

Doka Xpress

The Formwork Magazine

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**101 floors
in record time**



Challenging job

Shining Towers, Abu Dhabi ... page 8

Ready-to-use service

for problematic bridge ... page 16

**Keeping up with
high requirements**

Doka Saudi Arabia ... page 10

Megawalls

Speedy wall formwork ... page 18

doka
The Formwork Experts

Editorial



Dear readers;

The demands being made on the market and at construction sites are changing. Among other things, it is becoming ever more important for project owners to comply with the statutory safety regulations! Hardly surprising, when you consider just how much a client's image, costs and deadline-keeping depend upon work progressing safely and quickly. For any supplier aiming to help construction firms meet the ever-tougher demands being made of them, dependable long-term partnerships are thus crucial. In times like these, the only firms that "make the grade" as real corporate partners are the ones that have a highly efficient organisation and bags of staying-power, that can take on challenges, and that are underpinned by rock-solid balance sheets.

The Doka Group is one such firm. It gives its clients highly professional support in every phase of the construction sequence with reliable, high-performing formwork solutions and services. Doka is constantly researching into pathbreaking ways of making it easier for our customers to form CIP concrete. Don't miss the unique opportunity of coming to the Doka expo pavilion at bauma 2010 to see for yourself how the agenda is being set for the future of formwork technology!

Yours,
Josef Kurzmann
Executive Director, Doka Group

Doka News

The tallest building in Qatar ▶

Doha – rising over 430 meters above the Arabian Gulf, the Dubai Towers will be the tallest building in Qatar. With the high-performing automatic climbing formwork solutions SKE50 and SKE100, the contractors reach heights with maximum speed and safety. Doka Qatar keeps delivering comprehensive assistance at each phase of the project.



▲ Economical solution for infrastructure

Algeria – Planned for a distance of 65 kilometres, the second ring road motorway project being under construction in the south of Algiers includes two parallel bridges, 70 m long each. Doka offered an economical rental package and full on-site support consulting.

▲ Masdar City project

Abu Dhabi – The plans for the Masdar Institute of Science and Technology envisage a structure with a floorplan of more than 22,000 m². Doka has contracted to supply over 14,500 m² of d2 load-bearing towers, 135 Dokaflex tables, large-area Top 50 formwork for the core walls, as well as 117,000 running metres of formwork beams.

Index

page



Doka's innovations



KSU, Riyadh



"Ready-to-Use"

- ◀ Formwork-technology pathbreakers
Innovations at bauma 2010 3
- Marina 101 – four-day cycle to a
soaring 425 metres 6
- Right on schedule with SKE50,
Shining Towers 8
- ◀ Keeping up with high requirements 10
- Landmark infrastructure with Doka 12
- 8 m tall walls in a single pour 14
- ◀ 100 % success with perfect-fit formwork ... 16
- Ultra-smooth fair-faced concrete 18
- Climbing at the push of a button 19
- In brief 20

Formwork technology pathbreakers

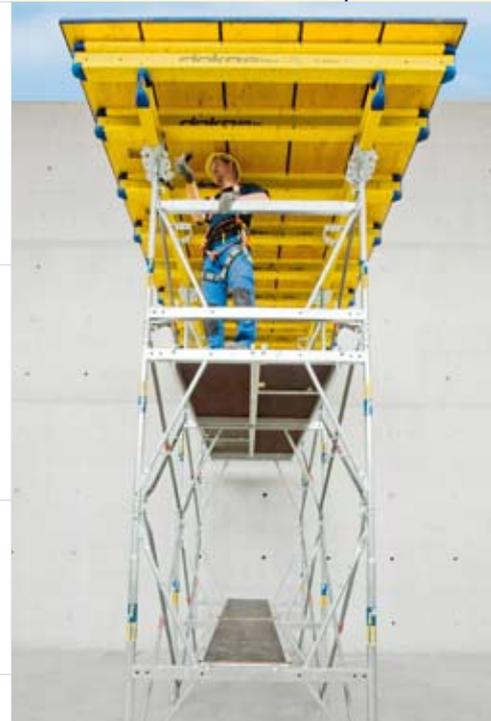
At bauma 2010, Doka will be presenting solutions for the challenges of the future: groundbreaking innovations that lay down a wholly new standard for ergonomic design and safety.

Load-bearing tower Staxo 40

Revolutionary load-bearing tower for the building construction segment

With **Staxo 40**, Doka unveils a lightweight framework scaffolding for the building construction segment that sets a new benchmark for workplace ergonomics and speed. It has 50 % fewer separate components and comes with optimised lightweight H-frames, so it can be erected

in half the time that a single-leg system would take. Its unique frame geometry permits barrier-free working beneath the towerframe superstructure. Even for great shoring heights, the system is quick and safe to erect and dismantle, as it comes with extensive safety accessories. 



▲ The unique H-shaped frame geometry of the Doka load-bearing tower Staxo 40 permits barrier-free workplace access routes.

Monotec tying system

The fast wall-tying system in the business



The **single-sided Monotec tying system** for Framax framed formwork and all Doka timber-beam formwork can even be retrofitted right on site, and lets users make big savings on the time and equipment needed for tying – but without investing in a new formwork system. With this simple upgrade, time-consuming form-tying operations can be shortened by 25 %. 

◀ The Monotec single-side tie shortens the form-tying operations by 25 %. A combination nut holds the tie-rod and substitutes for the quick-acting clamp RU, saving 40 % of the connectors.

▼ The new Formwork beam I tec 20 has an 80 % higher load capacity and optimises the materials usage of formwork systems.

Formwork beam I tec 20

Twice the load capacity, same weight

The new **Formwork beam I tec 20** now offers yet another technological leap forward. Compared to conventional 20 cm high timber formwork beams, it has roughly the same weight but an over 80 % higher load capacity! This opens up radically new scope for optimising the materials usage of formwork systems.

As well as with the proven end-reinforcement from the “Top” beams, the I tec 20 is also reinforced with plastic along its flange, which makes it less prone to splintering when nailed. The I tec 20 has the same dimensions as the H20 top, so it is fully compatible with all Doka systems. 





Large-area formwork Top 100 tec

Fast forming times for walls

Whenever walls need to be poured particularly fast and in superlative quality, **Large-area formwork Top 100 tec** is now the very first choice. The high-load I tec 20 beam makes it possible to dispense with entire waling levels and still benefit from fast pours. This reduces the number of wall-ties – and the labour costs – by 1/3. Tailor-made for every project, the shape, size, tie-hole pattern and form facing (screwed-on from the rear so as to leave no screw-head imprints) can be adapted to all possible requirements. 

▲ The new Large-area formwork Top 100 tec does without an entire waling level. This reduces the number of wall-ties – and the labour costs – by 1/3.

► Wall formwork FF100 tec delivers high-specification concrete finishes, with no limits on the pouring rate up to a height of 3.60 m.

▼ On the Dokaflex 30 tech system, the I tec 20 formwork beam allows wider spans, saving 1/3 of the floor props.

Dokaflex 30 tec

Less equipment – more performance!

With **Dokaflex 30 tec**, Doka offers a flexible hand-set formwork system for floor slabs that scores for extremely low costs-per-use. The high-load I tec 20 formwork beam is used here for the primary beams, allowing the props to be spaced much further apart. This saves around 1/3 of the floor props that would be needed by flex systems using H20s as their primary beams. As less equipment is used for the same area of formwork, the system takes 15 % less time to set up, and the equipment and logistics costs are also lower. 



Wall formwork FF100 tec

The fast formwork for fair-faced concrete

The high-load **Wall formwork FF100 tec** is based on the Formwork beam I tec 20 and delivers high-specification concrete finishes. Its high-load-capacity components save 1/3 of the form-ties, with equipment and labour-cost savings to match. Walls up to 3.60 m high can be filled in a single pour, with no need to worry about the pouring rate.

With its symmetrical form-tie pattern located well inside the element, and its form-facing screwed on from the rear, FF100 tec produces aesthetically appealing and top-quality fair-faced concrete surfaces. 



DoKart and Table Lifting System TLS

Even more mobility and flexibility when forming floor slabs

Doka has brought out two innovations that speed up the repositioning of tableforms yet again, in even greater safety and wholly independently of the site crane. For repositioning tableforms on the same level, Doka now offers its new **DoKart**. This compact unit is extremely nimble, can travel sideways and even turn on its own axis. The DoKart is robustly built for long life and high reliability, with large wheels that give it generous ground clearance. Its high lifting speed is equally revolutionary.

Now a self-climbing version of the **Table Lifting System TLS** makes it possible to form floor slabs 100 % cranelessly, at the same time as enhancing safety during the lifting operation. This makes the self-climbing TLS particularly suitable for use on tall buildings. As it is structure-guided at all times, it can be safely raised even in poor weather conditions, either hydraulically or by crane. 



◀ The self-climbing TLS makes it possible to form floor-slabs 100 % cranelessly, while enhancing safety in the lifting operation.

▼ The revolutionary DoKart shifting appliance is extremely manoeuvrable and stands out for its rugged design and very high lifting speed.



Platform system Xsafe plus and Sideguard system XP

Workplace safety boosts productivity



Doka has extended its broad range of safety accessories again, this time with the **Platform system Xsafe plus**, which fits on all Doka wall formwork systems. It is pre-assembled, saving 30 % of the manhours needed by conventional platform systems. The Xsafe plus and the formwork can always be repositioned as a unit in a single crane cycle – meaning that Xsafe plus is back in action 40 % sooner.

Another innovation that scores not only for enhanced on-site safety, but also for being particularly quick and easy to assemble, is the **Sideguard system XP**. This universal safety solution for all edge protection needs fits in ideally with the Doka systems, and safeguards all drop-off edges. 



▲ The advantages of the Xlife sheet are now also available in Framed formwork Frami Xlife and Column formwork KS Xlife.

◀ The Xsafe plus platform system enhances workplace safety on all Doka wall formwork systems. It comes completely pre-assembled ready for immediate use.



TAV Construction is using the extremely powerful Doka platform SCP to form the central building core. The formwork, two concrete pump distributors and all the site gear are climbed on the platform.

425 metres in a four-day cycle

One hundred and one floors and a soaring 425 metres tall, Marina 101 is a new superlative skyscraper now under construction in the immediate vicinity of the Palm Jumeirah.

The central CIP core and the imposing columned facade of Marina 101 are being built in record time with automatic climbing formwork from Doka. Platform SCP is being used on the CIP core to keep the cycle times extremely short and maximise the level of industrial safety on the build. Doka's high-end SKE50 automatic climbers and folding formwork are in use for the facade.

Speedy progress, in other words short cycle times for cast-in-place concreting, was a top priority for lead contractor TAV Construction and the crunch factor in the decision to contract Doka as the formwork partner. Platform SCP is fine-tuned for maximum efficiency, the site crew is totally familiar with the routine, and it all adds up to a four-day cycle for each complete floor. The number of concreting sections is 110, so time savings on the carcass work are tremendous.

Perfectly timed work cycles for speedy progress throughout the build

Platform SCP climbs on 8 extremely powerful hydraulic cylinders; total available load-bearing capability in the climbing and working phases alike is in excess of 45 metric tons. In addition, the platform climbs the formwork for all 6 shafts plus a suspended stairwell tower for safe and speedy access to the working levels, along with two high-capacity concrete pump distributors. Per lifting unit and concreting section, the platform SCP design calls for only two box recesses to locate the supporting beams in the concrete structure. Other platform solutions, by contrast, need twice as many box recesses and a significantly higher number of rams for climbing.

To maximise flexibility in the concreting process for the building core, the columns and the floor slabs, the concrete pump distributors are climbed with the platform's climbing mechanism but independently of the core formwork. The platform SCP is permanently anchored in the finished concrete, and the two working levels are fully enclosed for maximum safety and protection against the weather.

The central building core is being formed with 815 m² of Doka Top 50 beam formwork. The number of cycles is high so the beam formwork is skinned with extremely durable Dokaplex sheets. Steel formwork is being used at the corners to enhance durability even further. Each anchor hole has extra protection to provide a higher number of re-use cycles. These reinforcements proved more than worthwhile on the Burj Dubai build and enable the 400-plus metres of the supertower's soaring CIP core to be climbed with only one change of formwork sheeting. 



Volkan Yerdelen,
TAV's Construction
Manager

The professional

“The CIP platform leads the floor-slab formwork by only two floors, so the free headroom is utilised to keep the work zone of the overhead crane clear and unobstructed. We have fewer climbs for the crane and that makes for a huge saving on time.”

The facts

JOBSITE Marina 101
LOCATION Dubai
CUSTOMER TAV Construction
PRODUCTS IN USE Platform SCP, Large-area formwork Top 50, Automatic climbing formwork SKE50

Safe. Fast. Efficient.

Speedy formwork solution for the columned facade

The 32 columns in the building's iconic facade are being cast with Doka's high-end SKE50 automatic climbing formwork. On each side of the building the climbing brackets are joined together to form a set so that they can all be climbed at the same time at the touch of a button. The facade formwork has folding side panels for fast forming and stripping out times. The rear of each of the massively proportioned columns is being formed with Frami panels.

◀ The working levels of the platform SCP are fully enclosed for maximum on-site safety and suspended stairway towers provide safe and easy access.



▲ The Doka automatic climbing system SKE 50 ensures safe and fast forming operations.

Right on schedule with SKE50

The Shining Towers (Harmony Towers) being constructed by Target Engineering are rising with Doka formwork.

The facts

JOBSITE Shining Towers (Harmony Towers)

LOCATION Abu Dhabi, UAE

CUSTOMER

Target Engineering Company

PRODUCTS USED Automatic climbing formwork SKE50, Large-area formwork Top 50, Dokaflex & Dokaflex tables, d2 load-bearing towers

One of these multi-storey towers appears to lean in two directions. The shorter tower, a 30-storey concrete frame structure, houses apartments while the taller one, a 42-storey build will accommodate office space. The towers are linked by a 34-storey podium and three basement levels. Located close to the Abu Dhabi's corniche, the project formerly known as Shining Towers, has been awarded in May 2009 to Target Engineering Company. Completion is expected by the end of October 2011.

Target Engineering who are specializing in high-speed and high-quality project schemes, have been using Doka formwork technology for many years. The crucial factors in this successful cooperation were and remain the high level of Doka's capability displayed in the professional handling of technologically and logistically challenging large-scale projects, and the comprehensive services maintained through all phases of each construction project.



Fast and safe workflow for the core structure

Doka large-area Top 50 partnered with the SKE50 automatic climbers made the best choice for the two core walls with a casting height of 3.70m to 4.0m and total area of 1,997 m² for both towers. Automatic climbing brackets complete with the fitted Top 50 are all jumped by hydraulic cylinders from one casting section to the next, safely and independently of the crane. 63 and 35 self-climber units of SKE are in action for Office and Apartment Towers respectively, ensuring a one week casting cycle. The automatic climbing formwork is one of the main success factors enabling smooth operation at this logistically challenging site. SKE, designed for maximum flexibility, provides optimum accommodation to the geometrically challenging sections of the concrete cores. The climbing brackets are always anchored in previously cured concrete and the working platforms are railed-in on all sides to guarantee maximum safety. Target Engineering also opted for an exterior en-

sure of the main working platform, which results in greater productivity due to safe working conditions.

Formwork services on every phase of the project.

At the Shining Towers project, Doka assures that the forming workflow complies with the forming schedule. This includes very short delivery periods, even though much of steel superstructure for SKE system is custom-made and thus needs time to design and fabricate. The Top 50 and working platforms are assembled and mounted to the automatic climbers under the expert guidance of experienced Doka Supervisors. The main contractor M/S Target Engineering also benefits from the full support provided by the Doka Planning Engineers at any stage of the formwork activity. The Formwork Experts have organised an intensive training for the site management. The training programme focused on formworks application and presented how to exploit the advantages of the Top 50 & automatic climbing system SKE50, thus avoiding unnecessary time losses.

Efficient slab solution.

For a typical floor slab of the Office Tower with a height of 4.0 m and slab thickness of 275 mm covering a floor area of approximately 1700 m² per floor and for the Apartment Tower's slabs with a height of 3.5m and a total floor area of approximately 660 m² per floor, Doka delivered Dokaflex tables & Dokaflex 20. Both systems use the same components; Dokaflex tables are effectively utilised at the large areas while Dokaflex 20 is perfect for fitting zones and perimeter areas. The Dokaflex tables are supplemented by horizontal and vertical shifting devices, which allow easy and fast repositioning. 



Mr. Adel Feghali
Senior Management
representative
Target
Engineering
Co. Shining
Towers

The professional

“ M/S Doka has been the preferred system for many previous and ongoing projects. The main criteria for optimum formwork incorporates ease of use, speedy assembly process, flexible use of components for many conditions, and of course safety, and Doka materials achieve these requirements which reflects advantages on the whole productivity output of the structural works.”

The solution!

High-rise towers located in a tight, built-up area. 98 high-performing automatic climbers SKE50 used for the core walls, allow the contractor to form, reinforce and pour one casting section in a 7-day cycle. A meticulous forming plan, short delivery times and continuous support given by Doka assure timely progress within the budget.

▼ **Maximum re-use of the company's Doka ex-stock, contributes to this highly cost-effective solution.**



The project uses the full range of Doka systems thus optimising the site workflow and labourer's involvement.



The facts

JOBSITE King Saud University (KSU) Riyadh, Girls Campus

LOCATION Riyadh, KSA

CUSTOMER Saudi Bin Ladin Group (PBAD)

PRODUCTS USED Top 50 system, Framax Xlife, Frami, Climbing bracket 150 and folding bracket K, Dokaflex and d 2 load-bearing towers

Keeping up with high requirements

Since its establishment, Doka Saudi Arabia has been a reliable and committed partner for the Saudi Bin Ladin Group.

A history of dedicated project support and streamlined project deliveries for the SBG's projects in Saudi Arabia and abroad was a decisive factor for selecting Doka as a formwork supplier for the campus project at the King Saud University (KSU) in Riyadh. KSU is the oldest and the most respected university in the Kingdom breeding the pool talent of Saudi Arabia. The works on the campus started in November 2008 and are expected to be finished by November 2011.

Since the area of the campus covers almost 1000 m², a large quantity of labour and machinery had to be deployed in order to keep the project on track. Doka's efficient and easy-to-use formwork systems help to minimise the labour's involvement in the forming phases and optimise the overall progress.

Facing the fair-faced concrete requirements.

The layout of the campus consists of various buildings and facilities, which are mainly for residential and academic use. The project has to combine functionality, use of space with a fair-faced concrete requirements. Doka large-area Top 50 system and framed formwork Framax Xlife are the ideal choice whenever the surface of the concrete must comply with particularly high specifications. Top 50 is designed to

be tailored to many very diverse types of tasks. The shape and size of the elements can be optimally adjusted to the structure. Framax Xlife panels set new standards for concrete quality and cost-efficiency. Due to their extremely durable plastic-coated Xlife sheet, they serve a maximised number of reuse cycles. Form-ply screwed on from the rear (no marks left in the concrete from form-ply fixing screws or nails), tidy horizontal and vertical joint patterns and tidy, fixed tie-hole pattern produce excellent concreting results. Matching panel formats reduce quantities in stock - at this large site only 10 sets of Doka framed formwork Xlife are deployed. The project also benefits a lot from Doka's continuous on-site technical support. The client is especially satisfied with the detailed advice and practical tips on the optimum use of the formwork during the whole course of construction provided by Doka site advisers.

Learning Experience

The project also benefited from Doka's on-site technical seminars held in line with the vocational training organised on August & December 09. Doka Saudi Arabia plans to support future training endeavors of Saudi Bin Ladin Group for all their projects. Doka experts will train the site personnel on how to overcome the many practical challenges encountered on site. 



*Mohammed Dahnous –
Formwork Co-ordinator Saudi Bin Ladin-King Saud University*

The professional

“Safety you can trust & a system that works wonders”

The solution !

On the structures requiring fair-faced surface large-area formwork Top 50 and Framax Xlife panels were employed. Doka light panel system Frami was used for columns and walls. Dokaflex supplied for 2 320 m² of floor. Load-bearing towers d2 utilised on different heights ranging between 4-9 meters providing extra stability for slabs on an area of 16 373m².



Doka systems make the ideal choice whenever the surface of the concrete must comply with particularly high specifications.





▲ To form varying shapes and heights of 18 viaduct piers Doka has delivered the large-area formwork Top 50 combined with the crane-lift climbing system 150 F.

Landmark infrastructure with Doka

Algeria's East-West Highway development is the world's largest current highway construction project. The development financed by the Algerian Government, will extend 1216 km and pass directly through 24 provinces, linking Algeria to Tunisia and Morocco.

The facts

JOBSITE East West Highway

LOCATION Algeria

CUSTOMER Makyol Spa
Algeria

PRODUCTS USED Large-area formwork Top50, Climbing formwork 150F, d2 Load-bearing towers

The project is a landmark infrastructure investment for Algeria that will meet transport needs, significantly improve road safety and help create a new economic region capable of attracting investments. Highway will be a 399 km,

six-lane motorway that includes 190 bridges and viaducts and five tunnels. This huge project is being delivered by COJAAL, a joint venture comprising five of Japan's largest companies and selected subcontractors, among



which the Turkish company Mak Yol Spa Algeria has chosen Doka to supply formwork solutions for their part of the project including viaduct and underpasses tasks.

Economical and fast forming of different shapes and heights.

To form varying shapes and heights of 18 viaduct piers Doka has delivered the versatile large-area formwork Top 50 combined with the crane-lift climbing system 150 F, thus enabling the contractor to reach a 5-day pouring cycle and benefit from efficient construction progress. The Doka climbing bracket 150F equipped with a telescopic shaft beam and suspended platforms permitted fast and safe casting of the piers with heights varying from 7.8 m to even 47.4 m. The 150 F crane-lifted climbing system is an ideal and particularly economical choice for crane-lift projects. The system ensures speedy positioning and safe anchoring at any height. Since

the entire formwork units can be quickly repositioned, the crane time is optimised.

As the client requested a fair-faced concrete quality for these exposed elements of the structure, Doka supplied Dokaplex plywood to produce a high-quality, smooth concrete surface.

The underpasses have been constructed also using large-area Top 50 formwork elements and d2 load-bearing towers, which could easily support the 1.00 m thick slab.

Doka engineers have provided the client with detailed drawing and static analysis. The engineering support together with "just-in-time" formwork deliveries for each construction phase contributed to the timely progress on site. The client has been particularly satisfied with the technical assistance and time efficiency "made by Doka".

▲ **Doka d2 load-bearing towers support the Top50 panels while forming the heavy 1.00m thick slab of the underpass.**

The solution!

Piers: 4 sets of Top 50 Doka large-area formwork Top50 used with the plywood Dokaplex to achieve a fair-face concrete. Doka climbing bracket 150F and the telescopic shaft platform easily deal with the height of the elements.

Underpass: Top 50 for the wall of 6.4m and d2 load-bearing towers to support the Top 50 panels while forming the heavy, 1.00 m thick slab.

The Doka d2 load-bearing towers effortlessly hold up the 9.00 m high floor providing safe working space for the site crew.



8 m tall walls in a single pour

Located just outside the heart of Doha, Barwa City is one of the biggest on-going projects in Qatar.

The development will cover a 2.7 million square metre area of land and offer 128 apartment buildings, 6000 flats, and 1024 studio units. The city will also include schools, a hospital, mosques, shopping complexes and health facilities. It will have its own district cooling system and total wireless Internet coverage.

Amana Steel Buildings have a full confidence in Doka's capacity to deliver the technical know-how and execute the job accurately. Already a frequent Doka client, the contractor appointed for the cooling plant project, chose the tried-and-tested formwork solutions.

Efficient site logistics

The project consists of two identical structures (East & West Plant) situated 1 km apart, each covering an area of 4,000 m². Looking for the best option to meet the high safety requirements and fair-faced concrete specifications on this site, Doka engineers delivered a combination of Top 50 and d2 load-bearing towers together with Doka ladder system XS and d2 stair tower 250.

A part of the 4,000 m² floor area of each structure was a section of 1500 m² with 2-level suspended slabs. For each structure Doka supplied d2 load-bearing towers, which were used on the 9 m high first floor and Dokaflex 20 utilised for the roof. The up to 8 m high core walls and columns were all poured in a single casting section, using Top 50 panels. Once the vertical elements on the first structure have been finished, the contractor could reuse the same Top 50 elements at the second plant. The formwork was transported together with the working platforms thus cutting out the re-assembly time and cost.

High self-compacting concrete pressure and off-form concrete finish quality

were among the crucial demands being made of Top 50 formwork equipment at this site. Doka's on-time deliveries and on-call technical advice were other factors assisting the site logistics.

Safety means efficiency

The higher walls and columns were poured in 3 steps. The integrated working platforms and Doka ladder system are in service to meet the strict specifications regarding not only efficiency but also safety standards. With its sturdy ladder cage, the Ladder system XS ensures safe – and thus fast – up-and-down access to and from the working platforms. It reduces the falling hazard to a minimum and greatly shortens the time spent climbing up and down. Similarly, the d2 stair tower 250 enables quick, safe access for the high workplaces and easy mobility on site. 



The facts

JOBSITE Barwa City District Cooling Plant

LOCATION Doha, Qatar

CUSTOMER Amana Steel Buildings

PRODUCT USED Large-area formwork Top 50 and d2 load-bearing towers + d2 stair tower 250

The solution!

The large-area formwork Top with integrated working platforms and safety features provides a safe and secure working environment for the site crew. Top 50 system provides the required fair-faced concrete finish with high level of accuracy even on the very "slender" columns. With a small number of components, great versatility and high number of re-uses, the system proves to be an economical and efficient forming solution.

◀ **Doka Ladder System XS and d2 Stair Tower 250 System made accessibility and mobility on site easier thus enabling safe working at heights.**



The facts

JOBSITE Ataturk Airport Multi-Deck Junction & Connection Roads construction

LOCATION Istanbul, Turkey

CUSTOMER Özka İnsaat AŞ

PRODUCTS USED Large-area formwork Top 50 and Doka Staxo 100 load-bearing towers

100 % success with perfect-fit formwork

In the large urban complex any jobsite will face a challenging dilemma; how to minimise the disturbance of a daily life and existing traffic.



to ensure that the disruptive effect of ongoing construction work on everyday traffic flows would be kept to an absolute minimum. Another limitation was the height of actual bridge clearance over the existing roadway, that was only about 5 to 6 metres. By supplying fully preassembled formwork panels, Doka eased the headaches of these severely constraining space restrictions. Work on two prestressed cast-in-place bridges has already been successfully completed. The project owner Özka İnfaat is extremely satisfied with performance to date, with the result that Doka Turkey has been commissioned to supply pre-assembled formwork for another bridge.

“Ready-to-Use” solution.

The working scenario for two bridges was similar. The second bridge was an 11 m wide single span lying almost perpendicular to the existing 2x3 lane highway with a median at the middle. 8 formwork segments, each 2.9 m long were assembled in Doka’s Gebze facility and delivered to the site where each segment was lifted in whole and laid on the steel girders without stopping the traffic flow. The entire traffic passage system was designed and detailed by Doka.

The deck thickness was 1.2 m and thinner under the sidewalks at both edges. With the help of steel beams all the dead load and live loads accumulated from the spans were transferred to the Doka Staxo 100 load-bearing towers. Four Staxo100 towers were fitted behind the existing roadway guardrails without disturbing the traffic. The two median towers were tied to each other by scaffolding tubes to create a wider shoring system assembly as no space for bracing was available at the median. Side towers were braced by the Doka robust props Eurex 60 550 to the R.C. foundation prepared for the job.

The casting of the bridge deck took half a day with two pumps at both ends so the traffic has never been stopped. Few days later, after the concrete achieved required strength, the post tensioning was done. Striking took only a few hours on a weekend night: after lowering the screw jacks and cutting the welded temporary connections of the girders at the pre-designed points, half tables from each segment were easily removed using the Doka Transport Fork. 

With passengers number developing fast and reflected in a corresponding increase in feeder traffic, planners for Istanbul’s Ataturk International Airport decided to face up to the challenge of vastly increased traffic by building a new interchange bridge and improving the connection roads system.

Overcoming the architectural and structural restraints.

No road diversions were possible because the “jobsite” is literally right at the gate of the airport. A key issue was

The solution!

Doka specialists pre-assembled the formwork units at the Doka Gebze facility and delivered them to the jobsite ready for swift and safe on-site deployment. The bridge was built without interrupting the daily traffic at this very crucial location.



▲ Customized formwork units were assembled at the Doka warehouse and delivered to the site.

 **Practical Tip**
Doka Ready-to-Use Service

Doka Ready-to-Use Service provides the customer with perfect-fit formwork and enables just-in-time delivery of required material to the site thus saving time, space and costs as special assembly facilities on the construction site are not needed. Simple or even extremely complex formwork units are pre-assembled as needed for the customers’ special requirements, and delivered to the jobsite. The ready-to-use service is also the optimum solution for all jobsites located in built-up areas where the working space is very limited.



▲ The 8.00 m high walls of a high-capacity water tank are being formed with Top 50 large-area formwork in 16-18 casting steps, each step 40 running metres.

The facts

JOBSITE The Avenues, Phase III

LOCATION Kuwait

CUSTOMER Alghanim Intl Gen. Trading and Contracting Company

PRODUCTS USED Large-area formwork Top 50 and framed formwork Framax Xlife

The solution !

Doka was chosen to supply Framax Xlife column formwork for 3600 columns and large-area Top 50 formwork for 8 m high retaining walls. Both systems ensure the required fair-faced concrete quality. Detailed planning and a perfect matching delivery schedule play a major role in driving speedy and efficient progress on this large-scale project.

Ultra-smooth fair-faced concrete

The construction of Phase III of The Avenues, Kuwait's largest shopping mall, is steadily progressing in the Al Rai area of Kuwait City.

Phases III and IV of the project cover three levels and approx. 100,000 m² in each phase, and lead contractor Alghanim decided that for reasons including the elevated requirements for the quality of the fair-faced concrete and the challenge inherent to the formwork in a project of this nature, the comprehensive portfolio of services and products offered makes Doka the right partner for this build. Alghanim already has a large quantity of Doka formwork and is familiar with Doka products and services.

Speedy and flexible formwork for walls and columns.

Along with the lead contractor's own material from Doka, the site is using made-to-measure Top 50 large-area

formwork for the walls. The wall sections of a high-capacity water tank measure more than 8 metres high, and they are being formed with Top 50 large-area formwork in 16-18 casting steps, each step 40 running metres. After casting of the 8 metre high walls, the same formwork material is used to cast each level 1150 running metres of 3 levels of the retaining walls (split in 4.00 m heights). Doka also supplied Framax Xlife column formwork for the grand total of 1200 columns per level. The average column size is 1.2 m x 0.85 m with a height of 4.20 and 4.50 m. Universal panels from the framed formwork system Framax Xlife are easy to assemble and reset, thus enabling very fast and efficient forming of this large quantity of columns. □

Climbing at the push of a button

Al Habtoor Leighton have successfully delivered a range of high rise structures throughout Qatar.

One of its current projects, the 39-storey Arwa Tower is a multi-purpose building comprising offices and residential apartments. Based on the previous professional partnership, the contractor assigned Doka to provide once again its most effective and time-saving formwork equipment.

Ideal solution for the core wall

Automatic climbing formwork SKE is used to raise large-area formwork elements together with the climbing scaffold in one single step and without any crane assistance by one casting section at a time. This makes it an ideal solution for the majority of climbing assignments. The core wall of Arwa Tower, with a total height of 176 m, mounts up using only 24 SKE50 automatic climb-

ers to cast each level with a floor to floor height of 4.10 m in 42 climbing steps. Fitted with almost 500 sqm of the large-area Top 50 formwork, this self-climbing system is still easy to operate and extremely strong. SKE50 is powered by hydraulic cylinders, facilitating quick and easy repositioning operations to lift the whole formwork to the next level. The lifting mechanism is safely coupled to the climbing profile all the time.

Doka site supervision

Doka provide introductory training on-site and site supervision. The platforms of the SKE50 automatic climbers and the Top 50 were pre-assembled under the supervision of a Doka field technician who also assisted in the first casting steps. 



▲ When completed, the 176 m Arwa Tower will be an elegant addition to Doha skyline.

The facts

JOBSITE Arwa Tower

LOCATION Doha, Qatar

CUSTOMER

Al Habtoor Leighton

PRODUCT USED

Automatic climbing formwork SKE50 and large-area formwork Top 50



◀ The concrete core “climbs up” fast and safely using 24 SKE50 automatic climbers fitted with approx. 500 m² of the large-area formwork Top 50.

The solution!

Doka automatic climbing formwork SKE50 ensures rapid and undisturbed workflow on the core wall. All operations- set up, strip, climb - are performed with no need for a crane and independently of other forming operations such as subsequently formed floor slabs and walls.

In brief

News, dates, media, awards



▲ Doka at the Bridges ME conference in Abu Dhabi



▲ Training course for the University of Qatar.

DOKA BRIDGE-BUILDING EXPERTISE SETS THE PACE

Expansion and development of the high-grade transport infrastructure are becoming increasingly important in the Middle East, with bridge-building as a major focus. The demand for efficient high-end construction methods is correspondingly large. The Bridges Middle East Conference that convened in Abu Dhabi late last year was co-hosted by Doka Gulf. The Formwork Experts demonstrated Doka's capabilities as a competent formwork partner for bridge-building in a much-acclaimed presentation that was delivered to the conference.

DOKA GOES TO UNIVERSITY

Doka Qatar commenced a formwork training course for students of construction and architecture at the University of Qatar. Wolfgang Berger, Technical Manager of Doka Qatar, presented the advantages of modern systems over traditional formwork, imparting the differences in a graphic and memorable

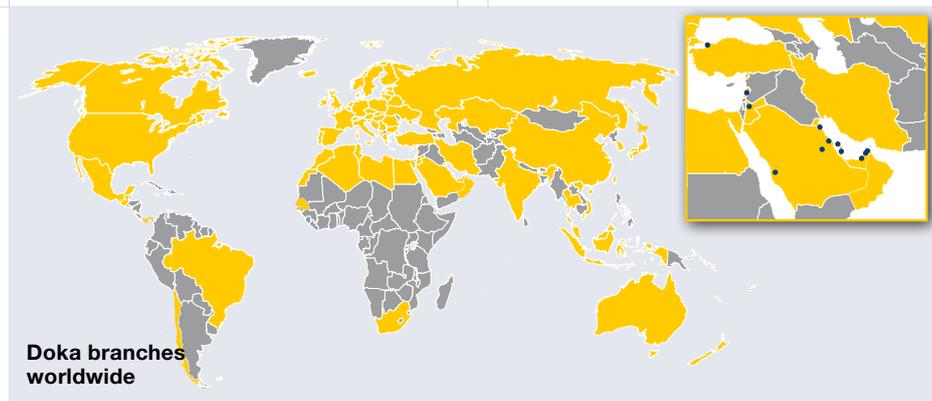
way. Doka Qatar had also provided formwork material so that the students could develop their interests hands-on. Future plans for this co-operative educational program envisage site tours for the student engineers and architects.

BUILDING AT HEIGHT SAFELY, 12 MAY 2010, ABU DHABI

Initiated by the industry's leading trade journal in the region and co-hosted by Doka the conference "How to build at height safely" will focus on showing contractors how to build cost-effectively and quickly while not compromising on safety. The event, to be held on 12 May in Abu Dhabi, will present the latest approach and construction technologies that help to overcome the many practical challenges of building at height.

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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.

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