

Doka Xpress

The Formwork Magazine

1/2010 · www.doka.com

**Reliable.
High-performing.
Inspiring.**

**Formwork-technology
pathbreakers**

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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

Single-source complete solution for speed on site ►

Gran Canaria. Viaducto 5 is currently the single biggest ongoing infrastructure project on the island. Doka España planned and supplied two pairs of Doka cantilever forming travellers, one set of bridge hammerhead formwork, and SKE50 automatic climbers.



▲ Landmark infrastructure with Doka

Algeria's East-West Highway development is the world's largest current highway construction project. It will extend 1216 km, linking Algeria to Tunisia and Morocco. To form 18 viaduct piers Doka has delivered the crane-lifted climbing system 150 F.



▲ Moving together without touching

Envisaged as a pair of dancers moving together without touching, the Shining Towers are rising with Doka formwork solutions in Abu Dhabi. These 42 and 33-storey towers appear to lean in two directions. Doka supplied 98 automatic climbers SKE 50.

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High productivity

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Invitation to bauma 2010

from 19th - 25th April 2010
in Munich, Germany



We warmly invite you!

At bauma 2010, Doka will once again be setting the formwork-technology agenda, presenting answers today to the challenges of tomorrow.

Expect to see pathbreaking innovations for forming walls and fair-faced concrete, a new generation of floor-slab formwork

and some radically new benchmarks for load capacity and safety.

Join with us to experience the future of formwork technology – and visit us at bauma 2010.

We look forward to seeing you there!

Josef Kurzmann
Executive Director,
Doka Group



How to get to the Doka expo pavilion at bauma 2010

New Munich Trade Fair Centre,
Open-Air Area North F8,
Stand N811,
Munich, Germany

Doka GmbH
Josef Umdasch Platz 1
A-3300 Amstetten
Austria



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

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. ◻

Monotec tying system

The fast wall-tying system in the business

► 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 **single-sided Monotec tying system** for Framax framed formwork and all Doka timber-beam formwork can even be retrofitted right at the 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 new Formwork beam I tec 20 has 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.

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 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.

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

► 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.

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. ◻



Platform system Xsafe plus and Sideguard system XP

Workplace safety boosts productivity

▲ 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.



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. ◻



Doka cantilever forming traveller (CFT) and Forming wagon TU

Strong in infrastructure construction




Doka is underlining its decades of expertise in the civil engineering field with path-breaking innovations such as the **Doka cantilever forming traveller (CFT)**, with integrated formwork. With the CFT, clients now only have one partner to deal with for both the formwork and the shoring. By optimising the interfaces in this way, Doka helps work to move ahead smoothly. The new **Forming wagon TU** makes it possible to cast cantilevered parapets without taking up any workspace on the bridge. It runs in a rollertrack fixed to the underside of the bridge superstructure. The CFT and the Forming wagon TU are fully rentable and can easily be adapted to widely differing cross-sections. 

◀ **The Forming wagon TU runs on the underside of the bridge and allows cantilevered parapets to be poured with zero disruption to traffic.**

Dokadek 30


Groundbreaking innovation in the slab-forming field

Dokadek 30 is a panel floor formwork that forms both the typical and the infill zones in record time. While its large 3 m² panels get work up to top speed in the typical zone, rapid forming of infill zones is taken care of by a system-compatible connection interface with Dokaflex. This unique combination within a single system shortens forming-times by 20 %, which in turn cuts the labour costs. Dokadek 30's ability to be set up safely from below, its integrated wind bracing and its early-stripping function make it a safe and cost-efficient panel floor formwork. 

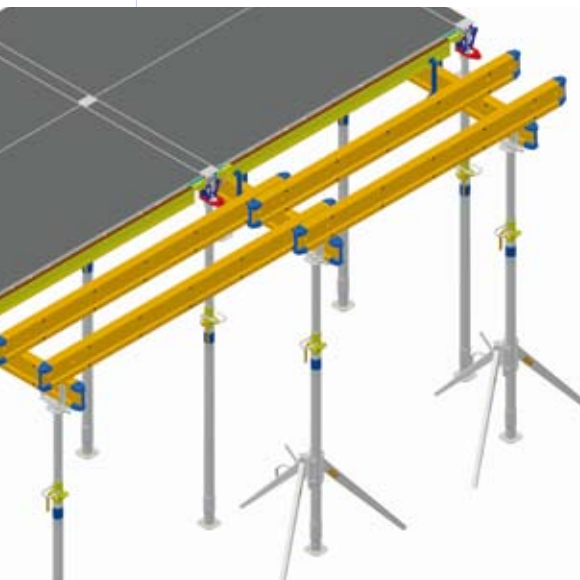


Doka service

The very best support in every phase of construction

Every construction project is unique. Nevertheless, all projects undergo the same five phases, from development all the way through to completion of the shell. To fulfil the varying requirements made in each phase and give clients effective assistance to help them succeed onsite, Doka has put together a tailor-made package of efficient services for each of these phases. The exact scope of the **Doka service** is defined here by a detailed performance specification, creating clarity right from the outset about the benefits that can be achieved. 

▲ **Doka has put together a tailor-made package of services for every phase of construction work. These give clients the ideal help to make a success of every single phase of their project.**



◀ **With its integrated interface to the versatile hand-set system Dokaflex, the Dokadek 30 panel floor formwork puts a halt to time losses in the infill zone.**

Formwork technology with a 'wow!' factor



"We shall be mobilising the emotional component by captivating fairgoers' attention with an imaginative but applications-focused presentation of our products and services that will make our brand values come alive in an exciting 'Doka brand world'."

Johann Strunz, Doka Group Executive Manager

Doka Xpress spoke with Johann Strunz, Doka Group Executive Manager responsible for (inter alia) Marketing & Product Management, about the forthcoming expo presentation at bauma 2010.

Mr. Strunz, just how important is bauma in terms of helping our sales effort?

Our presence at bauma is more important for the Doka Group this time than ever before. Due to the tough economic situation throughout the world, construction firms are increasingly having to rationalise and economise. This is a great opportunity for Doka. Because nowadays, the sense and "bottom-line" cost effectiveness of every investment are being scrutinised and weighed up more critically than ever. Innovative companies like Doka that exploit every scope for rationalisation, no matter how small, are benefiting from this trend.

What goals is Doka pursuing in its bauma exhibition?

As well as showcasing our many innovations and cultivating partnership-based client relationships, we also want to present Doka as an attractive top-line brand and industry pacemaker. We want all fairgoers to experience the values that Doka stands for. In short: we want to indelibly etch ourselves into our customers' minds as *the* groundbreaking global formwork company.

What messages do we aim to reach construction firms with this time?

Our aim is to "bring alive" the values that Doka stands for. First and foremost, this means reliability and high capability – and filling our customers with enthusiasm for the Doka brand. We work alongside our customers throughout the world, supporting them with the full Doka service and product range wherever they happen to be. Doka customers profit from new technologies that make it easier for them to form cast-in-place concrete. And there is no challenge that we will shun, no matter how great. As we are

continually proving on highly demanding projects, such as the Burj Khalifa, where our recent pioneering achievement set a new formwork-engineering world record. Never before had a climbing formwork been in action for such a long time and worked its way up to such dizzying heights. The standard we set ourselves is to surpass our customers' expectations day in, day out, and to be pathbreakers – in every way!

How has Doka announced its expo presentation this time?

With a communications concept that is precisely fine-tuned in terms of timing and content! In the run-up to bauma, we have attempted to build up curiosity and suspense with a Europe-wide teaser campaign in the construction trade journals, and with extremely restrictive press releases. We have announced some interesting things, but without giving away too many details. The answer to the teaser mystery will happen with a "bang" when all is revealed at bauma. This is why we are inviting the international construction trade press to an exclusive press-event – the Doka Media Night – in the Doka expo pavilion on 19th April.

What shape does this year's expo concept take?

A conspicuous one that no-one can possibly miss! The rigorous architectural conception of the Doka expo pavilion as an outsize yellow cube makes it a landmark that is visible from far away. For the visitor, stepping inside our pavilion will be like entering another world. We have consciously decided to do without one of the usual shows here. We shall be mobilising the emotional component in a rather different way this time, captivating fairgoers' attention with an imaginative but applications-focused presentation of our products and services that will make our brand values come alive in an exciting "Doka brand world". In keeping with the different requirements applying to different types of construction project,

we have created four theme worlds so as to engage each visitor in his or her “own world”. The specific requirements of the civil engineering segment will be addressed by the theme worlds “Mobility” and “Facility”. While “Mobility” includes all formwork solutions for infrastructural building-works such as bridges and tunnels, “Facility” is all about efficient forming of power installations and industrial buildings. Doka will be exhibiting its building-construction offerings in the theme worlds “Business” and “Living”. “Business” will give a complete overview of our high-performing solutions for offices and high-rises. In the “Living” zone, we shall be spotlighting formwork technology for residential construction.

We are quite sure that our exhibition concept gives fairgoers an ideal overview, and thus genuine added value – after all, nobody forms either only walls or only floor-slabs. The theme worlds allow us to pitch to different target groups directly and showcase the relevant formwork solutions at work in a true-to-life interplay on complex structures. Product demonstrations on the new systems will also show visitors how easily, quickly and safely the Doka systems accomplish any formwork task. Of course, the key topics of “Safety” and “Fair-faced concrete” will also be visualised in the expo pavilion. In addition, this time we also want to make a splash in the increasingly important component business, with a specially designed “Component corner”.

To what extent has Doka’s expo presence been affected by the economic downturn?

Yes, of course we have economised! But obviously “cut-price” solutions would have been totally counter-productive. This is why we have mainly economised on various elements that are not so relevant to visitors. In this way we have managed to substantially reduce our expo budget compared to the last bauma – but will still impress our visitors with an awesome expo presence nonetheless! To take one example, we have optimised the expo-stand manning arrangements to take account of the different visitor-streams expected at different times. The architecture of the expo pavilion has been deliberately trimmed back. We shall be dispensing not only with the show but also with all types of outdoor advertising on the fair-ground,

as surveys we did at the last bauma told us that the Doka Pavilion itself has a sufficiently “magnetising” effect.

What construction-sector trends is Doka looking to with its innovations?

Doka’s roots lie in civil engineering, so it’s not surprising that we are such “pathbreakers” in this segment and that we were among the first to note the increased trend towards infrastructure construction. With innovations like the Forming wagon TU, which runs on the underside of bridges, the Cantilever forming traveller with integrated formwork, the super-strong timber-beam formworks FF100 tec and Top 100 tec, as well as with our own wind-turbine formwork, Doka anticipated the trend triggered by government stimulus packages and developed a whole bundle of dependable and highly efficient formwork solutions. In the building-construction segment, too, where the trends are currently very different from one geographical region to the next, the construction downturn has further ratcheted up the pressure to perform. Construction firms are being expected to be more effective and more efficient. Just the demands, then, that innovations of ours like Dokadek, Staxo 40 and Monotec help to solve. They show how with Doka formwork technology, construction companies can rise to today’s heightened demands.

What are your personal expectations of bauma?

With our new and very distinct expo concept, based on Doka “theme worlds”, we are going to differentiate ourselves very clearly from our competitors and bring our brand values very much alive at bauma 2010. Our explicit and overriding objective is to get and keep “top of mind awareness”. Put very simply, what this means is that after our visitors go home from the fair, the name they will remember as the Number 1 in formwork technology will be ours – Doka. For our many regular customers, we want to prove to them yet again that their decision to work with Doka continues to be the right one. And for all potential new customers, our aim is to give them a clear signal that without Doka, they’re missing out on the very best!

Thank you for sharing your thoughts with us, Mr Strunz! ☺

“Our aim is to ‘bring alive’ the values that Doka stands for. First and foremost, this means reliability and high capability – and filling our customers with enthusiasm for the Doka brand.”



AV 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.



The facts

JOBSITE Marina 101

LOCATION Dubai

CUSTOMER TAV Construction

PRODUCTS IN USE

Platform SCP, Large-area formwork Top 50, Automatic climbing formwork SKE50

REQUIREMENTS

Extremely short cycle times for the 110 concrete sections of the central core and the columned façade as well as a high standard of working safety.

Super Tower in a four-day cycle

The central core and the columned façade of the 425 m tall skyscraper Marina 101 are being built in record time with the Doka platform SCP and SKE50 automatic climbing formwork.

With 101 floors and a soaring 425 metres tall, Marina 101 joins the exclusive club of supertall towers. 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 – impressive performance by any standards. The number of concreting sections is high at 110, so time savings on the carcass work are tremendous.

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 tonnes. In addition, the platform climbs the formwork for all 6 shafts plus a suspended stairwell tower, along with two high-capacity concrete pump distributors. The central building core has no less than six shafts and is being formed with 815 m² of Doka Top 50 beam formwork.

Maximal flexibility – speedy progress
To maximise flexibility in the concreting process the concrete pump distributors are climbed with the platform’s climbing mechanism but independently of

the core formwork. “We can climb the formwork and the concrete pump distributors separately, so there are virtually no mandatory-position points when we concrete. That gives us maximum versatility and, even more importantly, highly efficient material utilisation”, notes project manager Siva Shankar Kanagasabai. The two working levels of the platform SCP are fully enclosed for maximum safety and protection against the weather. The platform is permanently anchored in the finished concrete so lifts are possible even in windy conditions and construction can proceed rapidly and without unexpected hitches.

The 32 columns in the building’s iconic façade are being cast with Doka’s high-end SKE 50 automatic climbing formwork. One 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 façade formwork has folding side panels for fast forming and stripping-out times.

On this project, too, climbing the platform SCP for the CIP core and the SKE 50 brackets for the external wall sections separately proved the right strategy for efficient and perfectly harmonised formwork deployment right from the word go. ◻

The Solution !

The central core is climbed in a four-day cycle with the Doka platform SCP. The platform is fully enclosed and can be lifted even in windy conditions. The façade formwork is lifted up with automatic climbing formwork SKE50 and has folding side panels for fast forming and stripping-out times.



◀ TAV Construction achieves a tight four-day cycle per floor with the automatic climbing formwork solution from Doka and a well-trained site crew thoroughly familiarised with the work routines.

The facts

JOB SITE Tokio Marine Centre

LOCATION Singapore

CUSTOMER
Shimizu Corporation

REQUIREMENTS

Planning of working and protection platforms which climb up the perpendicular and slanted column elements without needing complicated modifications and costly downtimes.

PRODUCTS IN USE

Automatic climbing formwork
SKE50 plus

The Solution

The platforms are mounted and supported on rollers, and so are completely “decoupled” from the continuous changes in the position of the automatic climbing brackets which are guided along the columns.



Masaki Yamada,
senior project
manager

The Professional

“ We are absolutely impressed with Doka's expertise in climbing experience and knowledge to solve these very complicated requirements which we thought would be quite impossible at the beginning.

Doka has tailor-made their solution to fit in with our construction method. This is really helping us to meet our tight construction schedule on time.”

► The façade of the 122 m tall Tokio Marine Centre is characterised by slanting and intersecting concrete columns – no problem for the Doka automatic climbing formwork SKE50 plus, which is used here as a crane-independent working and protection platform.

Maximum flexibility, saving time and money

Doka has scored top marks on the 122 m tall Tokio Marine Tower for its technically impressive self-climbing solution and custom-tailored services to ensure smooth construction progress.

The façade of the Tokio Marine Center office tower has a highly distinctive design look, achieved by the use of both perpendicular and slanted column elements that occasionally intersect at acute angles. The massively sized façade columns are being constructed using the semi-precast method, and given meticulous finishing. To completely uncouple this multi-stage finishing-work phase from all the other construction operations, and to ease the pressure on the limited available craneage, working and protection platforms based on the heavy-lifting Doka automatic climbing formwork SKE50 plus are in use. For both Shimizu and Doka, this was very much an “out-of-the-ordinary” automatic climbing assignment. In planning it, the central challenge was to define the optimum climbing-track along the exter-

nal support columns, which slant by up to 7.3 degrees from the vertical, and to develop an efficient and highly versatile formwork solution which – despite the difficult structure geometry – would still permit rapid climbing operations without needing complicated modifications and the costly downtimes that these entail. The solution that the Doka Formwork Experts came up with performed convincingly right from the very first climbing step: The climbing scaffolds are positioned on the structure in such a way that there is always one automatic climber climbing in the vertical while the second climber is guided along a slanted column. On one side, the platforms are mounted and supported on rollers, and so are completely “decoupled” from the continuous changes in the position of the automatic climbing brackets. □





◀ A new LNG terminal is under construction in Map Ta Phut, Thailand. High-performance Doka climbing formwork is being used to cast the two enormous storage tanks. The figures work out at 21,000 m³ of concrete being precision-formed and poured.

Extra-wide platforms speeding up progress

Doka formwork technology is being used to cast 21,000 m³ of concrete for two large-capacity LNG tanks. Extra-large platforms are significantly reducing the number of crane lifts here.

As a long-term safeguard for supply dependability, a new LNG terminal is now under construction at Map Ta Phut on the Gulf of Thailand. The new superterminal will initially consist of a high-capacity regasification plant, supertanker berthing facilities, and two large-capacity LNG tanks, each 50 metres high. The tanks are identical in design; they measure 82 metres in diameter and each can store 160,000 m³ of liquefied natural gas. The tanks have solid CIP concrete outer shells more than 80 centimetres thick: lead contractor Christiani & Nielsen is using crane-lift formwork from Doka to build them in 11 concreting sections. MF 240 and 150 F climbing formwork, fine-tuned for cost-efficiency, are the solutions of choice for this build. Both systems are crane-climbed and easy to use, and both afford a high standard of safety.

Extra-wide platform sizing equals fewer crane lifts

Lead contractor Christiani & Nielsen opted for a complete solution from Doka, primarily because the lifts were fast and cut crane time to a minimum. Since the platforms are extra-large the number of crane lifts needed for the formwork is reduced to a tremendous extent, speed-

ing up formwork repositioning and reducing overall build time accordingly. The solution is set up for maximum efficiency, and the site crew from Christiani & Nielsen extracts maximum benefit to maintain a three-week cycle for the concreting sections, each of which is 4.1 metres in height. The figures tally at about 900 m³ of concrete per section, and formwork for 2200 m² of wall surface. Forty-two Doka MF 240 platforms are in use for the outside of each LNG tank, and another forty-two Doka 150 F platforms on the inside, and the climbing-formwork platforms carry a total of 2200 m² of Top 50 large-area formwork. The CIP shells of the LNG tanks are prestressed vertically and horizontally and allowance has to be made for the welding embedments that will enable the steel tanks to be secured to the concrete, so the positioning of the anchorages and the climbing cones was an important aspect to be taken into account in planning. Extra vertical sections were added to the Top 50 large-area formwork so that the anchor levels could be aligned with the positions of the sleeves and the embedments in each concreting section, easily and without time-consuming modifications. ◻

The Solution!

Extra-large platforms speed up formwork repositioning and reduce overall build time accordingly.

The facts

JOB SITE
LNG Tanks, Map Ta Phut

LOCATION Thailand

CONTRACTOR Christiani & Nielsen (Thai) PCL.

PRODUCTS IN USE 42 "Climbing formwork Xclimb MF 240" platforms, 42 "Climbing formwork 150 F" platforms, 2200 m² of Large area formwork Top 50

REQUIREMENTS Fast formwork solution for the construction of more than 2200 m² of wall surface in each of 11 concreting sections.

▼ The platforms of the climbing formwork are extra-wide. That significantly reduces the number of moves and lops a considerable margin off overall construction time on this build.



To build the over 400 m long “Viaducto 5” motorway bridge, Doka has supplied a comprehensive formwork solution consisting of cantilever forming travellers, pier-head formwork and automatic climbing formwork.



The facts

JOB SITE Viaducto 5

LOCATION
Gran Canaria, Spain

CUSTOMER
OHL – García Álamo – Félix Santiago Melián

LENGTH OF THE
SUPERSTRUCTURE 432 m

HEIGHT OF THE MAIN PIERS
102 m and 87 m

PRODUCTS IN USE
Doka cantilever forming traveller, Large-area formwork Top 50, Automatic climbing formwork SKE50, special pier-head formwork

REQUIREMENTS
High safety standards and fast construction progress are the N° 1 priority on this major motorway project.

One-stop forming solution boosts productivity

When it came to building the 432 m long and over 100 m tall Viaducto 5 on Gran Canaria, Doka’s highly efficient all-in-one forming package made it the one-stop supplier of choice.

With an overall length of 432 m, a height of up to 104 m and a sizeable longitudinal gradient, Viaducto 5 is by far the most challenging viaduct in the motorway-building project GC-2 on Gran Canaria. The contracting consortium

opted for an all-in-one solution from Doka. Its reasons? The high safety standard of the Doka cantilever forming traveller, the perfect interplay of the formwork and the traveller, and Doka’s technically sophisticated solution for

constructing the massively sized pier-heads. The consortium also turned to Doka for the automatic climbing formwork being used to build the four, up to 104 m tall, bridge piers – for short cycle times and high safety in all phases of the work.

The pre-stressed, single-cell box girder superstructure of the Viaducto De Guia Pagador is being constructed by two pairs of Doka cantilever forming travellers that have been modified to deal with the excess length encountered here. In terms of workplace safety, too, the Doka cantilever forming traveller – with its fully railed-in platforms on all work-deck levels and ladderways with built-in ladder cages – has more than met the Site Management’s stringent requirements. Not even the 6 % longitudinal gradient of the carriageway deck is a problem for the CFT. The innovative drive mechanism, on plastic slide bearings, permits precisely controlled repositioning of the approx. 100 tonnes of equipment and prevents the CFT developing a dangerous “life of its own”.

Massive pier-heads built with solution based on main support girders
All of 13 m long, the massively sized

pier-heads are being constructed on a solution based on main support girders. This involves two parallel steel girders being placed in the longitudinal direction through box-outs in the top casting section of the pier. The steel girders are crane-lifted into the box-outs and pushed through the piers by a hydraulic cylinder. Next, a girder grille that includes the formwork for the bottom slab of the pier-head is placed on the main support girders on either side of the pier. After the bottom slab has been cast, the transverse stiffeners, the webs and the deck slab are then cast using Top 50 large-area formwork elements. Following completion of the pier-head, the cross-girders and the girder grilles can easily be hydraulically lowered and then lifted off the pier.

Geometrically demanding piers being climbed both safely and fast

The two imposing main piers of the Viaducto De Guia Pagador are 102 m and 87 m tall (Piers 2 and 3 respectively), and were constructed using the versatile, high-performing Doka automatic climbing formwork SKE 50. With this system, the site crew were able to form, reinforce and cast the 5 m high typical sections in a four-day cycle. ◻

The Solution !

Doka delivered an all-in-one forming solution bringing maximum productivity to the in-situ concreting operations. Additionally Doka offered a wide range of services including the formwork planning, the logistics management and strong support by an experienced Doka Formwork Instructor.



▲ The main piers of Viaducto 5 are being built with Doka’s automatic climbing formwork SKE 50 and Large-area formwork Top 50 in a four-day cycle.

◀ The formwork for the massive pier-heads is based on main support girders.

In brief

News, dates, media, awards



◀ The new Doka formwork catalogue provides a complete overview.



▲ Real formwork professionals offer the best consulting service.



▲ Movable barriers will divide the Adriatic Sea.

IT'S ALL ABOUT FORMWORK

The new Doka formwork catalogue will be issued right on time for bauma 2010. Its 516 pages provide a complete overview of the Doka formwork systems and their areas of application. Services and system components are also covered in detail as central topics. The entire catalogue is structured for clarity so that you can find exactly the information you need quickly, whenever you need it. Pick up the new Doka formwork catalogue at the bauma 2010 trade fair or ask your personal Doka advisor for a copy.

HIGH CONSULTING CAPABILITY

At Doka, everyone from senior management to field sales has to stay right up to speed on the latest developments in formwork technology. That is crucially important, because only real formwork professionals with hands-on experience can offer Doka customers the best and most cost-efficient solutions for each new construction challenge as it arises.

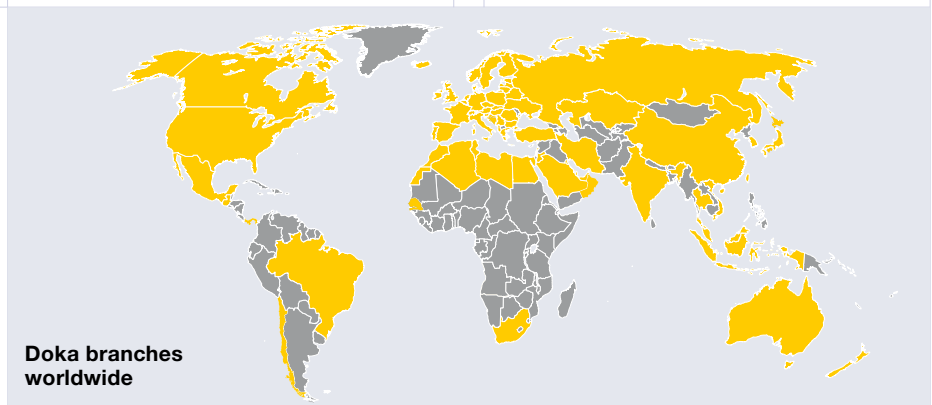
Recently, managers from right across Doka's Latin American organisation met up to hone their skills in the safe and efficient routines for working with high-end Doka systems. And the agenda also included time for an exchange of experience on the best formwork solutions for the different construction methods favoured in the various parts of this huge region.

PROJECT OF EPIC PROPORTIONS

Italy's gigantic MOSE project aims at protecting the ancient city of Venice from surge tides by putting a barrier between the lagoon that fronts the city and the open Adriatic Sea. The movable barriers are anchored to the seabed. When the sea threatens to surge in the barriers are filled with compressed air so that they rise and cut off the lagoon of Venice from the Adriatic Sea. 9000 m² of Dokaflex with high-strength props and 14,000 m² of Framax Xlife framed formwork are being used to form the foundations for the flotation barriers.

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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.