

# DokaXpress

The Formwork magazine Nordic issue 2020

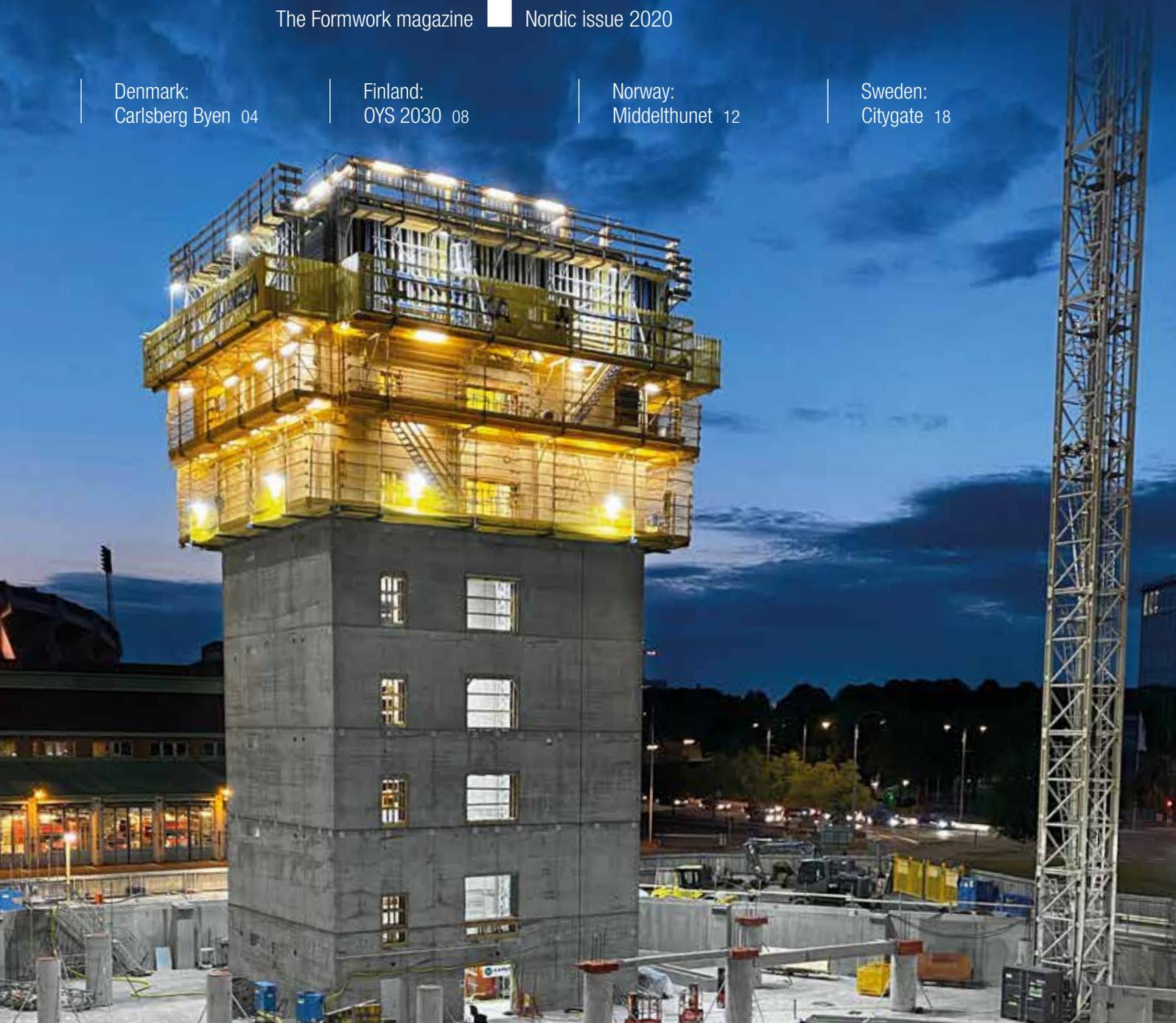
**doka**

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**Doka AR-VR app:** This edition of the Xpress is supported by the AR-VR app, meaning you can use our free app to maximise your experience and fully unlock our interactive experience, which includes images, videos and 3D models.

**AR Marker Symbol:** Use the AR markers to find even more content. Open the AR-VR app on your smartphone or tablet device, scan the image and fully experience the latest developments of Doka!



**Søren Clemmensen**  
Managing Director,  
Doka Denmark

## Dear Danish customers and readers,

The only thing that is certain is that the world is constantly changing; we need to be ready for new challenges and new ways of thinking and find new paths.

Doka began working in Denmark in 2008 and every year we have had to deal with new requirements, new developments, new team members, new customers and new projects. Innovative methods, solutions, competencies and products have continuously been added to our portfolio.

We have delivered solutions for tunnels and composite bridges and in the last few years, we have also seen high-rise construction gain a foothold in Denmark. In this issue, you can read about two towers in the Carlsberg Byen project, each with its own climbing formwork solution.

The Covid-19 situation has affected us all, but we have tackled it the same way as our projects - with a focus on safety, efficiency and cooperation - so that both our company and our customers can complete tasks on time and remain safe.

As we look ahead to 2021, we see exciting market developments. We have a strong product package supplemented by technical experts at our headquarters. We also have skilled employees in Denmark but will need more in the coming year. So if you think a place on the Doka team suits you, give us a call and let's have a chat over a cup of coffee. ■

## Working together safely!

People are the foundation of all activity and cooperation. Customer demands are constantly increasing and continuously enhanced productivity is essential. By providing high-quality products and services, Doka's goal is to become our customers' preferred formwork supplier. You, our valued customers, are constantly giving us new challenges that inspire us to find the best possible solutions. We guarantee that your trust in our cooperation will ensure the basis for Doka's future success.

I would like to thank all our customers for the past year and wish you all a safe year-end! ■



**Risto Lehtikoinen**  
Managing Director,  
Doka Finland



**Ståle Njåtun**  
Managing Director,  
Doka Norway

## Dear reader!

For us at Doka Norway, 2020 has developed in quite a different way than what we had originally planned. The pandemic that struck in mid-March created challenges we have never had to deal with before in both our private and professional lives.

We were also obliged to learn to communicate differently, both internally and externally, and handle situations with the extensive use of home offices and strict infection control measures in the workplace. So far, things have gone well, and we feel equipped to continue to handle a Covid-19 situation that will probably be around for some time.

Considering the situation, we are seeing healthy activity in the market. This makes us soberly optimistic about the future, even though it will be marked by both uncertainty and change.

Doka Norway represents products, technology and experience appropriately suited to the Norwegian construction market. Our formwork solutions have been used in small and large projects around the country for over 20 years, and we look forward to the next 20.

Our skilled employees are always ready to assist you with your project, no matter what your challenge may be. Get in touch and we will find the solution together. ■

## Dear reader!

I am sure most of us will never forget 2020 with a pandemic that has hit our entire society hard and affected both individuals and companies. However, the construction industry has done relatively well and most construction sites have been up and running much as before. We can also see this in our figures, with an activity level that was higher in the first three quarters of this year compared with the same period last year.

During 2020, we have been involved in several interesting projects. For example, we have had a number of tunnel wagons in operation in Stockholm, and we have started services (find out more on page 18). Furthermore, we have launched new products during the year, and I would especially like to highlight our innovative, lightweight floor prop, which has been well received. As well, we will launch a light foundation formwork during the fourth quarter.

In mid-October, Byggföretagen presented its 2021 construction forecast. It predicts a marginal decline compared with the 2020 forecast. Commercial premises seem to be the segment where the decline is expected to be greatest; housing continues to decline slightly while facilities construction is expected to increase. We are humble in the face of prevailing uncertainty, but still cautiously optimistic about next year. Together, we are ready and motivated to face the challenges that lie ahead. ■



**Claes Thoresson**  
Managing Director,  
Doka Sweden



DENMARK



# Carlsberg Byen

In Carlsberg Byen, ZÜBLIN is working on two projects that combine modern architecture with innovative technical solutions. During the process, all parties involved work toward minimizing risk and optimizing construction design, scheduling and finances.

## Dahlerup Tower

The Dahlerup Tower project is an 80-meter high-rise building plus the associated Caroline Hus housing project. The total construction area is almost 40,000 m<sup>2</sup> divided into residential, commercial and basement parking.

### FACTS

**Execution period:** 2018 - 2021

**Area:** 39,800 m<sup>2</sup>

**Client:** Carlsberg Byen P/S

**Architect:** Schmidt Hammer Lassen Architects & Holscher Nordberg

**Consulting engineer:** COWI A/S og ZÜBLIN

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ZÜBLIN's Danish project team and international technical division have worked intensively on these two projects with Doka's Danish team of technicians, logisticians and consultants, as well as our high-rise experts from the Global Expertise Center in Austria.

The crane-lifted climbing system Xclimb 60 was chosen for the Dahlerup Tower and the fully hydraulic solution with SKE50 plus, for the Vogelius Tower, which you can hear about in the video under the AR icon. To establish these solutions, we have had a Doka instructor on site to ensure that everything is safe and efficient.

The walls are made with Framax Xlife plus formwork with a one-sided anchor system, and with Xsafe plus platforms that focus on safety. The floors in the towers are fixed with Dokamatic floor tables for the large areas, supplemented with both traditional Dokaflex and Staxo 40 support towers in parts of the building. Our DokaRex aluminum element supports are used in the element assembly, and the FreeFalcon safety solution is used on the tiers. ■



- 1 **Carlsberg Byen:** AR Marker: Video: "Why does ZÜBLIN use climbing formwork when constructing the two 80m high towers"
- 2 **Dahlerup Tower:** Xclimb 60 climbing formwork
- 3 **Dahlerups Tower:** Support trusses for high one-sided walls
- 4 **Vogelius Tower:** Hydraulic climbing formwork
- 5 **FreeFalcon:** The mobile fall protection, quickly ready for use without anchoring in the building.



## Vogelius Tower

The project consists of the Vogelius Tower, which is an 80-meter high-rise building, as well as the associated housing projects Kjeldahl Hus, Forchhammer Hus and Djørup Hus. The building has a total area of 49,000 m<sup>2</sup> divided into residential, commercial and basement parking.

### FACTS

**Execution period:** 2018 - 2022

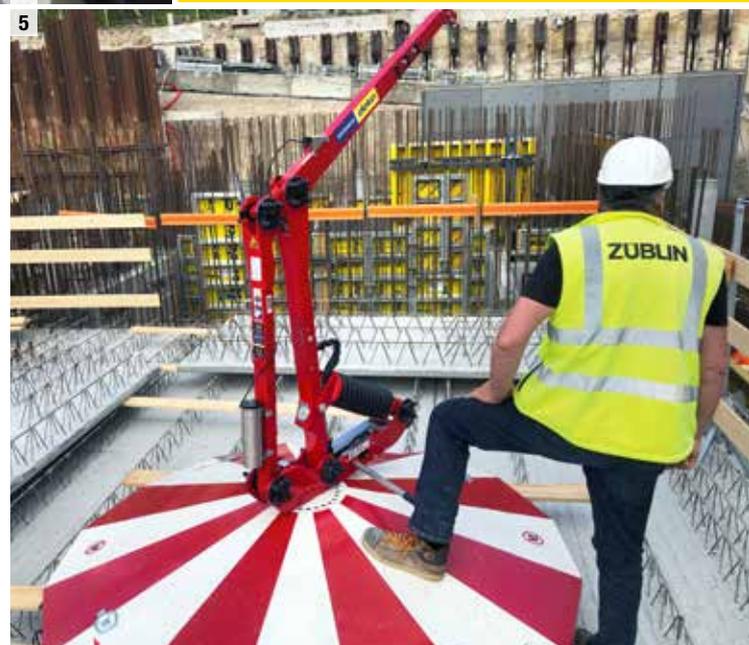
**Area:** 49,000 m<sup>2</sup>

**Client:** Carlsberg Byen P/S

**Architect:**

Schmidt Hammer Lassen Architects & Entasis

**Consulting engineer:** COWI A/S and ZÜBLIN





## Online tools for higher efficiency

The current situation shows once more, that online businesses and digital services are highly relevant. The myDoka customer portal and our Online Shop help you to increase the efficiency of your processes regarding new as well as existing materials – find out more about how it works.

### myDoka

The myDoka customer portal provides instant access to the inventory and transaction data of all job sites in real-time and enables efficient planning and control of formwork quantities.

Similar to the Online Shop, the portal can be accessed regardless of time and location, on smartphones, tablets or PCs. The user-friendly interface facilitates intuitive and easy navigation. Data can be exported in various formats to facilitate further processing.

The portal offers secure handling of confidential data by encrypted access with user name and password.

#### Why you should use myDoka

In the planning process, you have to find out some information about the materials, that are available: it is all about the condition of the material, the time that it will stay on one construction site and if it is owned by the company or rented. To answer these questions precisely, you can use myDoka. In addition to project, construction site and product management, the platform also offers numerous other features, such as automated links to the online shop or classic services such as freightage, reconditioning and storage, which you can select as modules.

myDoka is available in three versions. The basic version is free, both following upgrades are subject to a fee. The upgrade myDoka+ allows you to manage company (own material) as well as rental material. The second upgrade myDoka top offers additional KPI evaluation options for further formwork optimization, e.g. a full dispo functionality.

myDoka+ supports you with useful features such as the new stock view at the company level, including the availability status, in order to make the material flows on your site even more efficient. It enables a quick material search at the push of a button. In this way, you can increase the utilization of your own material. You can move the material between different construction sites and plan their return or reconditioning at Doka. You can carry out the corresponding controlling in the user-specific adaptable cockpit.

myDoka top also offers KPI evaluation options for better planning and optimization like the utilization rate of your own material down to item level. ■



#### Some myDoka benefits at a glance:

- Time-saving and cost-saving with instant access to up-to-the-minute data regarding their project and site
- User-friendly: just click through to the information needed
- Overview of the crucial project data
- Makes the control of formwork material possible at any time and anywhere

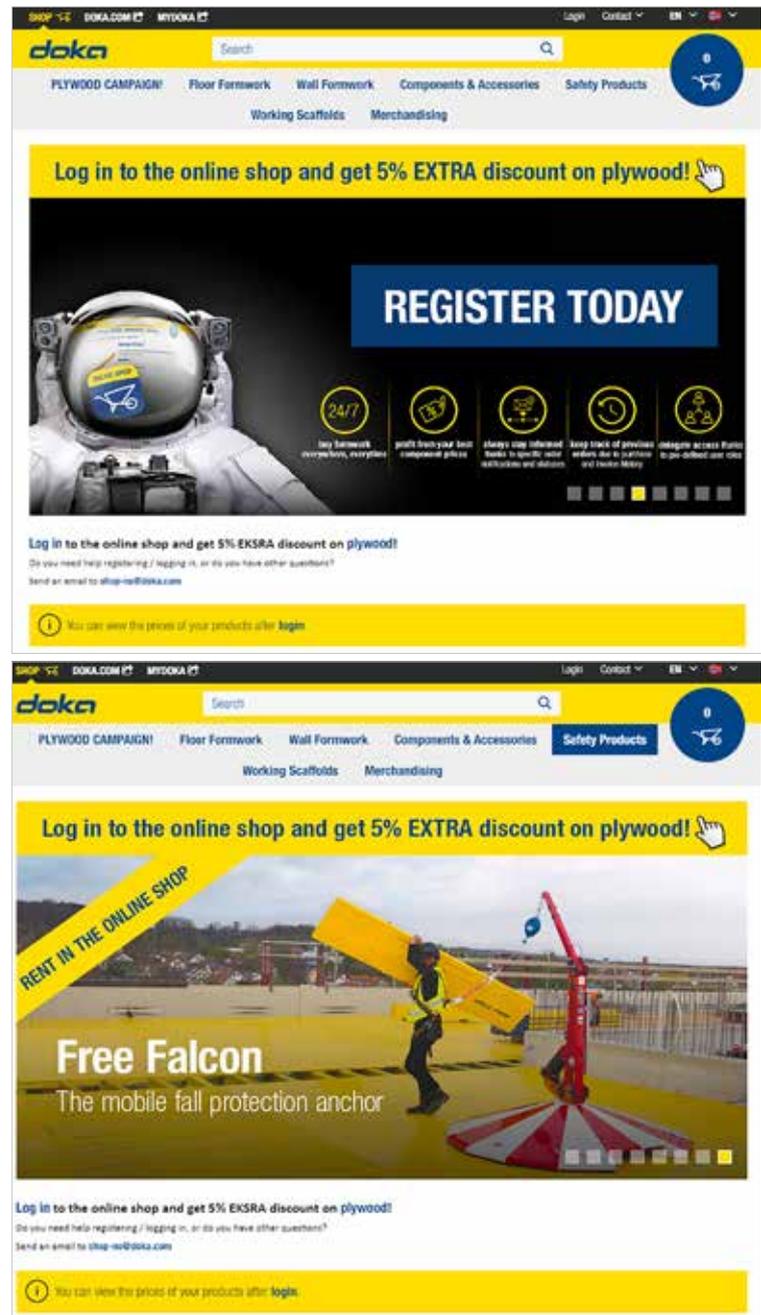
# Online Shop

The demand for online purchases has recently risen sharply. Over 5,600 registered customers in 21 countries already use the Doka Online Shop. Shop.doka.com makes buying formwork online fast and easy since 2017.

Why should you use the Online Shop? It is an excellent addition to the personal consulting service provided by the field staff. For example, you can easily buy products online, which you already know well and need no detailed advice. In this way, you benefit from the possibility to buy needed formwork 24 hours a day, seven days a week. Buying online can simplify the process for you and make it shorter in time because you do not have to make long phone calls or e-mail-exchanges. In case you do have any questions, your personal Doka adviser, as well as the online shop service hotline, are still available.

## What the Online Shop offers you

The ordered materials can be delivered straight to the site where they are needed first. The online availability check makes shopping even more comfortable for you: within a few moments, you can get a hint about the current delivery time for your required material. Additionally, customers can opt-in to receive an up-to-date overview of products, their prices, as well as recommendations for necessary accessories and add-ons. Once you placed an order, you can track its status online. Specific price and delivery conditions of the customers are applied online. ■



## Some Doka Online Shop benefits at a glance:

- Efficient product search and individual watchlist
- Fast, easy and 24/7 access to the formwork you need
- Order from anywhere and through all commonly used devices
- Possibility to link it to the the Easy Formwork Planner or the Doka Tools app

ONLINE SHOP





## FACTS:

**Site:** OYS 2030 new building section of Building B, Oulu University Hospital

**Year of completion:** 2023

**Contractors:** New hospital buildings implemented with the alliance model. Companies implementing Building B: Skanska Talonrakennus Oy, Caverion Suomi Oy, Siemens Osakeyhtiö, A-Insinöörit Oy, Arkkitehtitoimisto Tähti-Set Oy, Arkkitehtitoimisto Lukkaroinen Oy, UKI Arkkitehdit Oy, Granlund Oy.

**Doka products used:** The MF240 climbing formwork system, Framax Xlife plus, Dokaflex floor-slab formwork

- 1 The MF240 climbing formwork system was used at the hospital site. The Framax Xlife plus system was used as wall formwork for Building B.
- 2 The center of the building has fourteen elevator shafts and contains a stairwell in four separate shaft groups, a few of which are visible in the photograph.

# New hospital building made possible through the power of cooperation

OYS 2030 – building the world’s most modern hospital in the city of Oulu - is a major project in Northern Finland. Skanska used Doka’s formwork systems in the project.

## OYS 2030 – The world’s smartest hospital.

Over the past few years, construction projects in Finland have dramatically shifted in emphasis from housing construction to community infrastructures. To serve society better, new and growing residential areas need working schools, shopping centers, parking structures and hospitals to function properly.

The need for this change also inspired the local hospital district organization in Oulu to renew its entire hospital area in a single phase, thus enabling it to serve the area’s growing population efficiently, safely, and cost-effectively.

The scale of the OYS 2030 project is enormous: its estimated total value is EUR 1.6 billion, with new buildings accounting for approximately EUR 900 million. By investing such a substantial sum, Northern Finland will get a hospital of the future that will become a prototype for other hospital projects.

## Skanska and Doka working together in Building B

Construction always requires a great deal of cooperation. In Oulu, the new buildings are being constructed using the alliance model, which is becoming increasingly popular in Finland. This usually means that the builder commissions the entire package from a cluster of companies whose members cooperate closely to ensure that projects are completed properly and on time.

In the case of Oulu, the alliance incorporates enterprises from every field of the construction sector: engineering expertise, architectural design, building service technologies, and a range of other construction-related functions. Skanska Talonrakennus, for whom Doka has supplied formwork for several years, is implementing the actual structural frame.

Beginning with the renovation of the Helsinki Olympic Stadium, the cooperation between Skanska and Doka has been intensively produc-



tive, resulting in several large-scale projects that have been successfully completed on schedule.

Skanska and Doka have also collaborated on other projects. The Oulu University Hospital’s new building is the third major site where Doka and Skanska have worked together in Oulu.

## Climbing formwork system used in Building B

What makes the construction of the hospital’s Building B special is its use of the MF240 climbing formwork system.

- “The center of the building has fourteen elevator shafts and contains a stairwell in four separate shaft groups. During the development stage of the project, we knew that the shaft group casting had to progress significantly ahead of the framework installations. This is where the climbing formwork system provides an advantage,” says Skanska’s Senior Site Supervisor Hannu Häkkinen.

The climbing formwork system produced significant results, enabling the shafts for Building B to be completed ahead of schedule, thanks to good planning and well-planned logistics. Successful cooperation lays the foundation for superior results, as is evident in this project.

- “Doka provided us with very detailed plans and expert assistance when we were assembling various installations. I am very pleased with how well this cooperation worked,” adds Häkkinen.

This new building for the Oulu University Hospital is only one example of how productive things can be when we are safeguarding the interests of the customer, the core value of all Doka operations. We always strive to find the best possible solutions for our customers, whether it’s a question of climbing formwork or smaller structures. ■



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## DokaXlight

The new aluminum framed formwork is lightweight and easy to use

DokaXlight is the lightest framed formwork in the Doka product range and, best of all, impresses by combining very low weight with a high degree of durability. One person can handle it without the need for a crane, and the integrated handles make forming operations easier and faster.



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- 1-2** The universal hand-set DokaXlight can be handled by just one person and without a crane.
- 3-4** Integrated handles make handling much easier and speed up forming operations. A built-in tie-hole protector in the cross profiles ensures a high number of uses.

Whether used in new or existing buildings, at 22.6 kg (49,7 lbs) per main panel (0.75 m x 1.50 m), the durable DokaXlight is a simple and cost-effective option for concrete components of all shapes and sizes. The DokaXlight can be used by one person alone without the need for a crane, so forming operations can be completed at the same time as other work and resources can be used more productively. With a concrete pressure of up to 50 kN/m<sup>2</sup> with wall formworks and up to 75 kN/m<sup>2</sup> with column formworks, the universally deployable hand-set formwork also enables higher pouring rates.

“Because each 0.75 m x 1.50 m main panel weighs just 22.6 kg (49,71 bs), the DokaXlight hand-set formwork is easy for my team to use. This allows fast and cost-effective use in many fields of application!”, emphasises Ralf Mang, foreman, Spiluttini Bau GmbH.

In addition to its low weight, the integrated handles also make the formwork easier to manipulate, so you can “take it easy” with DokaXlight. From April 2020, integrated element connectors will be available to reduce the time spent searching and fetching on the construction site. Despite its low weight, the framed formwork is extremely durable and can be used in many situations. The stable Xlife panel with its aluminum frame provides the formwork panel with all-round protection and a built-in tie-hole protector in the cross profiles ensures a high number of uses. Sustainability hasn’t been forgotten in the DokaXlight: used material can be used to manufacture new products or for thermal energy production.

#### Successful premiere at bauma

The universal aluminum framed formwork was introduced to the public for the first time at bauma in April. The level of interest was staggering. An eventful and successful presence at the trade fair in Munich resulted in nearly 450 specific customer requests. The ultra-light-weight framed formwork was also used in live product demonstrations by the world champions and runners up in concrete construction work (WorldSkills 2017). Three times a day, they competed against the clock on the Doka campus and bettered their own performance each day – 27 m<sup>2</sup> DokaXlight were formed in a record time of 06:07:93 minutes. ■



4

# NORWAY

High efficiency and top level safety in the workplace.

**Project:** Middelthunet

**Location:** Oslo Vest (Majorstuen)

**Type of structure:** Apartment complex and commercial building

**Client:** Nordr Eiendom AS (Formerly Veidekke Eiendom) and Obos

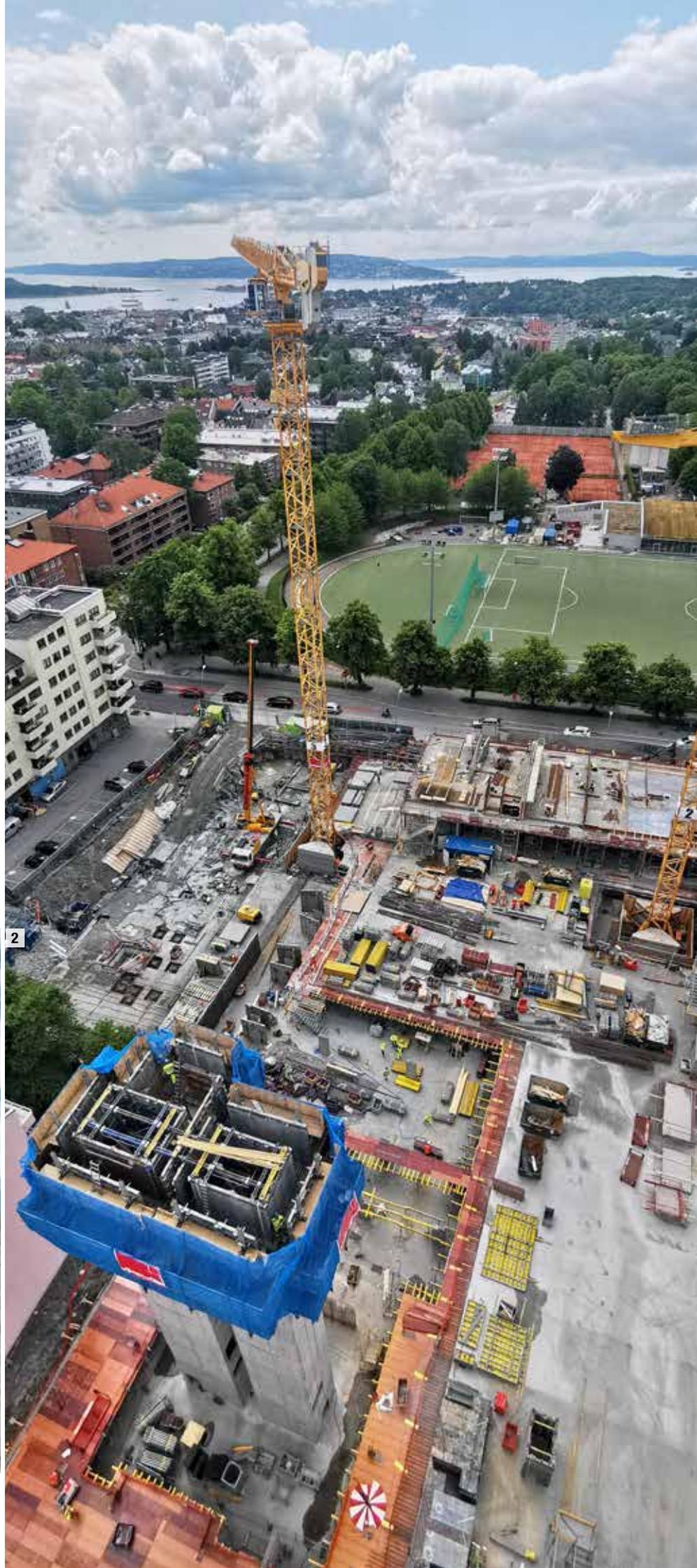
**Construction Company:** Veidekke

**Subcontractor:** Turboconstro AS

**Scheduled completion:** December 2022

**Doka in the project:** Delivery of formwork solutions with technical design, logistics and FreeFalcon fall protection

**Formwork solutions:** SKE50 plus self-climbing formwork, MF240 climbing formwork (crane), Dokadek, Dokaflex, Framax Xlife plus, Staxo 40, Staxo 100, floor table and counter-casting universal trusses



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- 1 Shaft building C: With 2-3 castings a week, the work progressed quickly and efficiently.
- 2 The building rises: Here you see elevator shafts on their way up with the SKE50 plus hydraulic self-climbing formwork. The photos were taken in June 2020.
- 3 Safety is very important to Veidekke in all project phases and the mobile FreeFalcon fall protection is used when building floor formwork. FreeFalcon is described as the ideal combination of security and freedom of movement. With the anchor point above head height, you avoid the risk of tripping, you can easily move it back and forth using a jack trolley, and you have a working radius of 10 meters.

# Doka Norway's largest housing assignment with hydraulic climbing

Doka's hydraulic self-climbing formwork came in handy when Veidekke started construction on this unique apartment complex in the middle of Majorstuen in Oslo.

## To the top with Doka's hydraulic climbing

In the winter of 2022, the building will consist of a total of 329 high standard apartments and a very attractive location on Majorstuen with great views of both the Oslo Fjord and Frognerparken. This is a unique development property in an established and very attractive residential area, and one of the few upcoming major housing projects in Oslo Vest. In addition to being an apartment complex, the lower floor will consist of business premises and a kindergarten.

After a long time demolishing the old buildings that stood on the site, the construction process itself was finally started and the new building is going up quickly.

## The right system

The Middelthunet project consists of three buildings of 10, 12 and 14 floors respectively. The hydraulic SKE50 plus self-climbing formwork is an efficient and safe solution providing protection all the way around to ensure that you are safe from falls, weather and wind.

## Fast work with a high level of security

The hydraulic climbing formwork enables quick and safe work while at the same time offering protection from the weather. With 2-3 castings a week, the work progressed quickly and efficiently.

With SKE50 plus, you have a large work area all the way around the shaft that provides for ideal working conditions. The fully hydraulic equipment makes it possible to move up to 20 climbing units at the same time. In addition, complete safety is ensured during the work and when ascending and descending by means of platforms, stair towers and ladders. Doka Norway is very proud to be part of this exciting project and we look forward to seeing the finished result! ■

New challenges and opportunities for Doka

## Our business in times of COVID-19 pandemic

In difficult times like these, there are many challenges to be overcome and new paths to be taken. The Managing Directors of the Doka branches in Denmark, Finland, Norway and Sweden assess the current situation in their countries and provide an insight into which topics and solutions are currently playing an important role and will continue to do so in the near future.



### **How does the current difficult economic situation affect the business in your country?**

Doka Denmark was founded in 2008 and had its first childhood years during the financial crisis. This gave us some hard experiences and learnings, which we now, during the Covid 19 situation, benefit from.

### **What are the main challenges, and what solutions do you offer?**

The current pandemic will affect the business in Denmark in 2020 with a significant decrease in GDP. The construction sector has handled the situation efficiently, and only a small decline has been seen, and even less in segments of our core business. From the in-situ concrete and formwork viewpoint, the outlook for 2021 is a stable volume and perspective. We now have been at our new branch for two years, with optimised processes at our yard, where cost-effectiveness and quality are key parameters, in order to be a competitive formwork supplier. In 2020, we introduced new offer solutions to support our customers in calculating and realising the Insitu concrete works, with less risk and higher efficiency. Additionally we offer customers an all-risk model in terms of damages and repairs of our products and for our engineering services, as we always find that these costs differ most from the calculations to the actual performance of the projects. We also collaborate intensively with our customers to avoid increased transport, as these costs benefit neither the customer nor Doka. These new models have been well received, also from already ongoing projects.

During the lockdown period, we gained new learnings about working from home, and having virtual meetings. Therefore, we also relaunched our myDoka customer platform customer platform, started the process for a brand new website, which we expect to go public at the end of 2020, and began the task of establishing a Danish Webshop, which should be available by mid-2021. All those new digital platforms will be available 24-7 for the benefit of our customers - fast and cost-effective solutions for everyone involved.

We look forward to providing our best service to you in 2021, by using our digital platforms, offering our excellent formwork solutions and through our transparent pricing models. For 2021, we wish all the best for all our customers and partners. ■



We look forward to providing our best service to you in 2021, by using our digital platforms, offering our excellent formwork solutions and through our transparent pricing models.

**Søren Clemmensen**  
Managing Director,  
Doka Denmark





#### **How does the current difficult economic situation affect the business in your country?**

The past year has been unpredictable in many ways, and after a pandemic around the world, many things will not return. Plans at the beginning of the year have had to be updated in many industries to match the new normal. Air transport and tourism are certainly the sectors that suffer the most. Construction has survived the situation reasonably in the early stages, and the industry has adopted operating models that have effectively prevented the spread of the virus.

#### **What are the main challenges, and what solutions do you offer?**

Safety on construction sites is important for all parties. As a supplier of formwork equipment, Doka is responsible for the safety of the equipment it supplies and the design associated with its use. The products and their manufacture meet strict requirements. Service and maintenance of the equipment ensure that the products delivered to the customer meet the required characteristics. The pre-assembled pouring platforms of the wall formwork and the integrated ladder systems ensure safe and fast use of the equipment. The edge protection system that can be installed with the slab formwork and the mobile fall protection anchor FreeFalcon enable safe work regardless of height. Renting and using formwork system is an environmental act that saves natural resources.

Digitalisation in construction business is growing all the time. Computer-aided formwork engineering has been in use for a quarter of a century, and the natural continuation for it is that drawings are made directly into the data model. Doka continues to develop with its partners various tools to facilitate formwork work on-site, such as inspecting formwork installations on-site or equipment and software to measure the development of concrete strength. Through the myDoka portal, the customer gets a direct connection to the data of their construction site with Doka's ERP system. ■

Doka continues to develop with its partners various tools to facilitate formwork work on-site, such as inspecting formwork installations on-site or equipment and software to measure the development of concrete strength.

**Risto Lehtikoinen**  
Managing Director,  
Doka Finland



## How does the current difficult economic situation affect the business in your country?

Even with solid finances from the government, the Covid-19 situation will also affect the Norwegian economy for a relatively long time. We are seeing that the willingness to invest in the private sector is decreasing, which we believe will have an effect on commercial buildings. We also expect a decline in the housing sector, while we have more bright expectations to the development of publicly funded buildings and construction projects. Overall, this makes us optimistic for the market development in 2021, even though there is a significant risk of how any new outbreaks may affect the development.

## What are the main challenges, and what solutions do you offer?

The main challenge will be to adapt the organization to the changes required from the market. More energy will be put into developing good solutions for large projects in the transport sector, in the same way as for larger public construction projects.

We believe that several of these kind of projects will be well suited for our various digital solutions, which have been developed together with our formwork solutions, to contribute to increased productivity on the construction site.

For other and smaller projects, it will be important for us to facilitate simplified transactions, e.g. purchasing through our online shop. We believe this channel will help make it even easier to be a customer of Doka Norway.

However, most important of all are the people for us in Doka Norway. We will do our best to be close to the customers, regardless of which projects that are to be solved. ■



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**Ståle Njåtun**  
Managing Director,  
Doka Norway

### How does the current difficult economic situation affect the business in your country?

So far this year our business hasn't been affected at all. On the contrary, we have been in the lucky position that our activities and revenue are even higher, compared to same period last year.

Based on available forecasts for the construction volumes next year, we are prepared for a slight slowdown in the market, but hopefully not so dramatic.

We can't influence the overall economic situation, therefore we are focusing ourselves on the available potential on the market.

### What are the main challenges, and what solutions do you offer?

We have a humble attitude for the year to come, but we are also confident that we can manage the situation as it is now.

Most of the important fundamental prerequisites are in place, we have a strong and experienced team, a product portfolio that are well adapted to the market needs and a readiness to deliver.

The ongoing digitalisation is a topic for the whole construction sector and a lot will happen in this segment in the coming years. This is also an important segment for us and Doka has already several digital services in place, with the aim to support our customers to increase the productivity on site and to simplify the work (i.e. the Citygate project at page 18).

During this year, the pandemic situation has forced many of us to communicate more thru digital tools and platforms. In this regard, I want to highlight our customer platform "myDoka" that supports our customers to monitor their sites in an easy and independent way.

Despite the difficulties & challenges that might occur, the team of Doka Sweden are prepared to support you!

Stay safe! ■



We have a strong and experienced team, a product portfolio that is well adapted to the market needs and a readiness to deliver.

**Claes Thoreson**  
Managing Director,  
Doka Sweden



Citygate office complex planned entirely in 3D

# BIM in the spotlight

One of Northern Europe's tallest office buildings is rising into the sky in the Gårda district in Gothenburg. The 144 metre high building will provide 42,000 square metres of office space over its 36 storeys. This project is unique for Doka in various reasons: it's not just that the BIM experts planned a building entirely in 3D for the first time; two digital services from Doka – Concremote and DokaXact – are making their valuable contribution to construction progress.



Copyright: Skanska

## Revit and BIM 360: 3D planning and digital project management

Before the official start of construction, engineers from Doka, Skanska and Alimak (who provided the construction hoist) were able to move virtually through the 3D building core, inspect the Doka SKE50 automatic climbing formwork in detail, and clarify interaction with the construction hoist to ensure access at every construction stage.

However, before reaching this phase, Doka's BIM experts created 3D formwork solutions using the DokaCAD for Revit planning software. DokaCAD for Revit is an Autodesk Revit plug-in that allows native, automated formwork planning in BIM software. One of the major advantages of this system was that the customer was able to integrate the formwork planning delivered by Doka seamlessly into their own Revit model.

A digital collaboration network of project participants was set up in the construction project management software BIM 360, which provided all participants with a shared 3D model that everyone could access without the need for any other custom software. This meant that collisions could be identified earlier (e.g. the insert-moulded horizontal and vertical tensioning cables for prestressing) and eliminated before execution.

## DokaXact and Concremote: digital duo saves time and guarantees accuracy

DokaXact has a decisive role for workflow efficiency and ensuring precise construction of Citygate's building core. The system is based on measurement sensors installed at predefined points of the formwork, communicating wirelessly with a central processing unit. Surveyors and the site construction team use DokaXact to quickly and accurately position the wall formwork on the automatic climbing system. Using the DokaXact app, which guides the construction site team through the process step by step, the formwork can be positioned for the next

concreting stage with millimetre accuracy. Data about the current position and progress are transmitted via a cloud and can be viewed and re-used from anywhere.

Concremote is used to improve the planning of the construction project, but that's not all: it gives the client access to real-time data from anywhere, any time. This means that information about the concrete performance can be analysed and appropriate construction measures can be launched at the right time, e.g. formwork striking. In the Citygate project, the real-time concrete strength data is being used to achieve the planned cycle time of one storey per week.

## SKE50 plus automatic climbing solution considers demands of concrete works and precast installation

Due to required space inside of the building core, the SKE50 plus automatic climbing formwork with mast system was used. This allows

- 1 Citygate rendering
- 2 Citygate by night
- 3 A view into the building core, showing the safe access from the construction hoist to the Doka automatic climbing formwork.
- 4 During a virtual tour of the building, the technicians and the customer were able to get a precise idea of the planned formwork solutions before construction began.



## FATCS

**Project:** Citygate

**Location:** Gothenburg, Sweden

**Building type:** Office building

**Height:** 144 m

**Storeys:** 36

**Office space:** 42,000 m<sup>2</sup>

**Client:** Skanska

**Sub-contractor:** Svensk Armering & Betongbyggen

**Architect:** Henning Larsen Architects

**Construction start:** Second quarter of 2020

**Construction end:** Second quarter of 2021

**Products in use:** SKE50 plus automatic climbing formwork, Framax Xlife framed formwork, Top 50 large-area formwork, Top 100 tec large-area formwork, Monotec tie-rod system, DokaXact positioning system, Concremote concrete monitoring

**Services:** 3D planning with DokaCAD for Revit and BIM 360, Formwork instructors

enough clearance to lift prefabricated wall and ceiling elements into place, while still convenient for striking formwork. "The solution is a well-thought-out system which simplifies the work and can contribute to keeping cycle times short", emphasises Niklas Jarlström.

The Monotec tie-rod system is used at the upper water level of the Top 100 tec large-area formwork. The tie-rods can be easily operated from the outer top platform, which speeds up forming works under safe working conditions and avoids the need for ladders and additional scaffolding on the inside. For efficient installation of the prefabricated reinforcement cage, the SKE50 plus automatic climbing formwork with a travelling unit was used for the outer platforms. This features a wall formwork that can be retracted by up to 95 cm. For safety reasons, specially built stairs and ladders were used as walkways between the different levels. Safe access from the construction hoist to the Doka automatic climbing system was also ensured throughout construction. ■

« DokaXact makes life easier for the surveyors »

**Niklas Jarlström,**  
Skanska Product Manager





Denmark

## First use of DokaXlight in Denmark

Our new aluminum framed formwork DokaXlight is being used for the first time in Denmark, and has only been in operation for a few weeks. For the construction project "Energinet" in Esbjerg, the company Jorton uses DokaXlight. ■



You'll find more details about DokaXlight on the website of Doka Denmark:  
<https://bit.ly/32flBel>



Finland

# Product launch – Framax Xlife plus Thermo

Winter is coming, and with it, the cold air is coming to the north. In the past, winter effectively prevented casting work in place, and construction sites may have had to wait for better weather for a long time. In Finland, however, a solution was developed to make the castings successful regardless of the weather. The Framax Xlife plus Thermo heated mold system works efficiently with electric heating, ensuring that the temperature required for casting is maintained despite external conditions. Northern Finland, in particular, will benefit considerably from Doka's new product, and we are looking with interest in Finland at how the new heated mold finds builders. ■

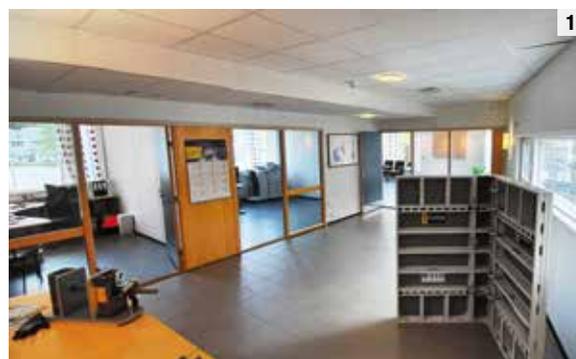


You'll find more details about the product on the website of Doka Finland: <https://bit.ly/3epozCo>

Norway

# Expansion and growth in a challenging time

We are proud that in 2020 we established a new office and warehouse in Bergen, which will be the third Doka location in Norway. The building consists of both an office and a warehouse. Besides, we have expanded our head office in Oslo by 100m<sup>2</sup>. These 100m<sup>2</sup> include ten new office spaces, an expanded canteen and upgraded cloakroom facilities. The construction process was completed in the summer of 2020. ■



**1-2** New office and warehouse in Bergen  
**3-4** Head office in Oslo

Continued on the next page >>



- 1 Aerial view of the Karlatornet Tower at an early stage.
- 2 DokaXact takes an established process and enables the construction companies to form concrete cores with a state-of-the-art technology.
- 3 In the Citygate project, the real-time concrete strength data from Concremote is being used to achieve the planned cycle time of one storey per week.
- 4 Citygate, a 144 m office complex in Gårda, Gothenburg, is currently growing skywards with the help of Doka's SKE50 plus automatic climbing formwork.



Sweden

## Two high-rise projects use DokaXact

In Gothenburg, two high-rise buildings are currently rising towards the sky, Citygate and Karlatornet. In both construction projects, Doka's interactive and sensor-based system DokaXact are used for the correct placement of wall formwork elements for building cores. When Karlatornet will be finished, it will be 245 meters high and have 73 floors for accommodation, offices and hotels. In the district of Gårda in Gothenburg, the 144-meter-high Citygate will provide 40,000 square meters of office space spread over its 36 floors.

"DokaXact with its fast and direct adjustment of formwork system is an important part of our measurement process and a strong contributing factor of our good results on the climbing core"  
 - Eirikur Thorgrimsson, Measurement technician at Citygate. ■

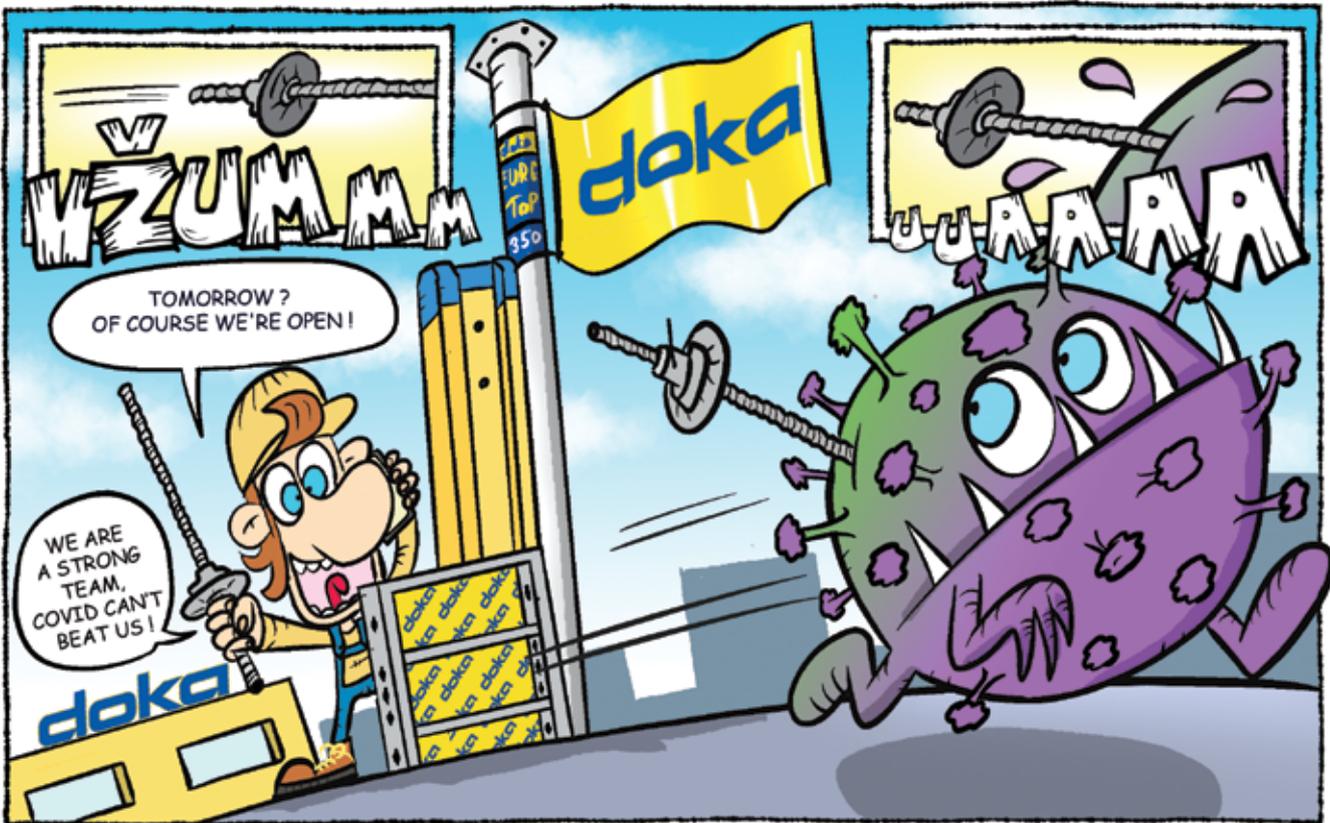


Would you like to know more about the benefits of DokaXact?  
 Then watch the following video: <https://bit.ly/3eukT2e>



# MR. FACHMANN

# DOKA IN ACTION





**doka**

# Remote Instructor

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