Edition 6

Ideas. Solutions. Possibilities.

Success stories

Layher®

More Possibilities. The Scaffolding System.

TEAM.
WORK.
PASSION.

The Layher name has been synonymous with safety, high-quality scaffolding systems, outstanding service and dependable partnership for more than 75 years. As a family-owned company, we are closely interconnected with our region and its people. Design, production, sales, logistics and management are at home in Gueglingen-Eibensbach. This is where we produce quality "Made in Germany". We have a global presence with more than 2,700 employees and sales subsidiaries in 46 countries, and we live by our brand promise of "More possibilities" with enthusiasm and inventiveness. Your success is our aim.

Find out more at: **www.layher.com**

Dear Readers,
We're back again in 2024 with a new edition of our "Success stories" magazine.

EDITORIAL

"Ready for the future" – that's how we'd describe the future prospects for the industry from our perspective. In spite of the challenging developments in the construction market – the outcome not only of high material and financing costs but also of a sense of uncertainty in relation to the general economic situation – we're looking ahead to the future with a positive mindset as far as the scaffolding sector is concerned.

As a successful family-owned company with a long tradition and a lot of experience dealing with changing conditions and constraints, we too repositioned ourselves strategically last year when we opened our new manufacturing plant for Allround Scaffolding and expanded our SpeedyScaf production capacity. We're now optimally equipped to approach the coming tasks effectively as we write the next chapter in our success story with you, our customers.

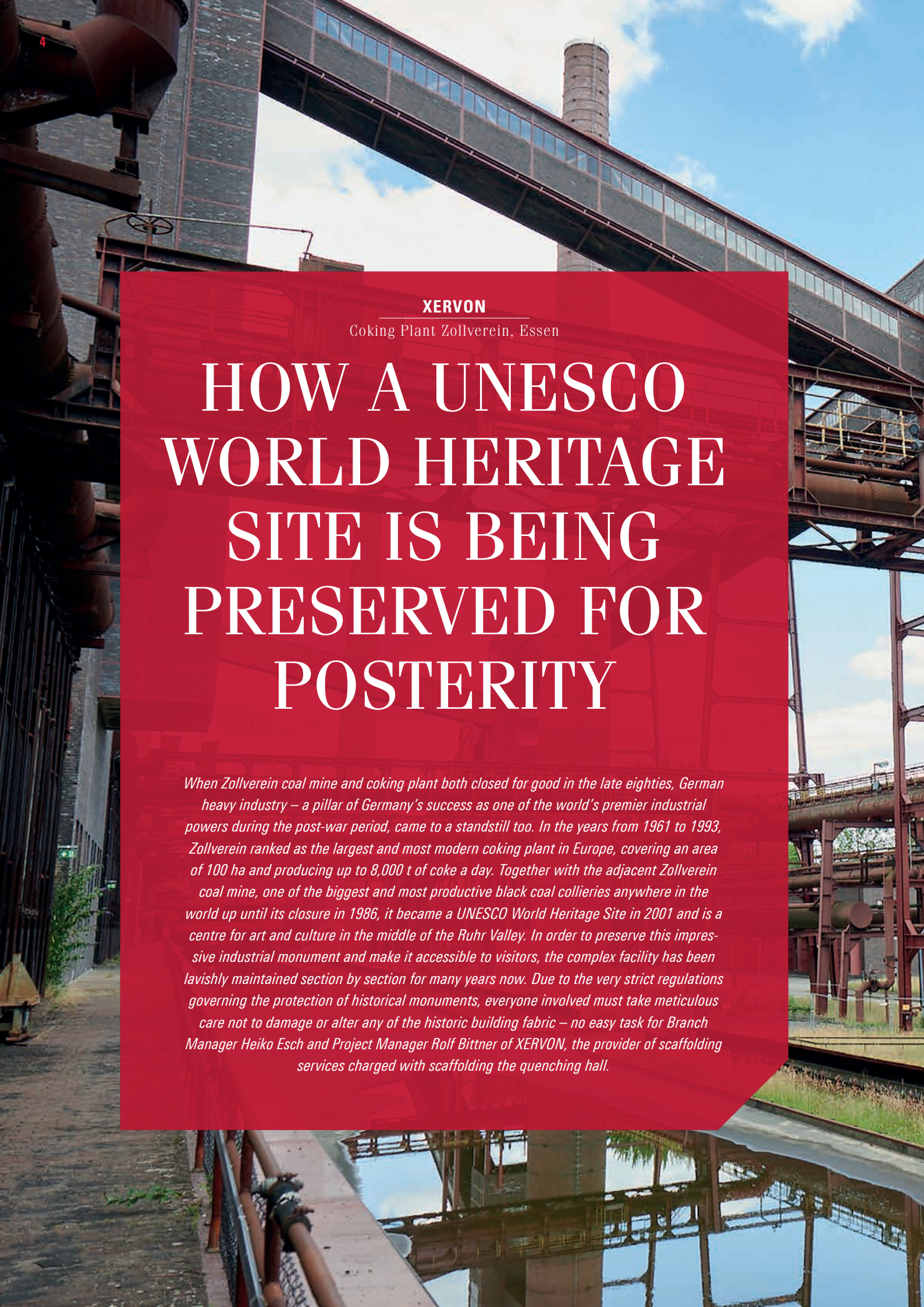
In this issue, we describe several success stories and we'd like to begin with a few superlatives: up until its closure in 1993, the Zollverein coking plant in Essen ranked as the largest and most modern of its kind in Europe. The challenge for XERVON, the scaffolding contractors, was to erect scaffolding around this huge industrial monument in preparation for its refurbishment and mobilise all their skills in order to succeed here regardless of the many architectural details, missing plans and strict regulations governing the protection of historical monuments.

We then move on to southern Germany, or more precisely to Karlsruhe, where the local scaffolding firm of Burkart were awarded the contract to scaffold the opulent sepulchral chapel dedicated to the ruling family of Baden in Hardtwald forest. The chapel dates back to the late 19th century and was in need of complete refurbishment – no easy undertaking given the problematic loading capacity of both the terrain and the structure itself.

In our final story, we cast a spotlight on the increasingly important issue of 3D laser scans for buildings as a starting point for simple, efficient and safe planning and execution of scaffolding projects using Layher SIM.

Once again, you can find plenty of interesting information and video clips in this latest issue of our magazine.

We hope you enjoy reading and watching!



XERVON

Coking Plant Zollverein, Essen

HOW A UNESCO WORLD HERITAGE SITE IS BEING PRESERVED FOR POSTERITY

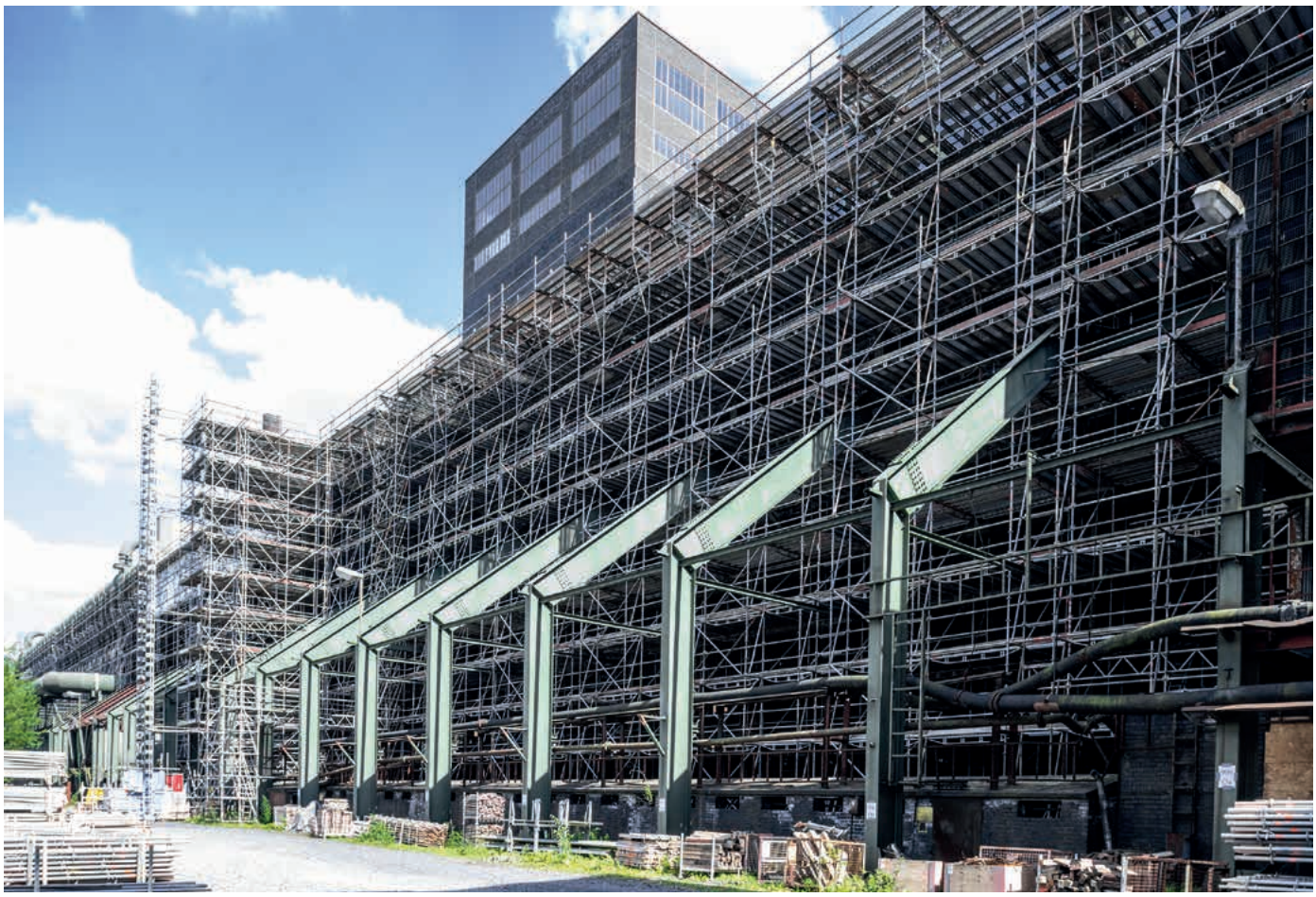
When Zollverein coal mine and coking plant both closed for good in the late eighties, German heavy industry – a pillar of Germany's success as one of the world's premier industrial powers during the post-war period, came to a standstill too. In the years from 1961 to 1993, Zollverein ranked as the largest and most modern coking plant in Europe, covering an area of 100 ha and producing up to 8,000 t of coke a day. Together with the adjacent Zollverein coal mine, one of the biggest and most productive black coal collieries anywhere in the world up until its closure in 1986, it became a UNESCO World Heritage Site in 2001 and is a centre for art and culture in the middle of the Ruhr Valley. In order to preserve this impressive industrial monument and make it accessible to visitors, the complex facility has been lavishly maintained section by section for many years now. Due to the very strict regulations governing the protection of historical monuments, everyone involved must take meticulous care not to damage or alter any of the historic building fabric – no easy task for Branch Manager Heiko Esch and Project Manager Rolf Bittner of XERVON, the provider of scaffolding services charged with scaffolding the quenching hall.


Essen

Project Manager Rolf Bittner of XERVON needed a solution for almost 300 m of rails in the large hall at the heart of the coking plant. They were previously used to transport hot coke from the ovens.

WELL PLANNED IS HALF BUILT

"While the scaffolding was being erected, the Zollverein Foundation's monument conservation officers were on site at least once a week to check every single support, take a close look at every single anchor plate and make absolutely sure that we didn't modify any of the building fabric", Bittner reports. "The people responsible for the project were positively surprised each time by how coherently and reliably our solutions were planned in advance on the basis of the detailed 3D scans, and how flexibly we were nevertheless able to respond to last-minute change requests with standard Layher Allround material", Esch continues. "That was something they'd not previously experienced in this form with other service providers." It was not only the Layher scaffolding material that laid the foundation for this success but also the decision to measure the entire structure using 3D laser technology and carry out all planning using the data acquired in this way. "Layher and the technical office in Eibensbach provided us with very professional support", says Bittner. The complete scaffolding was planned in 3D as part of the Layher SIM process using LayPLAN SUITE software tools, so that we were able to solve any challenges upfront during the planning phase. "The project was also something of a trial run for us, in that it helped us see to what extent planning scaffolding in 3D brings real benefits for our everyday work and assess whether it would make sense for our company to purchase the



The complex structure was regularly extended over the years, meaning that efficient scaffolding planning was only possible with the help of detailed 3D laser scans. Even the experienced customer was pleasantly surprised by how fast and how flexibly the scaffolding was erected.

technology ourselves. What's more, this is the first major project that we were invited to realise on behalf of the Zollverein Foundation. I have to admit we're impressed! And, even more important, so are our customers", Esch adds. ▸▸

The scaffolders from XERVON created among other things an impressive birdcage scaffolding of 21,900 m³.

An 8,000 m³ birdcage scaffolding element inside the hall provides the team of refurbishers with easy and safe access.

HAVE YOU EVER SCAFFOLDED A CHUTE?

On the outside of the quenching hall, the specialists erected 22 m high and 3.53 m wide birdcage scaffolding totalling an awesome 21,900 m³ over a length of 282 m. The scaffold foundation on the sloping, tiled coke chute was a particular challenge. Additional 0.73 m wide support structures were therefore installed along the entire length to absorb any forces occurring. “We weren’t allowed to drill, we weren’t allowed to put too much stress on the tiles and we were obliged to wedge the entire scaffolding in a very elaborate way inside the building”, Bittner explains. “We laid tubes to the inside in order to dissipate the tensile forces in these areas and absorb them on the interior walls.” Layher Allround Scaffolding offers a wide range of solutions for tricky tasks such as this, even in the standard range, and literally enables ‘more possibilities’.

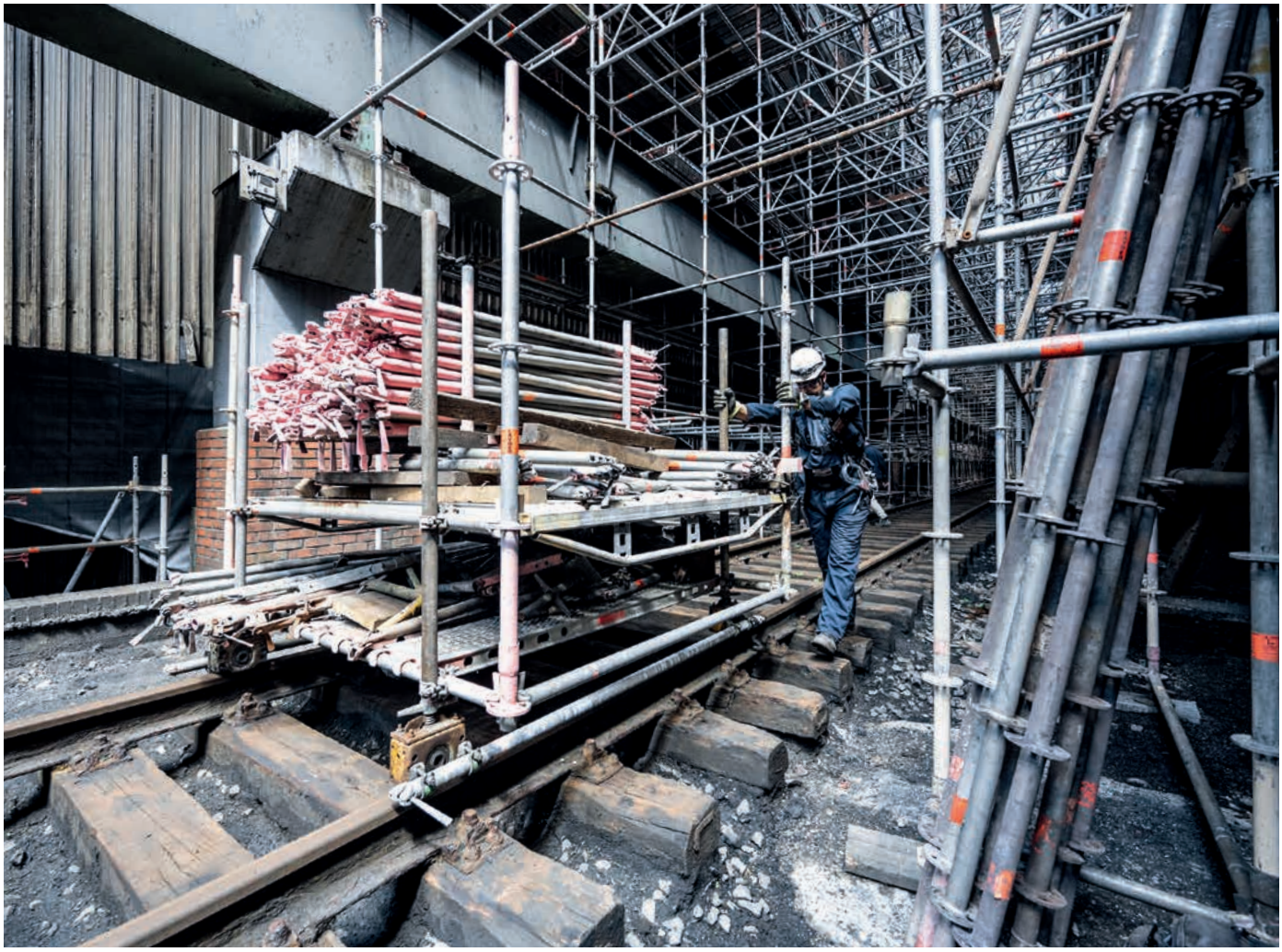
The tiled coke chute, which is a listed monument, presented the planners with a number of challenges.

Due to its unclear structural properties, the hot alley was not allowed to be used to reduce the total weight on the scaffold.

SCAFFOLDING ON RAILS

Inside the quenching hall, three birdcage scaffolding elements – each 8,000 m^3 in size and completely wrapped in foil plastic sheeting in places for dust protection – were erected one behind the other, creating safe and readily accessible platforms for carrying out the refurbishing work. Once again, the building had a special challenge in store. A so-called hot alley runs at an elevated level parallel to the tracks inside the building, on which huge railway wagons used to transport coke from the ovens to the quenching tower. From here, the person in charge of the coking plant could keep a watch on the entire process route with the help of a small rail car. Unfortunately, the structural properties of the underground were unclear, meaning the birdcage scaffolding was not allowed to be supported on the floor but had to be built on the rails with the help of wooden beams.

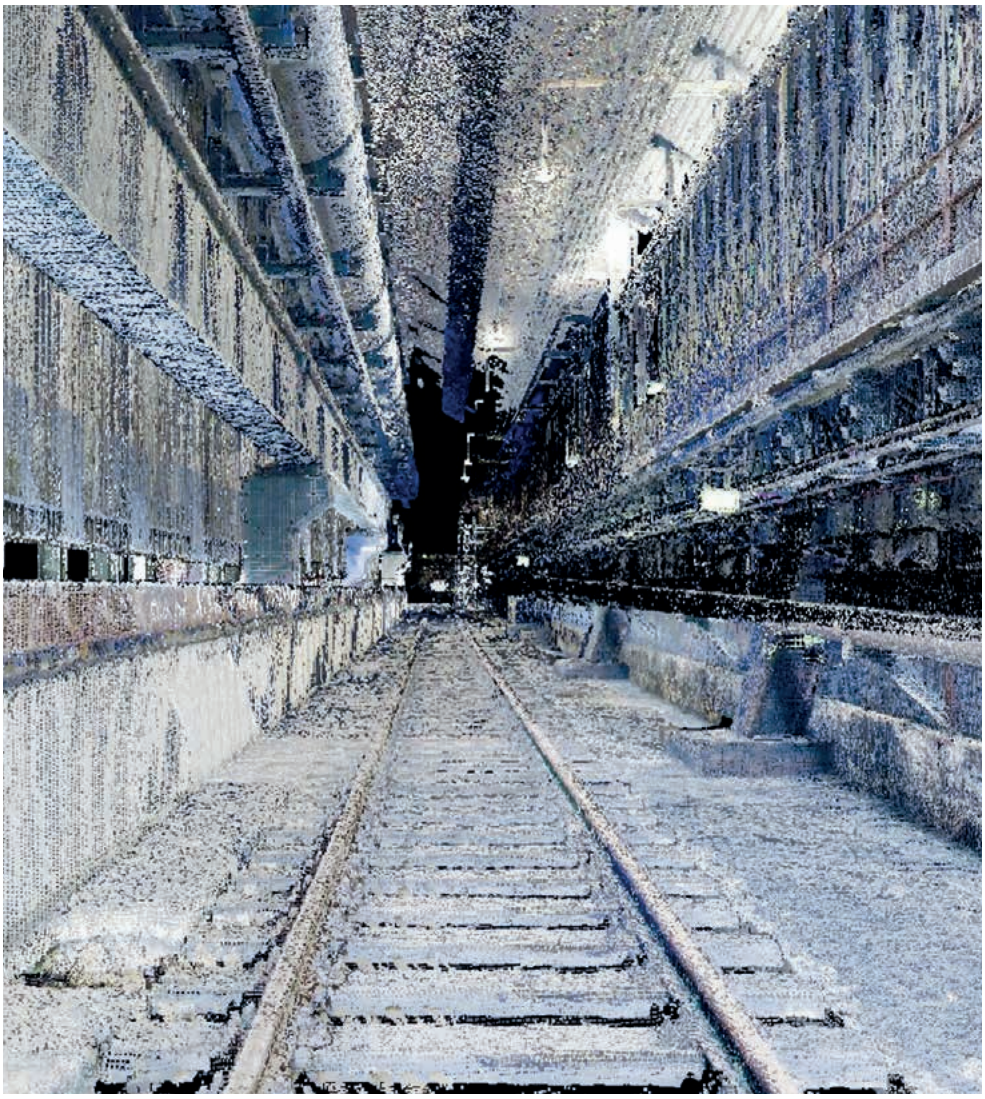
Since the hall is not suitable for lorries, the responsible persons at XERVON had to come up with a solution to get material to wherever it happened to be needed on site. With four rail rollers and some Layher Allround standard material, they set to work building a wagon which can be pushed along the railway tracks inside the hall, turning material transport into child's play.



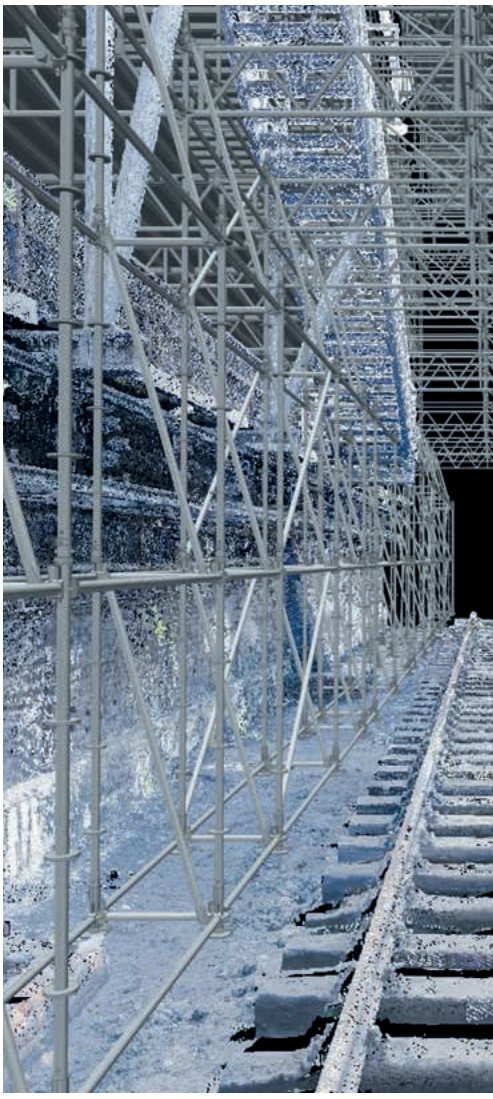
Fate as an opportunity. Since the hall is not suitable for lorries, XERVON's scaffolders set to work building a wagon for transporting the material along the railway tracks.

A CLOUD FULL OF POINTS TRACES THE BUILDING

An inconspicuous all-rounder – the 3D laser scanner



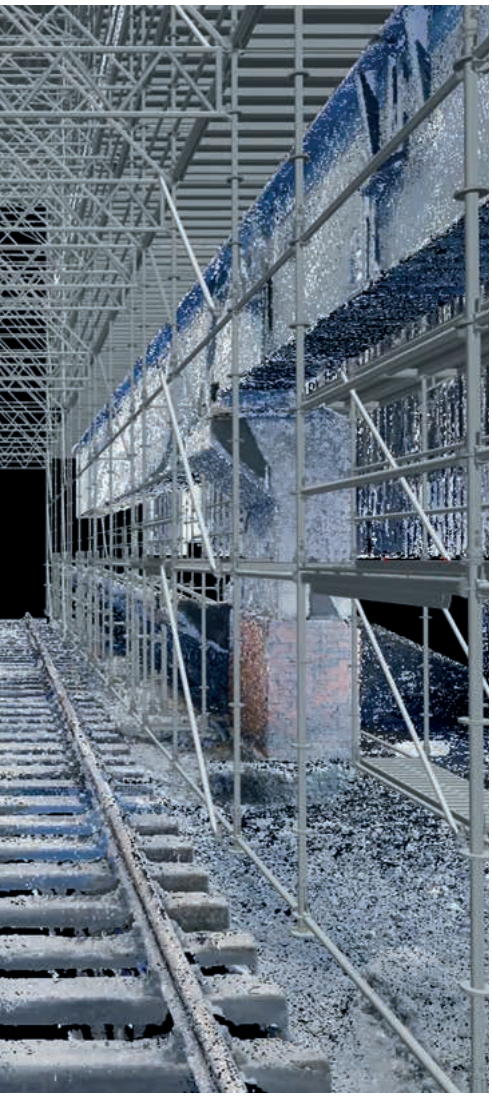
The result of the scan is a 3D point cloud that shows every detail in three dimensions.



The scaffolding can be optimally planned in the point cloud using LayPLAN CAD from the LayPLAN SUITE.

THE ENTIRE PROCESS – FROM PLANNING THROUGH SITE AND MATERIAL LOGISTICS TO ERECTION – WAS STORED AS A DIGITAL IMAGE DURING THE LAYHER SIM (SCAFFOLDING INFORMATION MODELING) PROCESS.

Planning in 3D is a good idea whenever the geometry of a building is complex and there are numerous interference contours that make it difficult to erect scaffolding. If no 3D-files of the building exist, they can be generated by a 3D laser scan. Laser beams scan the building from various angles. The software uses the data recorded by the scanner to compute a digital twin of the building in the form of a point cloud in preparation for planning the scaffolding in LayPLAN CAD. An optimally planned 3D AutoCAD model and 2D assembly drawings are the result. All obstructions or problematic geometries can then be identified in advance and both the assembly procedure and the required material planned accurately. “That way, we don’t have to engage in any do-it-yourself on site, which is frowned upon and above all time-consuming”, Bittner comments. “On top of that, it prevents missing material from bringing work on the construction site to a halt for long periods. The slightly longer time and greater effort for planning are more than offset by the easy installation.” The entire process – from planning through site and material logistics to erection – was stored as a digital image during the Layher SIM (Scaffolding Information Modeling) process. Layher offers the software needed for this purpose as part of the LayPLAN SUITE software package, for instance. Layher SIM has manifold benefits. Amongst other things, it enables a quick and trouble-free mounting of the scaffolding, which leads to more planning and scheduling certainty as well as increased profitability in every project. In complex construction projects, Layher SIM can also be combined with BIM (Building Information Modeling), leading to more transparency for all trades.



The advantages of detailed planning based on the 3D scan were clearly apparent on the construction site.

SERVICES FOR INDUSTRY

The specialists in Layher's Technical Office are only ever a phone call away for the project manager.

XERVON GmbH is part of the REMONDIS Group and has been a leading international supplier of industrial scaffolding and insulation services for over 80 years, with sister companies offering specialist surface technology and maintenance. The Bottrop branch is responsible for the project at Zollverein coking plant in Essen. "We have about 200 scaffolders of our own here plus quite a few subcontractors, and our work is mainly for industrial clients throughout the Ruhr District", explains Branch Manager Heiko Esch. "XERVON's Scaffolding division was originally an independent scaffolding specialist and even then, we worked exclusively with Layher material. Today, we still have material from those early years in stock and we continue to use it as a matter of course. The

"THE SCAFFOLDING SYSTEMS ARE DESIGNED TO BE COMPATIBLE, AND BECAUSE THEY'RE ALSO HIGHLY DURABLE AND CAN BE PURCHASED FOR DECADES AFTERWARDS, LAYHER'S INTEGRATED SYSTEM REPRESENTS AN EXCEPTIONALLY SECURE INVESTMENT FOR US."

scaffolding systems are designed to be compatible, and because they're also highly durable and can be purchased for decades afterwards, Layher's Integrated System represents an exceptionally secure investment for us. When it comes to satisfaction, here's nothing more to be added."

The Zollverein coking plant is a magnificent testimony to German industrial history.

USED PROUCTS

- ALLROUND SCAFFOLDING
- SYSTEM FREE ACCESSORIES
- SOFTWARE

Video clip of XERVON project

The striking winding tower of the former Zollverein coal mine in Essen, popularly also referred to as the "Eiffel Tower" of the Ruhr District, is probably one of the best-known landmarks in German industrial history and – no less important – a symbol of Germany's post-war economic revival. Today, this UNESCO World Heritage Site is home to the Red Dot Design Museum, which was redesigned and converted by star architect Norman Foster, as well as numerous other cultural and event facilities and a park that is open to the public.

THE ZOLLVEREIN COAL MINE
THE HEART OF GERMAN HEAVY INDUSTRY

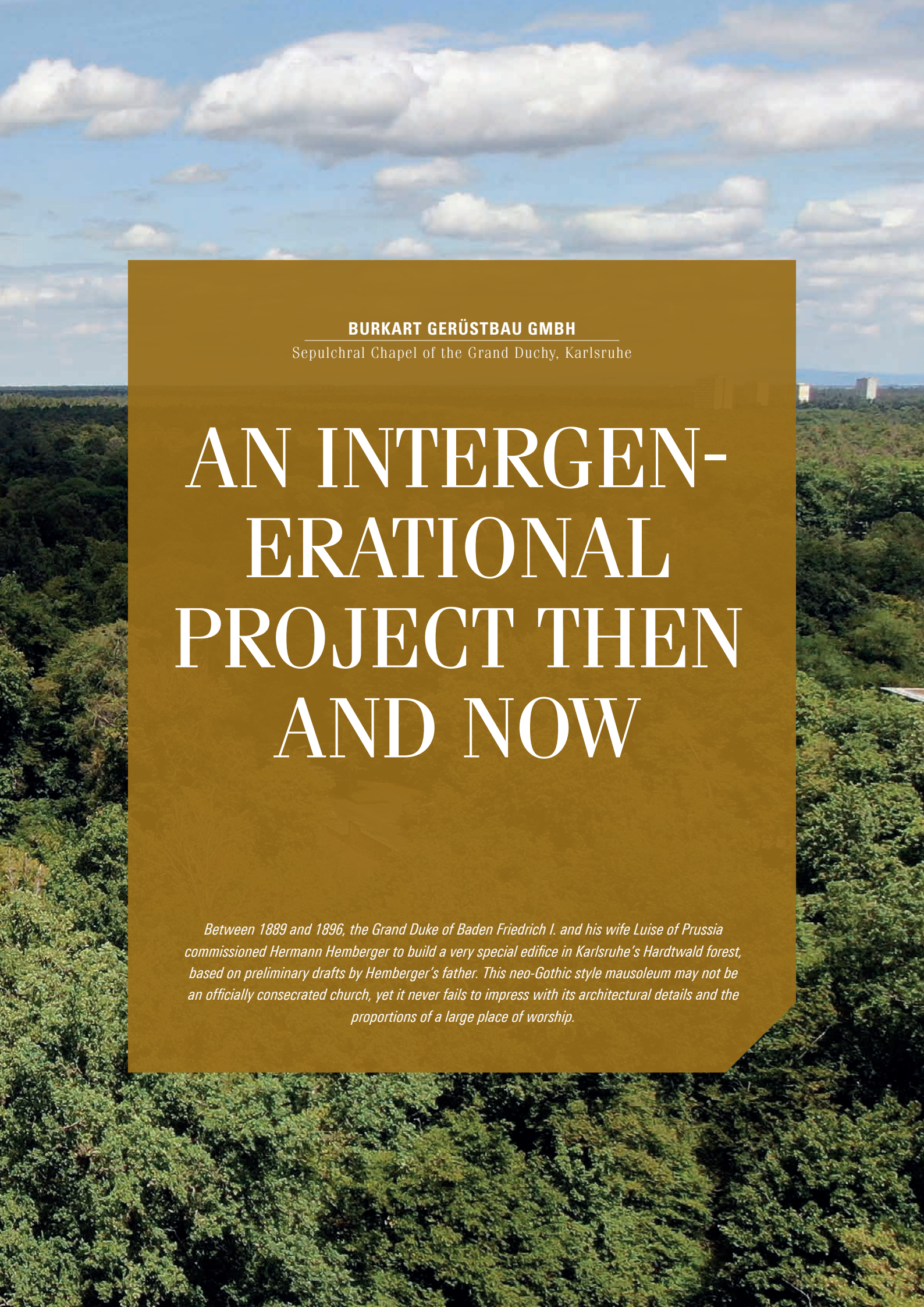
As the Industrial Revolution gathered pace mid-way through the 19th century, coke was in great demand as a fuel for steel production. In 1834, the marl layer underneath today's Zollverein coal mine in Essen was successfully penetrated for the first time, enabling drilling at a depth of 120 m into a particularly rich coal seam named after the German Customs Union founded in 1833. Following extensive preparations, the first coal was extracted there in 1851. It was only a short while after mining got under way that the first simple coking plant was put into operation adjacent to the shaft – the beginning of coke production and the predecessor of the Zollverein coking plant which kept going until 1993.

The colliery was regularly expanded and modernised over the decades. More winding shafts were built starting in 1890. There was a period when the mine had as many as twelve winding and ventilation shafts. Shaft XII – the colliery's most prominent contemporary landmark – was built by 1932, making the Zollverein coal mine the biggest in the entire Ruhr District. Even before the war, it achieved an annual output of almost 3.6 million tonnes of coal and provided work for more than 6,000 people.

After the Second World War, which the colliery survived with relatively little damage, the plan was to vastly increase coke production in order to meet the energy demands of the flourishing Federal Republic and its economic miracle. In 1966, Shaft II reached the coal seam's 14th level at a depth of 1,005 m. By 1972, Shafts X and XII had also been drilled down to this depth. Massive cost-cutting measures by the operator, Ruhrkohle, and a major slump in sales led to the winding towers eventually being shut down for good on 23 December 1986.

Following decommissioning in 1986, the state of North Rhine-Westphalia purchased the site of Shaft XII from Ruhrkohle – already a listed monument at the time and designated as part of the German UNESCO World Heritage Site in 2001 – and transformed it into a lively cultural and business location in collaboration with the internationally renowned Dutch architect Rem Koolhaas. Today, the Zollverein coal mine is a living industrial monument that can also be interpreted as a symbol of the successful structural changes all over the Ruhr District.


Karlsruhe



BURKART GERÜSTBAU GMBH

Sepulchral Chapel of the Grand Duchy, Karlsruhe

AN INTERGEN-ERATIONAL PROJECT THEN AND NOW

Between 1889 and 1896, the Grand Duke of Baden Friedrich I. and his wife Luise of Prussia commissioned Hermann Hemberger to build a very special edifice in Karlsruhe's Hardtwald forest, based on preliminary drafts by Hemberger's father. This neo-Gothic style mausoleum may not be an officially consecrated church, yet it never fails to impress with its architectural details and the proportions of a large place of worship.

GREAT FLEXIBILITY CALLED FOR

"LAYHER'S INTEGRATED SYSTEM AND THE WIDE STANDARD RANGE OF ALLROUND SCAFFOLDING GUARANTEE US MAXIMUM FLEXIBILITY HERE AND THE ABILITY TO REACT AS EFFECTIVELY AS POSSIBLE TO UNFORESEEN CHALLENGES THAT ARISE WHEN THE SCAFFOLDING IS ERECTED."

When refurbishment of the roof and facade of the building could be delayed no longer after 120 years, Burkart Gerüstbau GmbH of Karlsruhe was awarded the contract for the necessary scaffolding work. For Burkart too, just as it did for the architects over a century ago, the issue of generations plays a special role on this particular construction site, being the very last time Peter Burkart and his nephew Christian will be collaborating on a project. As soon as it is over, Peter Burkart will be taking well-earned retirement after almost 40 years as the firm's joint Managing Director.

"Like all public contracts, this project was put out to tender, which on the one hand provides a certain degree of security for us as the firm carrying out the work, because the clearly defined tasks theoretically mean all quotes submitted are readily comparable. In practice, however, it bears a certain resemblance to dipping into a lucky bag, because you have no way of assessing the construction site in person upfront and so you can never rule out unpleasant surprises," says Peter Burkart, who can look back on extensive experience supervising such projects. "Layher's Integrated System and the wide standard range of Allround Scaffolding guarantee us maximum flexibility here and the ability to react as effectively as possible to unforeseen challenges that arise when the scaffolding is erected." ▸▸

The tower needs to be refurbished first, before the typical sandstone facade of the church itself. Initially, therefore, the lower sections are only designed as shoring for the actual work scaffolding around the tower.

The steel beams for reducing the total weight on the work scaffolding are likewise supported on the load-bearing structures made from Allround Scaffolding.

In this particular case, for example, this meant that the tender only envisaged one elevator up to the start of the tower 21 m above the ground. "Our scaffolding was already complete when we were suddenly informed that a second elevator would be required. It needed to reach from the start of the tower to the start of the roof, to enable the sandstone blocks that must be partially removed from the facade for refurbishing to be transported safely," explains Christian Burkart, Technical Office Manager. "That was the big chance for us and our Layher Lightweight material to demonstrate once again exactly what we're capable of." For the first phase of the project – the refurbishment of the tower – shoring made from Layher Allround material was erected on the long sides of the mausoleum, with access via Layher platform stairtowers to allow safer, faster ascent and descent with tools and work materials.

"THAT WAS THE BIG CHANCE FOR US AND OUR LAYHER LIGHTWEIGHT MATERIAL TO DEMONSTRATE ONCE AGAIN EXACTLY WHAT WE'RE CAPABLE OF."

The last joint project by this uncle-and-nephew team involves some exciting detailed solutions.

In order not to damage the facade any more than absolutely necessary, the planners guide steel beams through the building's windows and use them to reduce the weight on the shoring.

OPTIMAL COMBINATION OF WEIGHT AND LOADING CAPACITY IS AN ENABLING FEATURE

"We've been using Layher material exclusively ever since our company was founded, because the optimal combination of weight and loading capacity enables us to provide a whole range of efficient solutions and gives us a clear competitive advantage," explains Christian Burkart, who originally graduated in engineering. This was a crucial factor where the scaffolding solution for the sepulchral chapel was concerned, because the edifice's many architectural details mean the options for absorbing forces on the structure are severely limited. "We had to build the modular scaffolding for the tower on steel beams, which we unloaded on both the inside and outside via the chapel windows as well as shoring made from Layher Allround Lightweight material. In that kind of situation, the weight of the material is key." These transverse beams then served as the foundation for the work scaffolding needed to refurbish the tower. Peter Burkart recalls that the time frame allotted for

The close collaboration between the customer and Layher's field service experts is a crucial factor behind their mutual success.

Sinister gargoyles are not only a real eye-catcher for interested observers but also a major challenge for scaffolders.

ONE CHALLENGE FOLLOWS ANOTHER

the project was extremely tight: “When we received the order at the beginning of the year, we had no time to lose, because the scaffolding had to be in place before birds and bats started using the building as a nesting site again in spring.” Local environmental officers checked up on this regularly throughout the construction work before each new step was approved. “What’s more, the sepulchral chapel is located very close to Karlsruhe’s Wildpark stadium, directly on one of the most popular routes among the second division football team’s fans,” his nephew Christian adds. “That’s why we decided on extensive protection against unauthorised access with a high wall of scaffolding material and Layher Protect System elements around the entire construction site, to reduce the risk of accidents and vandalism.” In the second project phase after refurbishment of the tower is completed, the shoring will be converted into work scaffolding for refurbishing of the chapel base.

The scaffolding is constructed entirely from Layher standard components, so that a very flexible reaction is possible whatever the requirements on site.

40 YEARS OF SUCCESS

A mark of top quality "Made in Eibensbach"

"OUR HIGH FLEXIBILITY AND OUR TRADITIONAL PRAGMATISM WHEN IT COMES TO PLANNING AND UTILISING RESOURCES ARE OUR BIGGEST ASSETS."

A Layher Protect System enclosure protects the construction site against unauthorised access.

While studying for a degree in engineering, Thomas Burkart regularly helped to erect Layher rolling towers in his father's painting business during the holidays. When he announced his intention to set up business with his own scaffolding company in 1983, his positive experience so far made the exclusive resort to Layher material an easy choice. Burkart insists that it "offers the best value for money in the market". Today, 40 years later, the firm still relies on scaffolding material made in Eibensbach. With 120 in-house scaffolding erectors, backed up by a large organisational and administrative team, construction site contractors anywhere within a good 200 km radius know they can count on the yard in Rheinstetten, south-west of Karlsruhe, to serve them well day in, day out. "Our high flexibility and our traditional pragmatism when it comes to planning and utilising resources are our biggest assets," Christian Burkart claims proudly. "We always use exactly the amount we need – no more and no less." Peter Burkart's verdict as he approaches well-earned retirement is simple: "Coupled with the high quality of all Layher material and the optimal combination of weight and loading capacity, that makes Burkart and Layher an unbeatable team."

The facade scaffolding at the rear of the sepulchral chapel with stairway access

The Layher Protect cassettes can be quickly assembled on Allround Scaffolding.

USED PROUCTS

- ALLROUND SCAFFOLDING
- SYSTEM FREE ACCESSORIES
- PROTECTIVE SYSTEMS

Video clip of Burkart project

THE MARGRAVE OF BADEN – AUTOCRAT AND TULIP LOVER

Phillip Heinrich Kisling, Margrave Charles III William of Baden-Durlach (1679 – 1738)

Charles III William, Margrave of Baden-Durlach, was an ancestor of the future Grand Duke Frederick I, who commissioned the sepulchral chapel in Karlsruhe's Hardtwald forest. In 1715, he founded the city of Karlsruhe, which subsequently became the new seat of the Margraviate of Durlach. He restored state finances and created a reliable bureaucracy, paving the way for the enlightened reform policies of his grandson Charles Frederick, the first Grand Duke of Baden.

Staunchly committed to absolutist rule, Charles III also showed a completely different face to his character. He was a passionate flower and plant enthusiast and grew an impressive collection of flowers in the garden of Karlsburg Palace in Durlach. A catalogue produced for this purpose in 1713 lists an astonishing 2,121 varieties, with tulips claiming the highest proportion at 1,163.

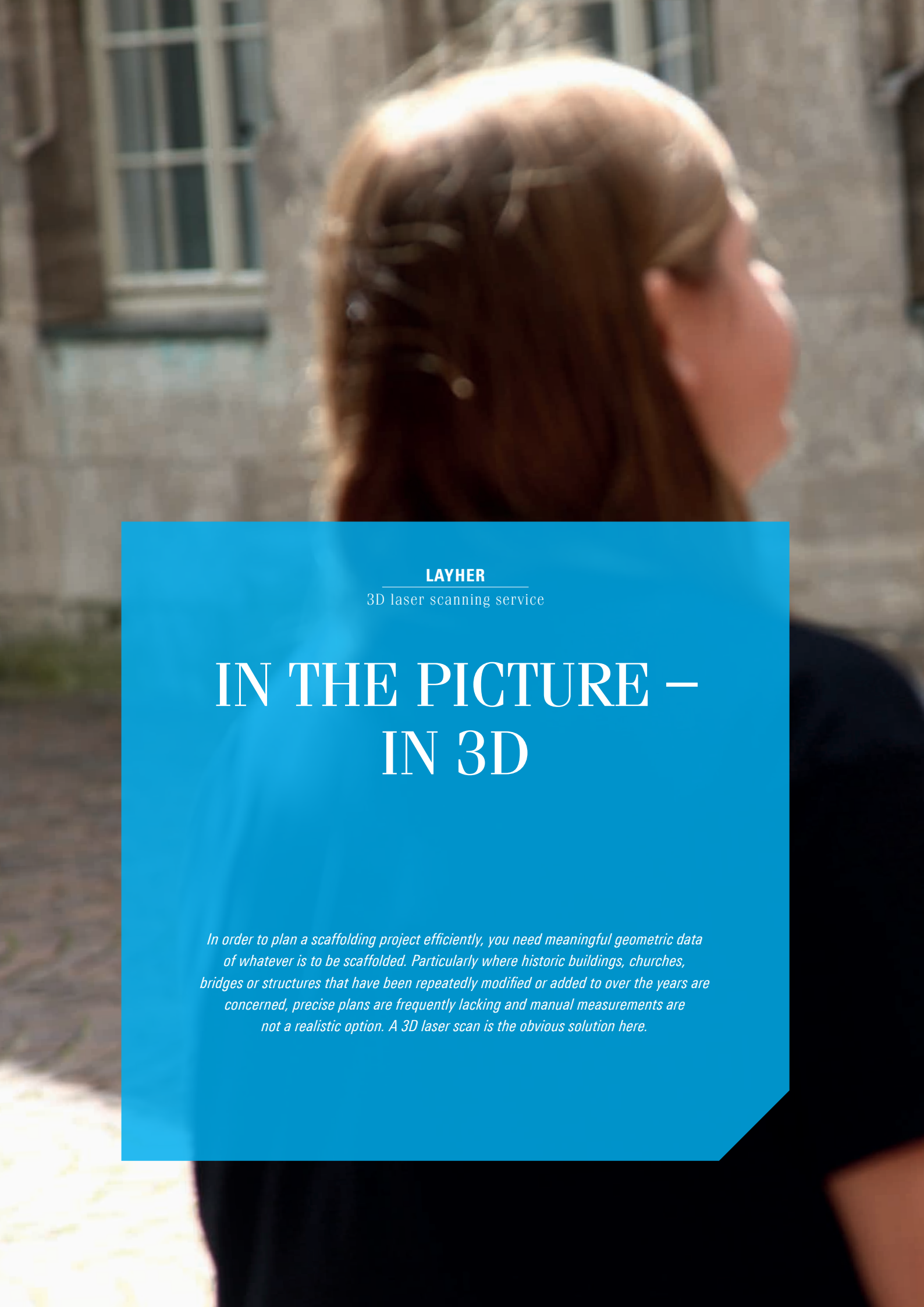
The Margrave obtained most of his flower bulbs from Holland and he also undertook trips there himself in search of new varieties. However, his love of flowers put a considerable strain on his small country's finances – after all, in those days rare tulip bulbs easily cost half a servant's annual wage.

Watercolour of tulips from the Karlsruhe Tulip Book around 1730

In 1733, nearly 5,000 varieties of tulip were recorded in the palace gardens in Karlsruhe, most of which were represented by no more than 10 to 100 bulbs. However, four tulip species had enjoyed explosive growth, with between 10,000 and 84,000 being documented of each. Besides tulips, the monarch also derived pleasure from other exotic plants, such as the almost 7,000 orange trees that were counted in the gardens in Durlach and Karlsruhe at the time.

The Margrave was keen to have the abundant flora in his "botanical garden" put to canvas by artists and his legacy includes at least 6,000 watercolour paintings of plants. The 5,300 watercolours presented in the so-called "Tulip Books", of which only four copies still exist today, are probably the best-known.

Karlsruhe Palace in 1900



LAYHER

3D laser scanning service

IN THE PICTURE – IN 3D

In order to plan a scaffolding project efficiently, you need meaningful geometric data of whatever is to be scaffolded. Particularly where historic buildings, churches, bridges or structures that have been repeatedly modified or added to over the years are concerned, precise plans are frequently lacking and manual measurements are not a realistic option. A 3D laser scan is the obvious solution here.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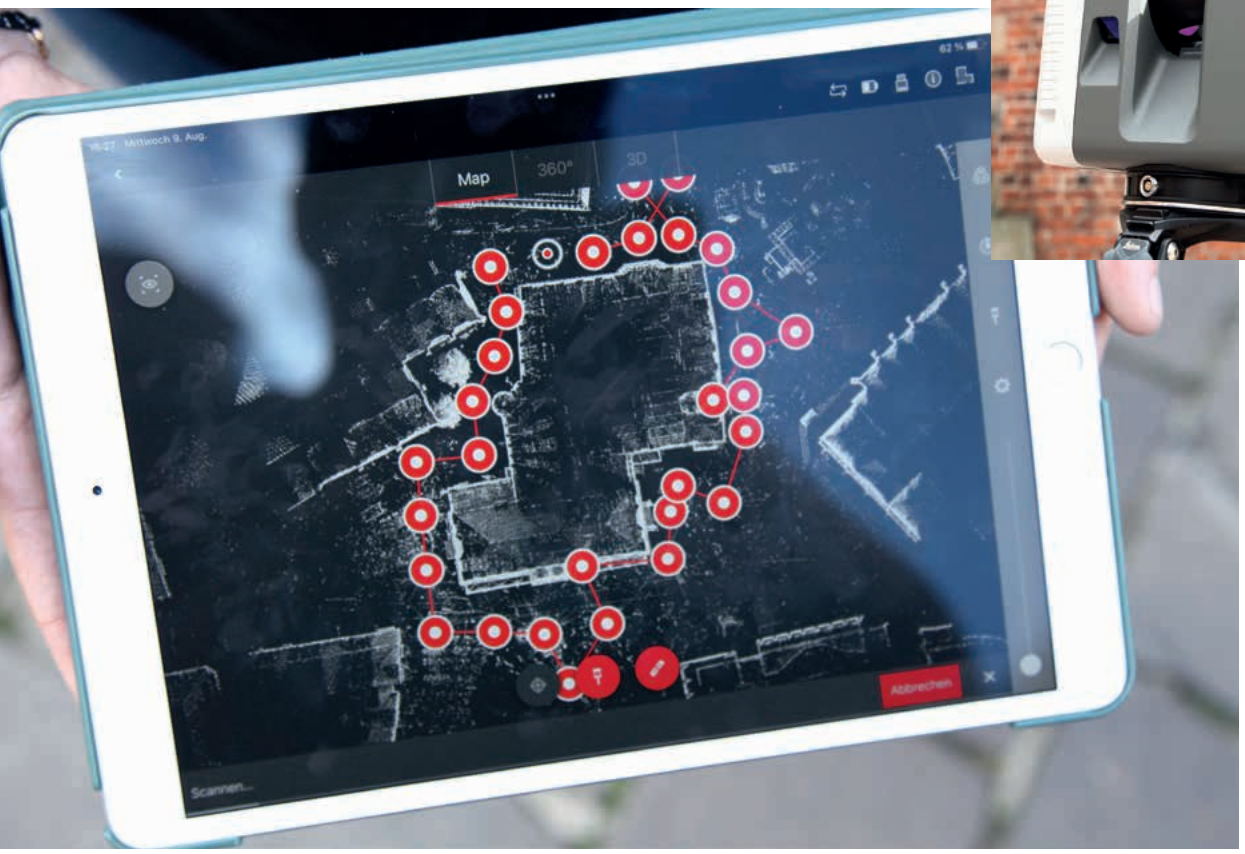
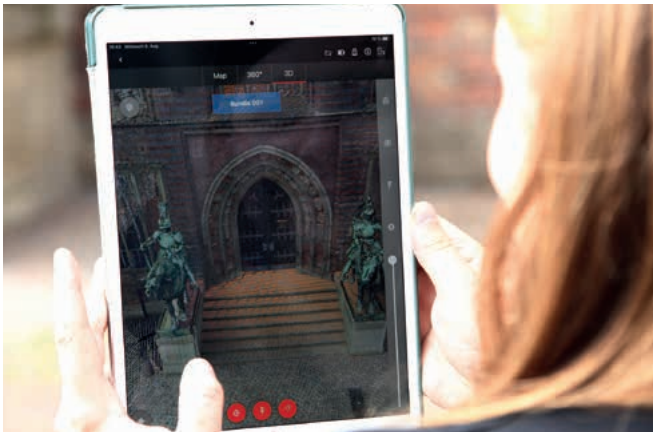
The centrepiece – the compact 3D laser scanner



Coordinates are used to localise the images and merge them into an overall picture.

Layher's specialist team know exactly how to position the scanner so as to obtain the best results.

THE SECRET IS KNOWING WHERE TO LOOK!



The scans are so detailed that you can even recognise damage to the facade.

The 3D laser scanner captures the structure with a rotating optical device and comes up with a very detailed point cloud, allowing even minor damage to the building's fabric to be detected. The system's software computes a three-dimensional overall image from the pixels and the location data that is captured. The more scan locations that are available for the project at different heights, the more accurate the results. Particularly where architectural undercuts or shoulders are concerned, it is crucial to increase the number of scan locations in order to avoid shadows in the image and to achieve a high quality point cloud. The eyes of our colleagues in Application Technology who carry out the scan are a great help here because if they can't see it themselves, the laser won't be able to see it either. "The secret is knowing where to look", is what the experts say. "Our ability to analyse the structure precisely during the scanning process is of immense importance, because if measuring points are missing, they can usually only be recaptured afterwards at great expense in terms of both time and money."

The results of this 3D laser scan are so detailed that the captured data can be utilised not only to generate a digital twin for the downstream scaffolding planning or other BIM processes but also, for example, to document damage to historic buildings – meanwhile a very practical alternative use for the data.

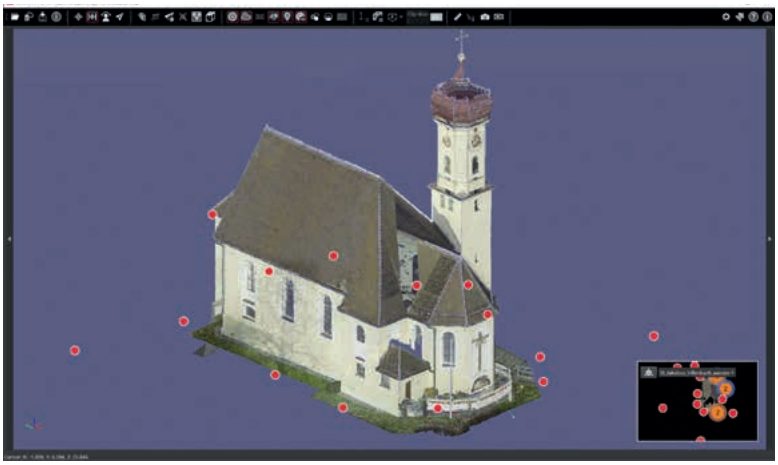
"OUR ABILITY TO ANALYSE THE STRUCTURE PRECISELY IS OF IMMENSE IMPORTANCE."

FAR MORE THAN JUST A PICTURE

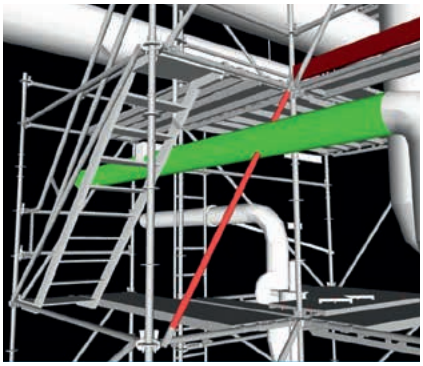
The Layher SIM process uses the captured 3D laser data as the basis for generating a digital twin with the software solutions in the integrated LayPLAN SUITE. Dependable 3D planning of scaffolding structures is possible in this way. The actual geometric data captured on site with the scan enables precise scaffolding planning upfront without any positioning conflicts, as a condition of efficient and safe erection with no time-consuming "surprises" during the actual construction work. What's more, the realistic visualisation of the scaffolding also simplifies the quotation phase with customers as well as coordination with other trades.

The scanner needs just under two minutes to complete one run.

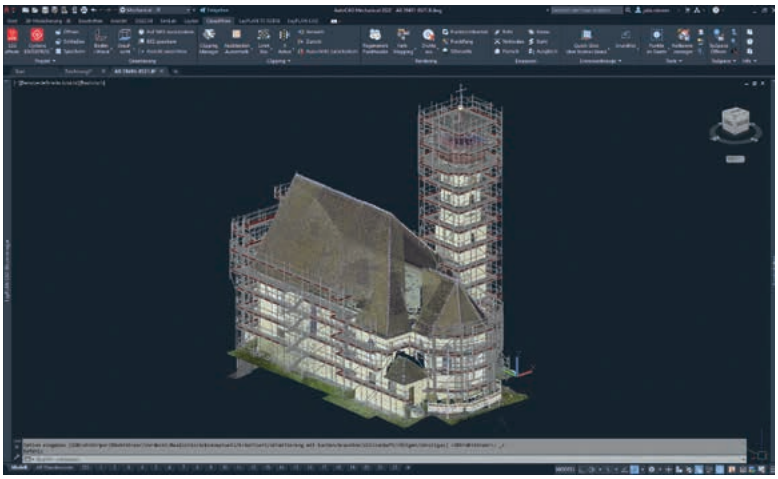
THE 3D LASER DATA FORMS THE BASIS FOR COMPUTING A DIGITAL TWIN.



Point cloud of the area surrounding a church



Conflict check in Autodesk Navisworks Manage



Point cloud with integrated scaffolding planning in LayPLAN CAD

You need to look very carefully during the scan, so as not to miss any areas that could later be relevant for the scaffolding planning.

"Our scanner looks very mundane and when we turn up at the site with it, we're often met with a few smiles. However, our specialists in Application Technology confirm that, at the latest, when we meet again on the next construction site after our 3D laser scanner have made a vital contribution to a project's success, that scepticism is gone because everyone involved has seen the many advantages of our methodology for themselves. Depending on the size of the construction site, how easy it is to access and the number of relevant scan locations, it takes us between half a day and a whole day to complete our scans." The captured point scans are subsequently merged into a three-dimensional point cloud. The digital twin which serves as the basis for planning is then generated using LayPLAN SUITE. It is even possible to take a virtual tour of the structure using the LayPLAN VR VIEWER and a VR headset.

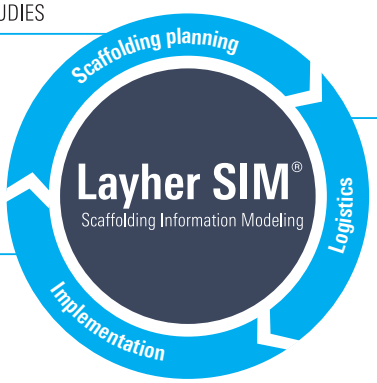
"THE INITIAL SCEPTICISM IS VERY SOON GONE AS THE MANY ADVANTAGES BECOME CLEAR."

It is possible to generate VR data of the scaffolding and display them in the LayPLAN VR Viewer.

SCAFFOLDING GOES DIGITAL – LAYHER SIM®

It feels like the whole world is talking about digitalisation. It's an issue that has long been on everyone's lips in the construction industry too in the form of BIM processes, even if it has yet to become established everywhere. Layher's SIM is an end-to-end process that integrates seamlessly into BIM and brings scaffolding into the digital age. Efficient 3D scaffolding planning is just one advantage of a digital approach. The software solutions in the integrated LayPLAN SUITE were specially developed to support and shape this process, providing an easy way to visualise scaffolding realistically, transfer the scaffolding planning to structural analysis programs and output material lists and assembly plans.

- COSTING
- SCHEDULING
- CONSTRUCTION PROCESS SIMULATION
- FEASIBILTIY STUDIES



- LOADING
- TRANSPORT

- ASSEMBLY
- APPROVAL
- USE
- MODIFICATION
- DISMANTLING

LAYHER SIM-PROJEKT WORKFLOW

- **3D model**
  e.g. for new construction projects
  if the BIM process is used
- **3D laser scan –> point cloud**
  e.g. for historic buildings
  if no data available
- **Remodelling of the 3D model**
  if only 2D data available

LayPLAN SUITE

LayPLAN CAD

LayPLAN MATERIALMANAGER

LayPLAN TO RSTAB

LayPLAN TO REVIT

- Realistic 3D scaffolding planning
- Visualisation of the design for professional presentation
- Material lists for logistics planning and costing
- 2D plans for assembly
- Data transfer to structural analysis programs
- VR model for virtual tour
- Conflict check
- Communication / data exchange with mobile devices
- Construction process simulation

Transparency at every step not only reduces costs; it also enables more safety and profitability in scaffolding projects. Construction companies and industrial firms that work with scaffolding providers using the Layher SIM process additionally profit from a high level of planning security, the greatest possible control over costs and – above all – on-time project execution thanks to efficient and smooth construction workflows. Delays and added costs due to inadequate planning because not enough geometric data is available are a thing of the past.

One key task of Layher SIM is to take care of the scaffolding planning that serves as the starting point and the digital twin for all subsequent process steps.
One of the required inputs is the geometric data of the object at which the scaffolding is to be erected. This can be provided in the form of existing 3D models, the results of a 3D laser scan or remodelling based on 2D plans. It is then possible to obtain further information as output that can be used directly for other process steps. Layher SIM focuses on the end-to-end use of data and the elimination of digital barriers in order to ensure loss-free data exchange.

Check out more interesting

Success stories

plus ideas, solutions, possibilities and lots of other things at

scaffoldingstories.com

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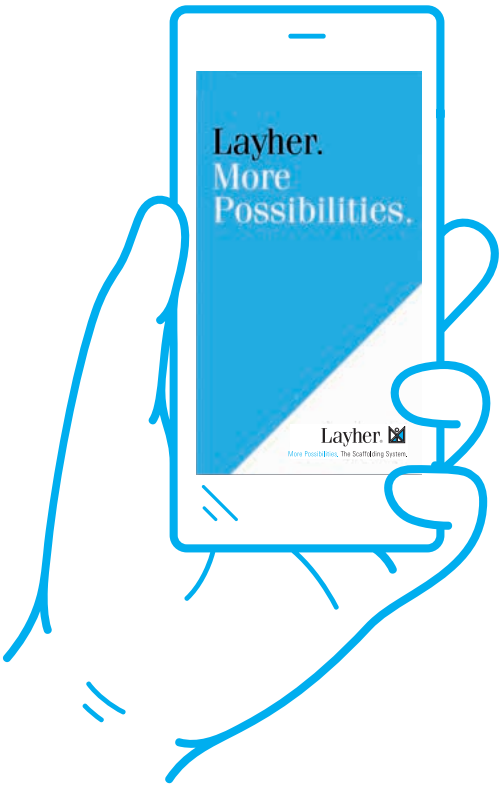
Layher®
More Possibilities. The Scaffolding System.

LET'S STAY IN TOUCH #layher



BECOME PART OF A LARGE COMMUNITY AND FOLLOW US ON SOCIAL MEDIA

Social media channels are the mass media of our time. We, too, want to take advantage to stay in touch with our users even better. We'd love you to follow us and actively engage in a dialogue with us. Thanks to the hashtags #layher, it couldn't be easier to contribute your own content, share your practical perspective and fill our channels with life.

Layher®

More Possibilities. The Scaffolding System.

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