfered panel joints, for instance, and special stripping tools wall panels are disassembled quickly. Using an integrated stripping head, floor-slab formwork is separated from concrete in a manner that is easy, quick and gentle on the material. The formwork can be reused immediately. Doka OneGo forms floor-slabs thickness up to 30 cm and wall thickness up to 45 cm. It can also be used to form floor-slabs and walls separately.

### Flexible and compatible

Doka OneGo is also convincing in terms of system flexibility: the ingenious 5-cm system grid allows for economical adaptation to the most varied

ground plan shapes as well as project-specific requirements. It also reduces the ratio of costly special elements. In addition, Doka OneGo is easily combined with other Doka formwork systems such as shoring towers. As a result it provides a one-stop solution for atypical components including podiums and skygardens.

Doka OneGo modules are produced on order; standard elements are pre-produced and made available quickly through the international Doka logistics network. Smooth formwork technology set-up is ensured thanks to the project-specific test assembly that guarantees proper system set-up. The smooth starting of the formwork operations is ensured by a project specific test assembly which guarantees the correct setup of the system and by the professional on-site support from experienced Doka formwork instructors.

Go to [www.doka-onego.com](http://www.doka-onego.com) and [www.doka.com](http://www.doka.com) for additional information. //



▲ A special stripping head allows fast and easy stripping of slab panels.

## Doka OneGo Launch in Malaysia

First unveiled as a prototype at the bauma 2013, the world's largest construction trade fair in Munich, Doka OneGo officially debuted in Malaysia on May 29, 2014. Doka Malaysia invited Datuk Hamim Samuri, Deputy Minister of International Trade and Industry of Malaysia, as guest of honour to officiate at the ceremony and launch. The event was held at Doka Malaysia's

head office and was attended by more than 50 guests. Mr. TG Lim, Managing Director Doka Malaysia, and Mr. Gerold Heinrich, Regional Director Doka East Asia and Pacific, invited the guests to a live demonstration of Doka OneGo. Doka Malaysia further presented other systems and products such as the Doka Table Lifting System in the yard. //



▲ Successful launch of Doka OneGo in Malaysia: Mr. TG Lim, Managing Director Doka Malaysia, Datuk Hamim Samuri, Deputy Minister of International Trade and Industry of Malaysia and Mr. Gerold Heinrich, Regional Director Doka East Asia and Pacific (left to right)



▲ Guests at the Doka Malaysia office had the opportunity of experiencing the monolithic formwork system live and at first hand.



▲ Doka Korea provided two sets of Large-area formwork Top 50 for the bridge with 31 casting sections.

## Korean infrastructure development

**Famed for the beauty of its scenery**, the east coast of South Korea is one of the country's popular tourist destinations. By 2018 the traveling time from Pohang to Samcheok will be cut by half, when work on the Donghae Jungbu railroad is completed. Bridging the Osip River is part of this infrastructure project. Doka provides the formwork solution for the box-girder bridge.

Construction of the Donghae Jungbu line had started in April 1940, but ceased in August 1945 when Korea became independent from Japan. Work was resumed in 2008. The single-track rail link is 165.8 km long and the budget amounts to KRW 2.9 trillion (approx. USD 2.85 billion). As well as cutting traveling time, the new line will also improve accessibility to the coastline of Gyeongbuk, which has an as yet under-developed

traffic and transportation system. In addition it will stimulate the tourist industry and encourage well-balanced growth across the country.

The line will go into operation in 2018, by which time there will be an unbroken rail link extending all the way to Europe. From the southern part of South Korea it will pass through the northern part of the country (the existing Donghae Nambu line),



◀ The formwork for sidewalls and deck slab was designed to advance on rollers. There is no need for a crane, so site efficiency is enhanced.

enter North Korea, China, Russia and finally reach Europe. The Donghae line as such will be the backbone of a national railroad network serving the entire peninsula and also extending to continental Asia.

### Customized, fit-for-purpose solution

The overall construction site will be divided into 17 sections, of which sections 1 to 5 are now under construction. Work on all sections will be completed by 2018. Doka Korea is currently involved in progress on section 5 (8.9 km from Ganggu to Yeongdeok), where it is supplying the formwork solution for the Osipcheon Bridge, which is 1,240 m long and 6 m wide.

Doka provided two sets of Large-area formwork Top 50 for the 31 casting sections of the bridge. The high-specification box-girder bridge is worked in two stages. The bottom slab and sidewalls are cast first. The site crew assembled a total of 1,305 m<sup>2</sup> of Large-area formwork Top 50 on site for this stage of the process. Casting the deck slab of the box girder is the second stage. The formwork for sidewalls and slab was designed to advance on rollers. There is no need for a crane, so site efficiency is enhanced.

Large-area formwork Top 50 is a 'construction kit' large-area formwork system that is pre-assembled on a project-specific basis and is designed to accomplish many very diverse types of tasks. The shape, size, tie-hole pattern and form-facing of the elements can be adapted to suit any requirement. This bridge's box-girder structure

is being cast using made-to-measure Large-area formwork Top 50.

### Tried-and-tested technique for bridge-building

In 2011, Doka Korea supplied the same formwork to facilitate speedy construction of a railway project. The Doka system contributed much to successful completion of the project and the efficiency of the formwork solution was proven on that build. The site manager was definite in his opinion that Doka's outstanding technologies and high-quality materials impressed the site crew and helped keep progress smooth and reduce construction time. // by SH Lee, Doka Korea



▲ Slab and sidewall formwork are made up of Large-area formwork Top 50, designed to take the weight of the concrete and be usable as a working platform to enhance safety.

### The facts

**Jobsite:** Osipcheon Bridge, section 5, Donghae Jungbu line

**Location:** Yeongdeok, Korea

**Customer:** Korea Rail Network Authority

**Length of bridge:** 1,240 m

**Number of casting sections:** 31

**Construction time:** 18 months

**System in use:** Large-area formwork Top 50



▲ DokaCC is an innovation especially for the cut & cover construction method used in tunnels: quick, efficient and safe.

## Doka delivers concrete expertise for rail programs

**Current urban development** presents numerous new challenges calling for lasting infrastructure solutions. Especially in the area of public transportation construction companies are confronted with demanding tasks. With its many years of experience and high-performing systems Doka serves as a reliable partner when it comes to formwork solutions for infrastructure projects.



▲ Cross-section changes and varying structural geometries can be realised safely using the flexible Load-bearing tower SL-1.

In many cities this requires far-reaching and sustainable renovation of the existing infrastructure to be embedded into current traffic solutions. With customised services and high-performing products, Doka covers the entire spectrum of up-to-date formwork solutions for tunnel, bridge, station and road construction. Doka customers benefit from years of formwork engineering experience gained while working on multifaceted infrastructure projects, such as railway tunnels, station buildings or underground traffic hubs around the world. Due to its special expertise Doka serves as a particularly strong partner for solutions where conventional concepts and systems are no longer adequate. From project development stage through to completion of construction, the range of services offered

by Doka formwork engineers is impressive and comprehensive. Customers can reap benefits in terms of adherence to schedules and logistics planning as a result of formwork pre-assembly and Doka Ready-to-Use Service.

A wide-ranging product portfolio adapted to regional requirements enables Doka customers to fall back on flexible systems that meet their project demands. Formwork systems offered as kits and specially adapted product specifics facilitate holistic concepts contributing to smooth construction processes. Above all, this includes a well-conceived logistics concept. Doka makes investments in an extensive network of distribution and logistics sites to be near its customers anywhere in the world. The result is a company

able to respond quickly to regional particularities and also demands for material on short notice. In conjunction with the option of system renting, the range offered by Doka provides economical and reliable solutions.

### Flexible and complete product lines for complex demands

The Load-bearing tower system SL-1 is universally suitable for demands presented by tunnels built in accordance with mining practice, the cut & cover method and especially for underground railway stations and long caverns. Regardless of form and load, the modular configuration of SL-1 ensures speedy and economic construction progress. In combination with the flexible Large-area formwork Top 50 this quickly assembled system realises any form. With its new Tunnel formwork DokaCC, Doka developed an innovation especially for the open construction method also known as cut & cover method. DokaCC allows for quick, efficient and safe construction of various traffic tunnels, in particular in the initial approach and gathering area of the underground railway.

When it comes to building station and operational structures, Doka offers a wide range of slab and wall formwork for a variety of applications

and project requirements. Doka supporting construction frames and Large-area formwork Top 50 deliver powerful and yet flexible results with underground structures as well as above-ground stations and operational buildings. Using the integrated push trolley, these high-performing supporting construction frames are transported quickly from one pouring section to the next in spite of their height. Framed formwork Frami Xlife is suitable for high walls to accelerate construction processes.

Flexible standard systems such as Staxo 100 and Staxo 40 offer interesting system expansions for any shoring tower design. The heavy-duty supporting system is easily adapted to different construction sites.

### Systematic safety

At Doka safety considerations start as early as during the product development phase. Use of high-quality material results in long product service life. Integrated working platforms and access systems ensure additional system safety while working. Furthermore, Doka offers extra protection systems such as working platforms or guardrail systems in order to meet individual requirements at the construction site. //

## Doka – a global presence in construction

For its years of experience in the infrastructure sector, Doka draws on a multitude of projects around the world. In the process, specific customer requirements and regional circumstances are the focal points.

### Light Rail in Qatar

Safety and economy are the focus of the project in Lusail City. In addition to high-performing shoring systems, various safety features such as working platforms, protective scaffolding and access systems are used in the construction of the first rail urban transport in Qatar. Thanks to the durability of Framed formwork Framax Xlife, in combination with the Platform system Xsafe plus, the system was being re-used more than 300 times to build several stations. Rapid material delivery times and Ready-to-Use Service parts ensure that the contractor will remain on schedule until construction is completed in 2018.

### Metro in Algeria

In 2011, during the Metro expansion between Hai El Badr and El Harrach in Algeria, Doka provided a timely solution and large material quantities for several station buildings and crossing areas.

With its comprehensive services and flexible as well as highly versatile systems such as the Large-area formwork Top 50, Doka supported the rapid and safe construction process for complex architectural requirements. Around 6,000 m<sup>2</sup> of Top 50 were equipped with Dokaplex and used for exposed concrete work as well. Robust Supporting construction frames and D15 as well as D22 Dam formwork ensured safe realisation of the project's particularities such as single-head walls of up to 8.33 m height.

### City Line in Sweden

Working on eight different railway areas, three tunnels and one bridge in Sweden's capital, Stockholm, Doka demonstrated its expertise in the field of modern railway construction. A total of 9,000 m<sup>3</sup> Load-bearing Staxo 100, 900 m<sup>2</sup> Framed formwork Framax X-life and 1,800 m<sup>2</sup> Top 50 were deployed in the complex infrastructure of the largest railway project in the Scandinavian nation. The project including various connecting routes between station and tunnel areas is expected to be completed in 2017. At that time, it will begin moving more than 100,000 passengers through the station each day.



▲ Even architectural demands such as with the Metro expansion in Algeria are realised quickly and safely with high-performing Doka products.



▲ Qatar is getting the first light rail transit network in the Middle East. It will be realised with a solution from Doka.

# New faces in East Asia & Pacific

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**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.



**Dean Weymouth**

Doka Australia  
Date joined: February 2014  
Designation: Warehouse General  
"I am part of the Reconditioning team and strive to provide a safe, reliable and high-quality product to our clients across Australia. I am proud to be part of the Doka Australia team."



**Jason David Braithwaite**

Doka Australia  
Date joined: February 2014  
Designation: Senior Sales Representative  
"I am excited to be part of the Doka team and I am looking forward to working and learning with the Doka team on all types of project."



**Kearin Peter Dombroski**

Doka Australia  
Date joined: February 2014  
Designation: Lead Stock Administrator  
"I am a highly motivated and dedicated person. My job is challenging and I enjoy it. I strive to ensure that loads are complete and on time and thank Doka for the opportunity."



**Paul McKenzie**

Doka Australia  
Date joined: March 2014  
Designation: Junior Formwork Designer  
"After finishing university, I have joined the Doka team. I am eager to develop formwork design skills and excited to learn and grow with Doka Australia."



**Wenjian Luo**

Doka China  
Date joined: March 2014  
Designation: Project Technician  
"The first time I heard about Doka was ten years ago. Doka's products and systems are very diverse, just like art. Being assembled on the jobsite, they look beautiful and excellent. I will do my best in my new position."



**Yougui Pang**

Doka China  
Date joined: February 2014  
Designation: Junior Project Technician  
"A journey of a thousand miles begins with a single step. The higher I got, the more amazed I was by the view. I am very glad to work together with all of you."



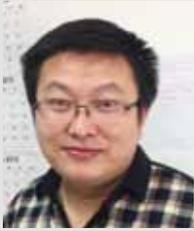
**Changjie Yu**

Doka China  
Date joined: January 2014  
Designation: Warehouse Supervisor  
"I am very glad to be part of Doka. I want all of us to improve rapidly with our company and work together."



**Yongjian Zhao**

Doka China  
Date joined: January 2014  
Designation: Project Technician  
"I complete the drawings for engineering designs within the time specified in the contract. I feel a great sense of satisfaction when looking at the engineering structure that is gradually completed."



**Wei Ke**

Doka China  
Date joined: December 2013  
Designation: Junior Project Technician  
"I am very happy to be a member of Doka. Everyone at the company works excellently. We are growing with Doka and I believe that the company will perform better and better. I am eager to see how things develop."



**Yausun Pan**

Doka China  
Date joined: February 2014  
Designation: Head of Sales Branch  
"Our bright future relies on teamwork and support from our colleagues. At Doka I believe we'll always get specific support."



**Xinhe Zheng**

Doka China  
Date joined: February 2014  
Designation: Senior Salesman  
"You reap what you sow – I wish to be successful in the field of bridge/transportation systems."



**Shnsuke Kobayashi**

Doka Japan  
Date joined: February 2014  
Designation: Project Technician  
"I think the highest priority is to respond to trends over time and ensure safety. I want to contribute to the construction industry with Doka formwork in Japan."



**Salihin Bin Udik**

Doka Singapore  
Date joined: March 2014  
Designation: Technical Worker  
"I am glad to work in this organisation and be part of the family. I am given the opportunity to learn new processes and products and pick up a new set of skills."



**Hossain Anowar**

Doka Singapore  
Date joined: March 2014  
Designation: Technical Worker  
"I enjoy working in a fast-paced environment and learning more about new products."



**Vijayan S/O G Thanasaygaram**

Doka Singapore  
Date joined: December 2013  
Designation: Hydraulics Technician  
"Hydraulics and technical duties have always been my interests since I joined the workforce. With Doka I can pursue my dreams with all the various types of equipment which need my attention."



**Armando JR Bahia Velasco**

Doka Singapore  
Date joined: February 2014  
Designation: Senior Project Engineer  
"What I like about my job is that one can have fun while learning and personally develop all the time. After having spent almost 7 years at Doka Qatar, I am very excited about the new challenges and the knowledge that I will gain here in Singapore. I am looking forward to learning the different culture, design and methods of construction in this region."



**Renato Samudio Colobong Jr.**

Doka Singapore  
Date joined: December 2013  
Designation: Group Leader Engineering  
"I was so inspired to enhance and share my professional skills when leading a new group of engineers. I want to get the most out of my team."



**Tiffany Kang Shi Ying**

Doka Singapore  
Date joined: December 2013  
Designation: Human Resource Executive  
"I am responsible for effectively handling all matters related to human resources. What I like most about my job is that I am always interacting with people and sometimes also have to manage challenging situations."

# In brief

News, dates, media, awards

## Architecture+Construction Materials 2014

One of Japan's most important comprehensive exhibitions of construction materials for housing, stores, commercial and office buildings was held from March 4 to 7, 2014 at the Tokyo International Exhibition Center "Tokyo Big Sight". The tradeshow was part of the Nikkei Messe. 95,386 visitors out of 206,240 made their way to the Architecture+Construction Materials' exhibition venue. For the second time since 2012 Doka Japan presented products and services at the exhibition and interacted with prospective customers in Japan.



## China Sichuan Housing and Urban-Rural Development Expo

In order to enhance Doka China's reputation in the southwest of the country, Doka China participated at Sichuan Housing and Urban-Rural Development Expo that opened in Chengdu on April 17, 2014. At the booth Doka set up Framax Xlife, Strip Corner and Dokaflex 1-2-4 to show clients advanced formwork systems and technologies in a more intuitive way. With satisfactory results, the Expo closed on April 19, 2014.



## Roadshow at Housing Development Board

Housing Development Board (HDB) is a statutory board tasked by the Singapore government taking care of public housing for Singapore citizens. On February 14, 2014 the organisation held a contractors' seminar on system formwork and drywall construction. Doka was invited to set up a small booth at the HDB office so that the contractors could establish business contacts, get information about and develop a better understanding of advanced products and systems.



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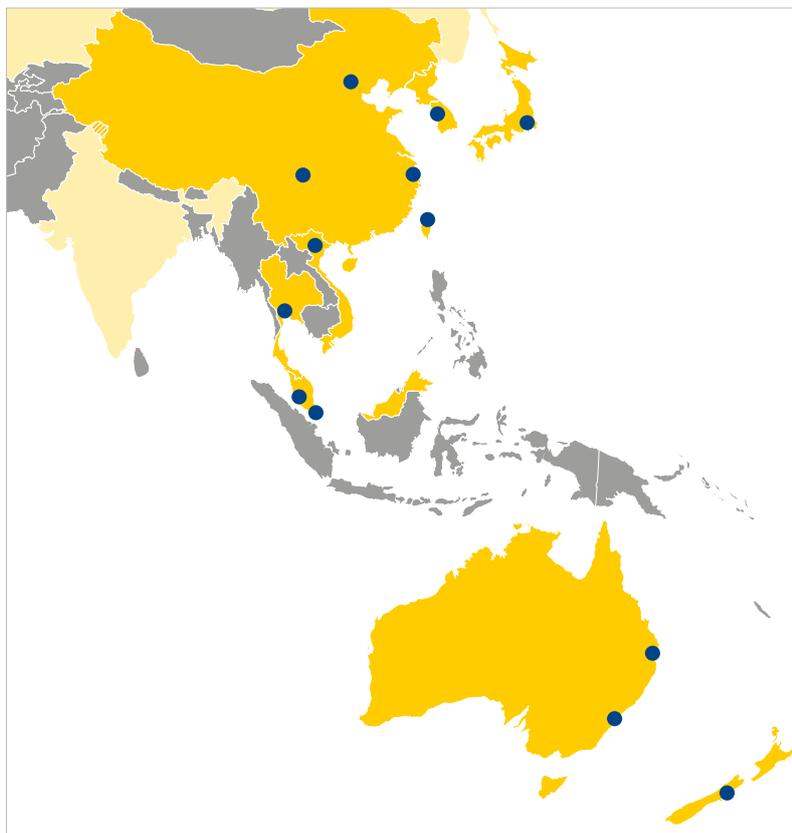
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▲ **Doka branches worldwide.**  
With more than 160 sales and logistics facilities in over 70 countries, the Doka Group has a highly efficient distribution network.

### Branches in East Asia and Pacific

- Doka Australia
- Doka China
- 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

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**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.**