

Doka Xpress

Middle East | The Formwork Magazine | Issue 01 | 2013

Nonstop Formwork Proficiency

Al Hilal Bank

Rising on Al Maryah Island

Msheireb

Five phases in Qatar

Busy in Kuwait

Prestige projects in hand

New Technology

Contractors form faster



Editorial



Dear readers,

Doka Middle East continues to service the construction market with high quality and easy to use formwork technology. Our massive and distinguished presence at the bauma in Munich this year revealed the perfect systems for forming in highrise, civil, energy and residential segments.

This new widened portfolio we are customizing and bringing to the region offers seamless compatibility to current Doka technology and fits perfectly to construction needs of today's projects.

Our solution oriented, skilled engineering teams in each country are happy to share vast experience and expertise with you for all challenges. No matter what budget, time schedule or level of complexity, Doka is the proven, most trusted formwork partner throughout.

I am pleased to present to you this year's Doka Xpress magazine, which is a shining example of just a few of the hundreds of Doka solutions ongoing.

Peter Vogel

Director Doka Group
Middle East

Index

Doka Energized in the Middle East	03
New Systems Middle East	04
Savvy in the Sultanate	06
Busy Construction in Kuwait	08
Msheireb Downtown Doha	10
Sign for Sustainability	12
Doka Pushes Schedule for Hajar Mountains Bridge	14
Doka Rises High on Al Maryah Island	16
Lebanon on the Rise	17
An Underwater Solution to Keep the Traffic Flowing	18

Cover picture: Twin Towers Qatar

Doka News

Powerful premiere for D35 ▶

Norway is continuously investing into the expansion of hydro power. In April 2014 the new "Dam Sarvfossen" at the Otra River will go operational. For its construction Doka's Dam formwork D35 is used for the first time. The standard system manages pouring sections of 5 m height and celebrates success onsite with integrated safety and logistics concepts.



◀ bauma 2013 – new records

Between 15th and 21st April 2013, 110,816 customers visited the Doka Cube in Munich, Germany, and saw close-up how Doka made its motto 'Pathbreaking. Beyond solutions.' come alive. A one-of-a-kind show performance, many product premieres, evening events and record visitor numbers were among the highlights of Doka's bauma presence.



The height of elegance ▶

Thrusting skyward in the South Korean capital Seoul, is what will soon be the tallest building in East Asia – the 555 m Lotte World Tower, which will add a striking new facet to the city's skyline. The Doka formwork solution fielded here uses SKE100 and SKE50 plus automatic climbers and the Protection screen Xclimb 60, ensuring swift, safe construction progress.





▲ For storage structures such as LNG tanks or silos Doka offers preferred solutions of self-climbing or crane-lifted climbing formwork systems with safety as the top priority.

Doka Energized in the Middle East

Firm offers customized formwork solutions for all Energy related projects.

Doka is concentrating its global capabilities to further solidify their package service and supply offerings to EPC contractors working on Energy and Petrochemical projects.

With 160 offices across 70 countries, a specialized Competence Center for Energy, and a presence in the Middle East since the 1970's yielding solid references within the Energy sector, Doka plays an important role in all concrete forming operations.

A Setup to Support

Doka is a highly prominent and capable supplier of all types of system formwork in the region. Its offerings for wall systems, floor systems, climbing systems, load-bearing systems, safety systems and general components receive acclaim for their high quality and integrated safety, ergonomic usage, and extremely long-lifespan. Further, the company's comprehensive approach to safety starting from the product development itself in Amstetten, Austria fits well with the extremely stringent codes in place by NOC's and IOC's as well as project management consultants. Doka in the Middle East has 12 offices across the Middle East, more than any other formwork supplier.

Each office has its own full-service operations and professional staff equipped to provide the necessary consulting and engineering including technical design, site-services, and logistical coordination to EPC contractors. In many cases the accessibility that Doka has to visit and service clients within remote industrial/petrochemical areas is highly important, particularly when it comes to training conducted at the jobsite and formwork instruction on usage of Doka systems. Stockyards exist in every country offering clients fast availability to the formwork systems in the respective quantities required.

Formwork Energy Portfolio

Heavy duty shoring is offered by Load-bearing Staxo 100, designed for large shoring-heights and high loads. Wide frames provide high-stability; ladders and anchorage points are integrated into the frames; and work locations are even safer with working platforms within the frames and the possibility for integrated manholes as well. Towers can be erected upright, or horizontally with ultimate focus on safety and speed with working operations being done on the level ground. Preassembled aluminum

>> Continued on page 4



▲ Framax Xlife is well-known in the construction industry for its high number of reuses, flexibility to cope with special requirements and ability to handle high concrete pressure.



▲ Heavy duty shoring is offered on this substructure by Load-bearing Staxo 100, which is specifically designed for large shoring-heights and high loads.

staircases can be combined with Staxo 100 for safe access to high workplaces.

Framed formwork solutions for walls, columns and foundations are supported by the lightweight systems Frami Xlife and Frami eco, which both offer a very high number of reuse cycles and can be set by hand or by crane. Framax Xlife is the heavy duty steel-framed crane assisted formwork for large areas with a high number of resuses. The system is also industry acclaimed to ideally cope with special requirements for forming high walls and handling high concrete pressure.

Large-area formwork Top 50 is the extremely flexible timber beam formwork for all shapes and loads. It is a 'construction kit' large-area formwork system can be pre-assembled by the Doka Ready-to-Use service on a project-specific basis. The shape, size, tie-rod spacing and type of formwork sheets utilized can be adapted to suit any requirement. Having the elements pre-assembled by Doka Ready-to-Use ensures top-quality, meaning precision element joints and a first-class joint pattern, even with challenging geometries. Doka also provides a very unique onsite assembly service for erecting formwork and equipment onsite, which pays off even more for the contractor.

Robust Solutions for All Energy Applications

For storage structures such as LNG tanks and Silos, both noted for their complex worksite meth-

odology – pre-stressing, tying and anchoring, platform widths and anchor ratings present special requirements. Doka offers preferred solutions of self-climbing or crane-lifted climbing formwork systems with safety as the top priority.

This allows for highly efficient formwork solutions for cooling-tower projects, by combining detailed formwork planning and workflow scheduling with fully mechanized self-climbing large-area formwork to achieve regularized workflow sequences with extremely short cycle times, and professional support both before and during the work.

When it comes to renewables, Doka offers professional support and the optimal solutions based on global project references completed on concreting for dams, powerhouses, turbine platforms, inlet and outlet structures, service tunnels, caverns, masts for wind-power installations.

Heavy concrete structures such as blocks or massive foundations and substructures, are important in energy construction in the Middle East, as are the associated camps, institutional and housing buildings required by clients to operate within oil & gas areas.

Doka has formwork solutions for all concrete applications related to Energy builds. With its services, and longstanding history of exceptional customer service in the region, it welcomes the next challenges. //

New Systems Middle East



▲ Doka The Formwork Experts have introduced the new high-tech device Concremote to the Middle East market which lets users measure in real-time early strength development of concrete in order to make targeted management of forming and concreting operations much simpler.

Concremote® – optimizing formwork operations with 'real time' automatic monitoring of Concrete Strength

Doka has introduced the new high-tech device Concremote to the Middle East market. Concremote lets users measure the early strength development of concrete on the site in real-time, making targeted management of the forming and concreting operations much simpler.

The device measures the concrete strength by way of sensors inserted in the concrete during pouring, without anyone needing to be physically present on the site to read out and record the measured data. These sensors regularly measure the temperature development of the fresh concrete and transmit the data to the Concremote computing centre. The 'de

Vree' weighted maturity method is used as the basis for calculating and providing reliable, standard-compliant information, in real-time, on the strength development of the concrete. Concremote uses two types of sensors for both wall and floor-slab applications.

Wireless transmission of the non-destructively measured values starts automatically. The system's long-life batteries, sturdy sensors and cable-free data transmission are user-friendly. The results can be accessed at any time on a secure web portal and users can be alerted by e-mail or text-message as soon as the specified early strength has been reached.

Concremote offers wide-ranging possibilities for optimising the construction process: if a customer



has entered a specific target value for a site, the strength values enable him to make precise recommendations regarding i.e. the earliest times for stripping the formwork, climbing and pre-stressing, and for the end of curing. The real-time measured data can also be taken into consideration for optimising the concrete formulation.

The Next Generation of Climbing Technology: Automatic Climbing Formwork SKE plus

Reaching for new heights just got simpler, faster and even more flexible. At the bauma exhibition 2013 Doka unveiled a number of highly precise new innovations for the formwork industry. In the highrise sector, Doka has dominated hundreds of projects with its highly acclaimed push of a button Automatic Climbing Formwork system in the Middle East. Now, with precise fine tuning and upgrades to an already proven system, Doka's new crane independent systems SKE50 plus and SKE100 plus further empower contractors in creating safe and controlled climbing environments.

Boasting load capacities ranging between 5 – 10 tons per climbing unit, the system applications are widely varying. The advanced, but simple to use technology covers applications from highrise cores, to industrial structures, bridge piers and pylons. It can also be used for cost-saving forming of exterior columns and additionally as a support system for installation of façade elements. Buildings with ever-changing geometries and complexities have met their match as the system is especially designed for structures of any shape and height. This is because

of a modular design concept. Safety is taken to the next level with an all-round enclosure and weather protection at any height. Large numbers of multiple climbing units can be repositioned at the same time due to all hydraulic and remote controlled technology from Doka. For even higher performance on forming corewall shafts, the new SKE plus offers different shaft solutions for all shaft sizes. Enhanced workspace, accessibility for reinforcement work, and quicker climbing operations are just a few of the main features by Doka for shaft corewall applications.

Faster Slab Formwork Innovation Dokadek 30

Gaining fast popularity in the Middle East, Dokadek 30 is the beamless handset system for speed and safety onsite! Its lightweight steel construction with galvanized and powder-coated frames and proven Xlife sheet with built in plywood, make it excel in safety, ease of handling and high-speed for onsite use.

Spacious 3 m² panels are ideally sized for forming large areas fast, plus greatly reduce the number of separate parts that need to be shifted. Results are that contractors can make their entire forming operation quicker, also due to the fact that no crane is needed during setup. With the suspension clamp, infill zones can be formed quickly as Dokadek 30 merges seamlessly with the adaptable floor-slab system Dokaflex. Safety is defined in the workflow as Dokadek 30 is deployed from the floor level and erected from below with no need for anyone to step onto the slab formwork itself. //

▲ Doka's new upgraded crane independent systems Automatic Climbing formwork SKE50 plus and SKE100 plus offer advantages for controlled, faster forming such as enhanced workspace, accessibility for reinforcement work plus quicker climbing operations for shaft corewall applications.



▲ Innovations such as Doka's Dokadek 30 are gaining popularity on project sites in the region because of durability, safer erection and dismantling, and ease of use by any level of work-crew for forming large areas fast.

The Challenge

Meeting the tight construction schedules and maintaining close coordination with the contractor to ensure optimized usage of the Staxo 40 system for shoring, being their first usage of the system. To provide fair faced concrete results for the basement parking and in general high quality finish for the other areas.



The Solution

Doka coped with material requests and deliveries with short notice periods, and provided regular onsite support and formwork instruction through the entire project duration.



▲ Doka in Oman provided the fastest solution for shoring and slab formwork for the prestigious GUtech project to the contractor Larsen & Toubro (Oman) LLC.

Savvy in the Sultanate

Doka Muscat LLC is leading as a key supplier for many projects of all types and sizes in Oman catering to the demands of increased economic prosperity.



Practical tip

Repositioning using Staxo 40 wheel

For efficiency, Staxo 40 shifting wheel enables finished tableforms or tower units to be moved to their next location.



Among the latest of projects is the completed new campus of the German University of Technology (GUtech) at Halban in Barka and the nearly finished Jasmine Complex, a mixed use development in the Al Khuwair area of Muscat Governorate.

German Education Comes to Oman

GUtech will eventually accommodate 10,000 students and staff, and the design by German Architects and Engineers Consultancy firm "Hoehler+Partner LLC" of the campus which sprawls over a 25,000 m² area, combines excellence of a Germany university of technology with traditional Omani architecture. The first phase of the campus includes the main campus building with all academic and administration facilities, three accommodation buildings for students and staff and

associated site infrastructure. The next three phases will consist of education, commercial and accommodation buildings, a museum, a mosque and open recreation spaces.

From the initial stages Doka has contributed significantly to speed and safety onsite with supply of key systems. Load-bearing Staxo 40 towers shored more than 14,500 m² of slab. The lightweight frames of the Staxo 40 system and its safe and easy ergonomics in terms of erection and dismantling save up to 80% time compared to traditional solutions. Additionally 8,000 m² of the highly adaptable Dokaflex tables were in service for casting the curving slab floors.

For the construction of GUtech's car-park area, Doka Oman supplied a combination of Staxo 40 and



▲ From the initial stages Doka has contributed significantly to speed and safety onsite with supply of key systems.

Dokaflex table systems. Efficiency and cost savings were imperative for the 1,600 m² area, whereby Doka systems were used for the first casting step and then subsequently reused. The car-park required a viable solution for floor-slab thicknesses of 30 cm and floor ceiling heights of 4.95 meters for the structure respectively.

Jasmine Complex – Luxury with all Doka Formwork

The Jasmine Complex, located in Al Khuwair, is a mixed-use project that consists of two towers and contains residential, retail, office and recreational spaces. The luxury project commenced in June 2012 with an estimated completion date in mid-2014. Doka delivered the entire technical formwork solution, which was rated by contractors United Golden

Construction Company as the most superior, with all necessary systems and components for the entire project. Approximately 8,000 m² of Timber-beam floor formwork Dokaflex were used for all floor work, because the system is flexible and also able to handle the changing profiles and slab heights. Additionally the 3 meter high single-sided walls were formed with the flexible system Large-area formwork Top 50.

Futhermore, with its ability to adjust to varying heights, Column formwork Frami Xlife aided the challenge to form all the columns and manage the structure's different wall height requirements. Located approximately twenty minutes from Muscat International Airport and five minutes from Al Qurum beach, Jasmine Complex will certainly be a flowering addition to the city's growing housing endeavors. //

▼ Partnering with United Golden Construction Company, Doka systems and engineering met challenges for single side pouring of high walls, different wall height requirements, and changing profiles and slab heights.





▲ The expansion program of the Kuwait International Airport consists of a carpark, a fire-station building and a prominent new office space.

Busy Construction in Kuwait

Several job sites of different sectors are on the go at the moment in the buzzing state. Doka delivers solutions opted for cost efficiency, high safety standards and speedy construction progresses with high quality results for these key projects.



The Professional

"We are pleased with Doka's fast track delivery, pushing of material and urgent requirements ex-stock. Round-the-clock support from Doka sales, technical and supervisory team in Kuwait is exactly what is required for this government project."

Ahmed Issa, Project Manager, MA Kharafi & Sons, who was also involved in the tunnel project, mentioned above.

Sabah Al Salem University Carpark Packages 6A & 6B

Contractor: Al Ahamadiah

The Challenge: Both the the construction of package 6a, nine two storey carparks covering an area of 165,000 m² and package 6b, four two storey carparks covering an area of 75,000 m², will have two additional floors and a shaded roof.

The Solution: Doka's highly flexible Large-area formwork Top 50 has benefited the project as the contractors already have vast experience in using the system. This sped up the formwork erection. Doka has satisfied the customers with prompt delivery services and answers to quick and accurate technical inquiries. Since Doka has already been the major formwork supplier on the Sabah Al Salem University mega-project (6 mio m² total area), its experience with the main client was extremely

Staxo 40 was the optimal solution on several areas of the University jobsite, including the Utility Tunnel.



helpful for the successful cooperation with the carpark contractors. Logistics and onsite formwork support was provided by a Doka Formwork instructor to assemble the panels.

Kuwait International Airport Administration Building

Contractor: MA Kharafi & Sons General Trading & Contracting

The Challenge: Doka's scope at Kuwait International Airport features three different construction areas. A carpark, a fire-station building and a prominent new main administration building are part of the Airport's expansion program.

The Solution: Wall formwork and staircases of the facility are being formed using Large-area Top 50 wall formwork up to the 9th floor of the building, which is the entire concreting scope for this structure. The typical basement heights were 5 m and then a standard height of 4.5 m from ground to the 9th floor. Most recently another Doka

system will be introduced on site. Doka Climbing formwork MF240 is to be used for special inclined walls on the front façade of the building which has an unique curvature of 4 m height

Sabah Al Salem University Utility Service Tunnel

Contractor: Kuwait Company for Process Plant Construction & Contracting

The Challenge: Construction of an access tunnel which will lead directly into a building and connect the campus with various MEP areas. The tunnel construction scope includes all civil works like escape stairs, ramps and exhaust shafts, sanity and storm water pipelines.

The Solution: Load-bearing tower Staxo 40 provides structural support for slab thicknesses of 20 cm for heights over 7 meters. The successful results of other megaprojects in the region impressed KCPC in addition to their own trial of the system. //

The Professional

"Staxo 40 was light and easy to handle on site, fast in erecting and shifting. Wheels attached allowed entire towers to be safely and easily shifted from one area to another without having to dismantle the shoring."

Engineer **Mahmoud Hammad**, Construction & Operations Manager who's working closely together with project manager Eng Ihab Assaad Riad

▼ The university carpark is formed with Doka's universal formwork Top 50 and ensures fast and safe progress on site.



The Professionals

"Familiarity with the Top 50 system coupled with the extremely efficient knowledge Doka had from its history of working on this large site saved us a lot of potential hassles on both carparks."

Engineers **Philip Patanian** and **Jack Aramani**, Project Managers from Ahmadia for packages

The Formwork Experts.

Msheireb Downtown Doha

Contactors: Phase 1A – Hyundai Engineering-HBK Contracting JV, Phase 1B – Carillion-Qatar Building Co. JV, Phase 1C – Brookfield Multiplex Medgulf, Phase 2 – Arabtec Construction Qatar, Phase 3 – HBK Contracting-Obayashi JV

Client: Msheireb Properties

Doka Systems Used: Dokaflex tables, Framed formwork Frami & Framax Xlife, Load-bearing towers Staxo 40 & 100, Supporting construction frame, D22 Dam formwork, Large-area Top 50, and Climbing formwork 150F

The Challenge: To engineer viable solutions, and to manage daily technical and logistics scope for 5 phases of the megaproject.

The Solution: Doka stocks and logistics management support accurate deliveries on short notice and prescheduled. In parallel round-the-clock project coordination and formwork instruction services uphold safety and provide efficiency.





Sign for Sustainability



▲ More than 1,800 m² of Large-area formwork Top 50 are in use at the Kahramaa Awareness Park.

▼ Complex architecture for a complicated topic: The Kahramaa Awareness Park is dedicated to sustainable energy and water desalination.

The Kahramaa Awareness Park in Qatar is one of a kind. A model center dedicated to water conservation and electricity is the park's main focus. An architecturally unique model center was designed to transmit information on processes around sustainability. Especially for children, but also for grown-ups, the awareness park will be a source of knowledge and informational entertainment.

Sinohydro Group Ltd. has been assigned to execute the complex project and with Doka has chosen a strong partner for the formwork. The area consists of several more or less independent buildings and spaces. All structures of the buildings required 3D Formwork design due to the extravagant shape of the congeries. A special challenge is the solution for the integrated tower. The tower's structural geometry varies from floor to floor and calls for detailed planning of all casting steps and accounting for modifications in every step.

Despite those challenges, Doka's target was to reduce the number of formwork alterations to save construction time. To further reduce the complexity onsite, Sinohydro decided to make the Kahramaa Awareness Park a Doka-formwork-only job site.

Large-area formwork Top 50 is used as wall formwork for the elliptical shapes of the building, whereas Load-bearing tower Staxo 40 and Climbing formwork MF240 serve as support for the walls. The flexibility of Top 50 makes it a brilliant solution for all kinds of geometries while Staxo 40 and MF240 bring the necessary safety aspect to the construction even in great heights. Covered access to all formwork elements is provided at all times. The big inclination of the tower's front wall has been solved with the use of Dam formwork D22. About 3,700 m² of slab formwork have also been delivered to the job site. The customer benefitted from exact optimized formwork planning with a minimum of components which saves time as well as costs. This can also be seen as part of a sustainable life cycle during the construction of the Kahramaa Awareness Park. //





▲ As part of the BEAT THE HEAT campaign supported by Doka Qatar WLL, mobile units traveled through Lusail's 38 km² area to distribute reusable water bottles and to offer heat stress prevention tips to workers.

Doka Supports Heat Stress Campaign in Qatar

Company teams up with developer in health and safety awareness campaign

Doka places high emphasis on its role as a supplier to uphold safety.

This year, with July being one of the hottest months, Doka Qatar WLL joined forces with Lusail Real Estate Development Company to run a heat stress campaign. The focus of the cooperative effort was to create awareness on necessary steps for contractors and developers to practice safe working during the summer's scorching temperatures which are mainly above 40 degrees Celsius.

Thousands of onsite construction workers benefited from this health and safety campaign entitled BEAT THE HEAT on prevention and symptoms of heat stress and related illness. The campaign was delivered in multiple languages, plus banners in four languages were erected along major bus routes of Lusail City sites. Reusable water bottles were distributed to all workers encouraging hydration and in various locations workers were able to join a mobile bus unit delivering classroom style lectures on heat stress prevention and how to call for help in case of emergency.

The reaction from the participants was extremely positive. A foreman from a contractor said, "I have worked in several companies here in Doha and this is the first time that I receive a health and safety awareness exactly here in my work area. The information was easy to understand and I am glad that the initiative was taken."

According to Ralf Buerger, Managing Director Doka Qatar, "As a supplier to many projects in Qatar, Doka collaborates daily with jobsites and their employees with the imperative goal to provide all safety precaution information to those who are erecting our material. By partnering to execute the BEAT THE HEAT campaign we have taken our approach one step further toward increased occupational health and safety of workers onsite. I am proud that Doka's support facilitated one more information avenue to help workers to stay healthy and hydrated while executing the demands of the fast paced Qatar construction industry."

Safety is written large within Doka Group on all levels. As early as the planning phase Doka supports its customers with professional consulting from its long expertise with safety issues. In depth analysis and provision of individualized solutions incorporate the correct and necessary safety solutions. High quality documentation such as formwork utilization plans, instruction manuals and safety data sheets are an important and vital basis to support customers further with usage of Doka formwork. Onsite, the company provides formwork instruction and dedicated project coordination onsite to support contractors with jobsite safety in deployment of Doka material and those who erect it is upheld. Internal campaigns within Doka and various initiatives foster awareness of the topic and make an important contribution towards motivating employees. Every year, a safety spotlight is launched in the company for World Safety Day on April 28th. //



▲ In a highly visible effort, campaign banners in four languages were erected along major bus routes of Lusail City sites.



▲ Engineered by Doka! Design support from Doka during early stages contributed to smooth construction for the remote jobsite.

Doka Pushes Schedule for Hajar Mountains Bridge

The Hajar Mountains lie parallel to the east coast of the United Arab Emirates. As the highest mountainous range in the region, and Hajar translated from Arabic as “Stone Mountains”, it is remote and somewhat difficult in terms of accessibility.

Nestled within, Catalyst Viva das General Contracting is constructing a 270 m long and 30 m wide bridge, scheduled for completion in August 2013. For Catalyst, the Construction and Maintenance of Hatta-Muziraa Road Stage A is their first project of such kind, and choosing a right formwork supplier is key to successful and on time project completion within just five months during scorching summer heat.

Expert Planning and Support

With Doka, the contractor had support and advice

early on from the offer stage beyond pure formwork related questions. Doka provided documentation and design which helped to getting a quick approval from the consultant.

Doka's onsite service kicked off the project as staff did not require an introduction to the formwork material. A main advantage here is the presence of Doka's trained team onsite which is saving the contractor tremendous time. Additionally, Doka's Ready-to-Use service allowed for further time reduction due to the



The Facts

Jobsite: Construction and Maintenance of Hatta-Muziraa Road Stage A

Location: Hatta, United Arab Emirates

Customer:

Catalyst Viva das General Contracting

Systems in Use: Load-bearing tower Staxo 100, Large-area formwork Top 50, Dokaflex

The Solution

For the concreting of this remotely located bridge deep within Hatta mountains, Doka supplied 70,855 m³ of Load-bearing towers Staxo 100, used to shore heights of up to 14.5 m.

pre-fabrication of Large-area formwork Top 50 panels in Doka's specially equipped covered warehouse.

All Encompassing Scope from Doka

When completed, the substructure will consist of foundations, abutments, piers and pierheads. All objects were constructed with specially prefabricated Doka Large-area formwork Top 50 and Staxo 100 towers as working platforms to reach the supporting heights of up to 10 m.

The superstructure is supported by 70,855 m³ of Load-bearing towers Staxo 100 used to shore heights of up to 14.5 m, supporting the 5 box girders bridge. Staxo 100 are erected fast and allow high safety due to horizontal assembly, safe access and integrated

anchorage points for personal fall arrest systems. Dokaflex 20 forms the complete decking area, covering 8,100 m².

The project is located within a Wadi, or a valley containing water only during heavy rainfalls, bearing the risk of washing up the ground. Additional Load-bearing towers Staxo 100 were put in place as stabilisers to prevent any potential weather condition risks to the bridge shoring.

With major challenges of working daily in over 40 degree Celsius temperatures and with the jobsite in a highly remote location, Doka and Catalyst work together as strong partners on schedule with perfect organization and on time. //

The Professional

"With Doka we had full support, as for, documentation, design and very well organized team, which allowed a quick performance and consultant approvals."

Ziad Hamzy, CEO, Catalyst Viva das General Contracting

► Doka is 100 % formwork supplier for Al Hilal Bank's commercial office tower on Al Maryah Island.



The Facts

Jobsite: Construction of Al Hilal Commercial Office Tower, Al Maryah Island

Location: Abu Dhabi, UAE

Customer: Al Fara'a General Contracting

Systems in Use: Dokaflex, Dokaflex tables, Large-area formwork Top 50, Automatic climbing formwork SKE50, Table-Lifting-System TLS, Load-bearing tower Staxo 40 & Staxo 100, Supporting Construction Frame (SCF)

Doka Rises High on Al Maryah Island

Al Maryah Island is further developing into a key commercial and financial district in Abu Dhabi. Part of the development is Al Hilal Bank's new, shining commercial office tower.

The Solution

Doka is entrusted with all forming operations to execute a thirteen month schedule for shell completion of Al Hilal Bank's new commercial office tower in Abu Dhabi.

The construction of the tower is well on its way with Al Fara'a General Contracting and formwork supplier Doka, who is providing 100% of the formwork systems to the project.

The building consists of 6 parking basements, three sub podium parking levels and 25 floors. Doka supplied a complete formwork solution for all vertical and horizontal in-situ concrete elements.

To achieve a five day pouring cycle, horizontal elements are built with Dokaflex tables in conjunction with Doka's Table Lifting System (TLS), and the vertical elements are formed with Large-area formwork Top 50 and Automatic climbing formwork SKE50.

The TLS is mounted on the edge of the building as a climbing device to completely crane independently move the table systems up to the next floor. A comprehensive system of features makes for fast and safe working, both when operating the TLS itself and during repositioning of the table forms. The TLS

can lift the floor-slab formwork over three levels and carries on its operation safely even during strong winds.

The solution for great heights and heavy floor-slabs uses Doka's load-bearing systems Staxo 40 and Staxo 100 to allow for logical, safe and fast assembly. Delivery frequency and storage space within the project area are restricted, so logistical coordination and on time delivery are crucial in keeping the project on schedule.

With concrete work scheduled for completion in just 13 months, Doka's time saving formwork systems are fundamental to improve construction speed.

Doka Abu Dhabi's team provides daily support through project coordination and assistance to uphold safe and secure progress onsite. Al Fara'a General Contracting and Doka are working as strong partners toward completion of the challenges with full success. //

The Professional

"With a very fast schedule, the right systems and constant support Doka has provided to us yet again an excellent job."

Raymond Abu Antoun Saad

Project Manager

Al Fara'a General Contracting



Lebanon on the Rise

While one of Lebanon's main sights, the famous Jeita Grotto, is deep down under the earth – the new landmarks are built on the surface. With the Trillium Beirut and the Crystal Towers, Doka contributes significantly to the new skyline of the country's capital, where old and new uniquely co-exist.

The Crystal Towers consist of two highrise buildings, both 100 m tall and will house several floors for commercial and residential purposes by 2014. The Contractor KFOURY Engineering & Contracting s.a.r.l. relies on a strong solution by Doka, which is based on Doka climbing and table systems. While quickly increasing the height of the building, Doka's Climbing systems MF240 and 150F decreased labour costs by saving construction time through very short cycle times. Fast delivery times of the material due to the Doka warehouse close to the jobsite and a high standard of safety on site had been crucial decision factors for the customer, who currently runs a second project with Doka.

Trillium Beirut is a threefold contemporary space consisting of two residential towers and a commercial building which will also be opened by 2014. Due to the tight construction schedule KFOURY opted for Doka's engineering service and pre-assembly to speed up the erecting of the climbing systems, table- and slab formwork. The flexible use of 16 pieces of Climbing system 150F and Dokaflex 20 generated a high speed of about 12 days per floor. Onsite supervising of trained Doka personnel facilitates quick cooperation and is ensuring the projects success. //

The Professional

"Kfouri Engineering is absolutely impressed with Doka's expertise in climbing and the efficiency of Dokaflex table system. Our engagement with Doka resulted in meeting our tight construction schedule and cost savings due to reduced manpower."

Assaad Naoum
Projects Director
KFOURY Engineering



▲ Trillium Tower will open by 2014 already. The threefold project combines residential and commercial buildings.

◀ Crystal Towers will be a shiny highlight in Beirut. Climbing system MF240 helps to build the 100 m tall towers on time.

► The tunnel formwork traveller was completely preassembled from the flexible, high-performing 'heavy-duty supporting system SL-1' in the dry dock in Baltimore, where the first trial pours for the eleven tunnel segments were carried out at the beginning of this year.

The facts

Location: Norfolk, Virginia, USA

Contractors: SKW consortium of Skanska, Kiewit & Weeks

Start of construction: 2012

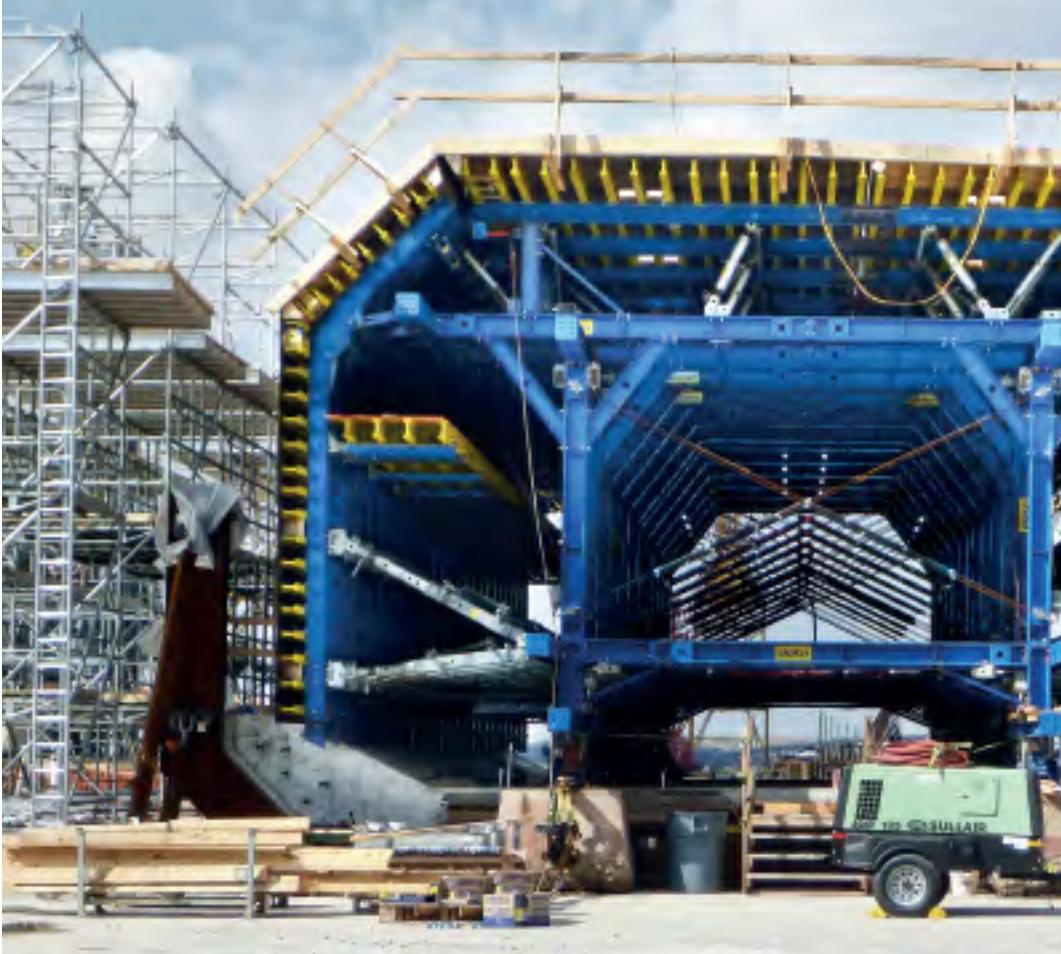
Completion scheduled for: 2016

Type of structure: Immersed tunnel

Length of structure: 1,13 km

Systems in Use:

Products: Heavy-duty supporting system SL-1, Large-area formwork Top 50 and a custom steel construction for the outside formwork; Services: Pre-assembly, Field Service and Doka-Engineering



An Underwater Solution to Keep the Traffic Flowing

The major order that Doka 'landed' for the Second Midtown Tunnel will actually be finished underwater! This 1,13 km long immersed tunnel will link the cities of Norfolk and Portsmouth in the US state of Virginia. The eleven separate segments of the tunnel are being cast at a dry dock in Baltimore, MD, after which they will be floated about 320 km south to the Elizabeth River and lowered to the riverbed. The 'heavy-duty supporting system SL-1' tunnel formwork that Doka is supplying to this project is a high-performing yet cost-saving solution.

The Professional



"We face some challenges on the Midtown Tunnel to achieve tight tolerances and ultra-high precision. For us in the team, that means we have to communicate and work together very intensively."

Andreas Zitzenbacher

Doka Business Development
Competence Center

Norfolk and Portsmouth are located in the Commonwealth of Virginia in the United States. Both cities have been linked beneath the Elizabeth River since the building of an underwater tunnel just over 50 years ago. Carrying around a million vehicles per month, this transportation artery is one of the busiest routes east of the Mississippi. Chronic congestion in and around the two-lane tunnel, and long journey times, are the order of the day. To relieve this situation, the old Midtown Tunnel is to be rehabilitated and a new two-lane immersed tunnel built alongside it. Together with the existing tunnel, the Second Midtown Tunnel will double traffic capacity on this route.

Doka supplied the formwork solution for a similar project in 2005: the 3 km long Busan-Geoje Fixed Link is one of the deepest immersed tunnels in the world and connects South Korea's second-largest city, Busan, to the island of Geoje at a depth of as much as 60 m. The 100-percent custom-built solution convinced the construction firm Daewoo and enriched the Doka tunnel experts' long-standing experience with yet another prestige project.

'Deep-diving mission'

The 1,13 km long Second Midtown tunnel will consist of eleven separate segments, each measur-



▲ The combination of the high-performing 'heavy-duty supporting system SL-1' tunnel formwork and Large-area formwork Top 50 is ideal for the box cross-section of the eleven tunnel segments for the immersed Second Midtown Tunnel.

ing approx. 106 m long by 16 m wide by 8,8 m high. Each segment weighs nearly 13.000 tons and is being pre-cast in a dry dock in Baltimore, Maryland. The finished segments will then embark on an about 320 km southbound voyage, being floated down Chesapeake Bay on giant barges to the immersion site in Norfolk. Here, the tunnel segments will be fixed together underwater and sealed with rubber seals. This special system, and the use of watertight concrete, make the Second Midtown Tunnel only the second such tunnel in the whole US not to need an external steel skin.

At the dry dock, the preassembly work on the Doka tunnel formwork traveller was completed at the beginning of 2013 and the first trial pours are now being carried out. From June onward, the tunnel segments will enter 'series production'. From February 2013 until April 2014, preparations at the tunnel site under the Elizabeth River will be in full swing. The riverbed around the tunnel will be dredged into shape so that the segments can be lowered into place, on schedule between November 2014 and November 2015. Once it is completed in

September 2016, the Second Midtown Tunnel will get traffic flowing smoothly again across the bed of the Elizabeth River.

High-performing formwork solution

By opting for the heavy-duty supporting system SL-1 from Doka, the SKW Constructors Inc. consortium of Skanska, Kiewit and Weeks have chosen a flexible, high-performing formwork solution. Designed for high loads, the Heavy-duty supporting system SL-1 provides an exceedingly strong, torsion-proof sub-construction for the tunnel formwork.

The heavy-duty supporting system SL-1 has already performed convincingly under difficult geological conditions on Switzerland's 57 km long Gotthard Base Tunnel, the longest railway tunnel in the world. Its short cycle times, and ease of formwork set-up and removal, were clinch factors for the client. This heavy-duty supporting system was also fielded on the large-scale upgrade and extension of the M4 metro line in the Hungarian capital Budapest. //



▲ Preparations for the immersed Second Midtown Tunnel are underway in the dry dock.

In brief

News, dates, media, awards

Twin Towers - Higher, Faster, Better!

As a key formwork supplier, Doka has had a strong influence on the success of the eye-catching highrise project Twin Towers located in the West Bay district of Doha.

X Marks the Spot

An X shaped building will soon be visible from 1.5 km away. Doka is working with JV TAV-CCC-Arabtec toward construction of the Midfield Terminal Complex Building at Abu Dhabi Airport, whereby the scope is to supply 100% of the typical floor beams and slab support. Doka engineers devised the solution based on the short fifteen month completion parameter.

Infrastructure in Oman

Doka Oman provided an excellent showcase of possibilities for contractors in the Sultanate at Infra Oman Exhibition in October. Hundreds of construction professionals visited the bespoke booth, which also highly emphasized the need for safety solutions on upcoming bridge and tunneling projects.

Apppletely Doka

With two amazing smart apps for iPads, Dokadek 3D and Doka Tools, formwork technology meets information technology. With the Dokadek 3D app you'll see just how easy the system is to handle via Augmented Reality. With the Doka Tools app, it takes just a couple of seconds to optimize the components for Dokaflex floor-slab formwork, and to work out the permitted rate of placing and the maximum fresh-concrete pressure during pouring.



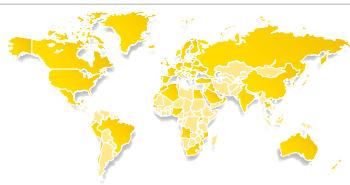
▲ When complete Midfield Terminal Complex will be a major crossing point for travelers from around the globe.



▲ Solutions for all types of infrastructure were presented at Infra Oman 2013.



▲ Download the Dokadek app and Doka Tools app on www.doka.com/apps



▲ Doka branches worldwide.

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

Doka Middle East

PO Box 61407
Jebel Ali Free Zone
Dubai, UAE
T +971 4 870 8700
F +971 4 870 8702
marketing-me@doka.com



Like us on Facebook



United Arab Emirates

Dubai | **T** +971 4 870 8700
Abu Dhabi | **T** +971 2 676 5855
Sharjah | **T** +971 6 556 2801

Saudi Arabia

Jeddah | **T** +966 12 669 1008
Riyadh | **T** +966 11 479 1003
Dammam | **T** +966 13 832 0606

Qatar

Doha | **T** +974 4 4500 628

Oman

Muscat | **T** +968 244 844 45

Kuwait

Kuwait | **T** +965 24 82 24 62

Bahrain

Bahrain | **T** +973 17 402 810

Lebanon

Beirut | **T** +961 1 612 569

Jordan

Amman | **T** +962 6 554 5586