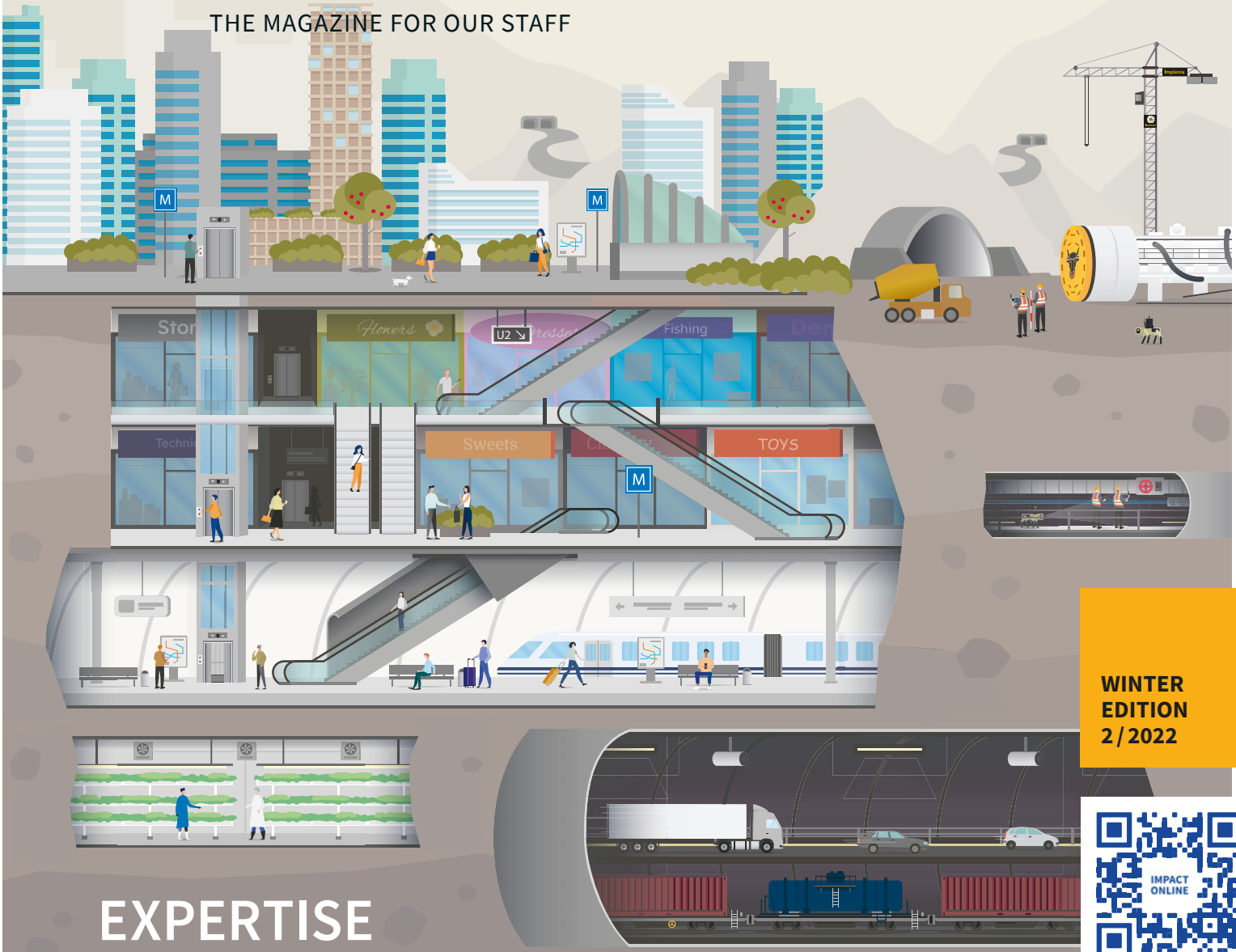
Implenia

IMPACT

THE MAGAZINE FOR OUR STAFF



WINTER EDITION 2 / 2022

IMPACT ONLINE

EXPERTISE

How we are using our expertise to build for the future both underground and overground

CONTENTS

PROJECT MILESTONES
From declaration of intent to handing over the keys
Page 5

WHAT'S GOING ON DOWN THERE?
The benefits for the future being researched underground
Page 8

NEW BOAT LIFT
The ups and downs of an enormous construction project
Page 20

IMPACT ONLINE

You can find many more reports, videos, and pictures on projects, topics and people at Implenia in the digital version of IMPACT. The online platform is constantly updated. **Take a look – there is so much to discover!**

Legal notice

IMPACT
The magazine for Implenia staff
Edition 2 / 2022

Editorial team
Julia Dieziger
Ulli Janett
Eva Heimrich-Kämpfer

Design
Gabriela Fleck

Pictures
Cover, page 6 and 7: new office
Page 4: istock/FooToo
Page 8: istock/onurdongel
Page 11: meyerfoto
Page 12 to 16: Michael Müller, Christoph Schroll (HOCHTIEF), Jürgen Stresius
Page 20 to 23: Bundesanstalt für Wasserbau (BAW), Lars Wiedemann
Page 28: istock/AmnajKhetsamtip

Print
Neidhart + Schön Print AG, Zurich

Contact
redaktion@implenia.com

RECYCLED
Paper made from recycled material
FSC® C016003

“Our comprehensive expertise allows us to add value for our customers and for Implenia.”

Our divisions and functions are home to an impressive diversity and depth of expertise in a range of fields within the construction and real estate sector. It fascinates me time and time again when I talk to experts and visit construction sites. We play to our strengths most effectively when we combine our expertise across divisions and functions to create integrated solutions tailored to what customers need.

Your expertise and experience form the basis on which we, as a team, can work together in a targeted way to develop innovative solutions for the complex challenges of our projects. That makes us a valued partner for our customers, able to add value for them and generate profitability for Implenia.

We bring our expertise to so many areas: opening up underground space for mobility, supply or other uses, complex infrastructure construction for waterways, developing sustainable, standardised real estate products, creating healthcare and laboratory buildings – and so much more besides. You will find a few fascinating examples in this issue of Impact.

Our expertise also forms the basis on which we constantly develop our range of services, improve our existing business, integrate ourselves throughout the value chain, and tap new business fields with strong margins – be it alone or together with appropriate partners. Once the transformation is complete, we will thus be able to boost our competitiveness even further in the current “Fit for Growth” phase.

André

NEWS

A NEW RUN AT THE GOTTHARD

We're back: The Implenia-led joint venture "secondo tubo" has been awarded the contract for the North main section of the Gotthard Tunnel project by the Bundesamt für Strassen (Astra). The contract value for the 7.9-kilometre section of the tunnel up to the section border in the centre of the tunnel is CHF 467 million. At the heart of the work, which is scheduled to take until 2029, is the 7.3-kilometre bore with a diameter of 12.3 metres, made by a tunnel boring machine. The second tube will make the Gotthard road tunnel safer in future.

NEW LABORATORY IN BASEL

Division Buildings has acquired another large-scale order in the field of research and healthcare with approval for construction of the new laboratory at the University of Basel's Department of Biomedicine. The order volume is more than CHF 250 million. Implenia is building the 37,000 square metre new complex, including rooms for laboratory, office and seminar use, as total contractor. BIM and lean construction are being used in both the planning and execution phases. Commissioning is planned for 2031.

BUILDING IN THE WEST

Implenia has acquired four real estate projects in Western Switzerland, with a combined volume of around CHF 300 million. They are the Kyoto office building at Green Village in Geneva, a new residential and commercial building in Alleestrasse in Biel, two production and research buildings near Lausanne, and a headquarters renovation for an international organisation in Geneva. Focusing on sustainability, these large, complex projects are perfectly aligned with Implenia's strategy.

LINK TO THE METRO DEPOT

In Stockholm, Implenia is constructing a connecting tunnel to the Högdalen metro depot on behalf of "Region Stockholm, Förvaltning för utbyggd tunnelbana" With a total order volume of SEK 1 billion (CHF 98 million), the project includes the infrastructure to link the expanded depot to the existing Farstagrenen underground line. This will be done by building a new tunnel with a concrete trough in a densely populated urban area at the Farstagrenen junction.

BUILDING ON SUSTAINABILITY

As part of the Rösslimatt quarter development, Implenia is creating an office and commercial building for SBB Immobilien near Lucerne station, with space for around 1,000 staff, plus retail and hospitality units on the ground floor. Implenia is carrying out the basic interior construction as total contractor. The site is being developed to outstanding sustainability and quality standards. Worth over CHF 50 million, the two-year project began in September 2022.

COMPETITION

Win a trip to Munich!

Competition question: What is Implenia currently building in Munich?
A) An underground station
B) A second Olympic Park
C) A new tent for Oktoberfest
Email your answer to redaktion@implenia.com or use the QR code and, with a bit of luck, you could win a trip to the Bavarian capital. Good luck!
Not sure of the answer? You can read all about our major site in Munich starting on Page 12.

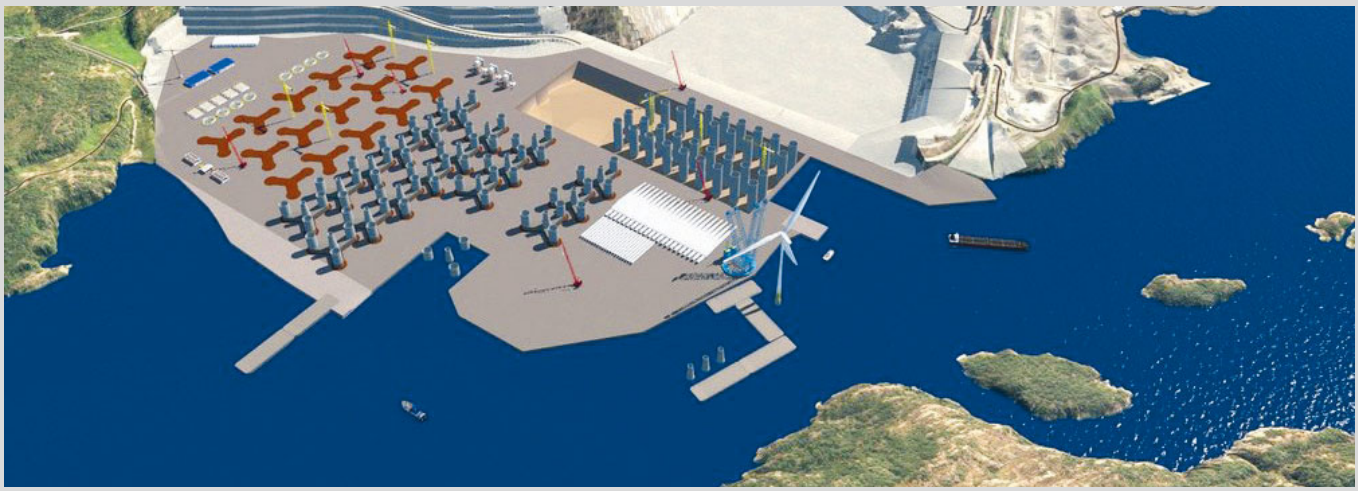
PROJECT MILESTONES

TUNNEL NAMING CEREMONY IN BERLIN

A tunnel naming ceremony in October 2022 marked the start of drilling for the expansion of power cables in Berlin, which will provide a reliable, environmentally friendly and economical electricity supply. Implenia is responsible for the construction of the new western section of the 380-kV power line. The tunnel is called “Franziska” – after Berlin’s Mayor, Franziska Giffey, who attended the ceremony.

OPEN FOR CYCLISTS AND PEDESTRIANS

Linking Stockholm and the suburb of Lidingö, Implenia is building Sweden’s longest tram bridge, including lanes for pedestrians and cyclists. The “Lilla Lidingöbron” bridge stretches 750 metres across an inlet, connecting the island to the city centre. The first phase – opening for pedestrians and cyclists – was completed in October 2022. The full construction will be opened in 2023.



↑ In Norway, Implenia and WindWorks Jelsa are planning a plant to produce concrete foundations for floating offshore wind farms.

CONCRETE FOUNDATIONS FOR ENERGY ISLANDS

Implenia and WindWorks Jelsa (WWJ) have signed a declaration of intent for the construction of a facility that will produce concrete foundations for floating offshore wind farms in Europe. The large-scale plant is to be built in Jelsa, on Norway’s west coast. Implenia’s contribution to the partnership will include its technical expertise in the series production of concrete substructures, foundations and solutions.

READY FOR MORE RESEARCH

After a construction period lasting just a year, the temporary laboratory at Campus Irchel was handed over to the client in September 2022. The construction of the Functional Genomics Center Zurich (FGCZ), a research and training platform run jointly by the University of Zürich (UZH) and ETH Zürich, offers space for 80 lab staff and all their scientific equipment across a total area of around 3,000 square metres.

NEW RAIL VIADUCT OPENS

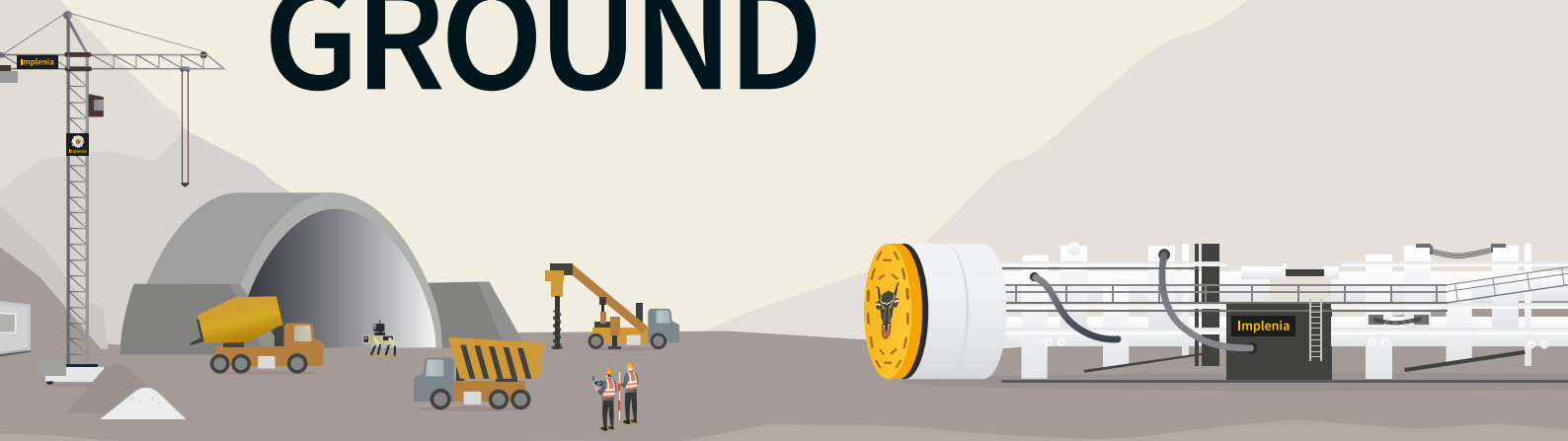
As part of its “Léman 2030” programme, Schweizerische Bundesbahnen (SBB) is expanding its inter-city services between Lausanne and Geneva, and its commuter service in Vaud. A key element is the new overpass between Prilly-Malley and Renens, which Implenia built for the SBB. Thanks to this viaduct, trains can now cross the neighbouring tracks without coming into conflict with other trains. The viaduct was opened in September 2022.

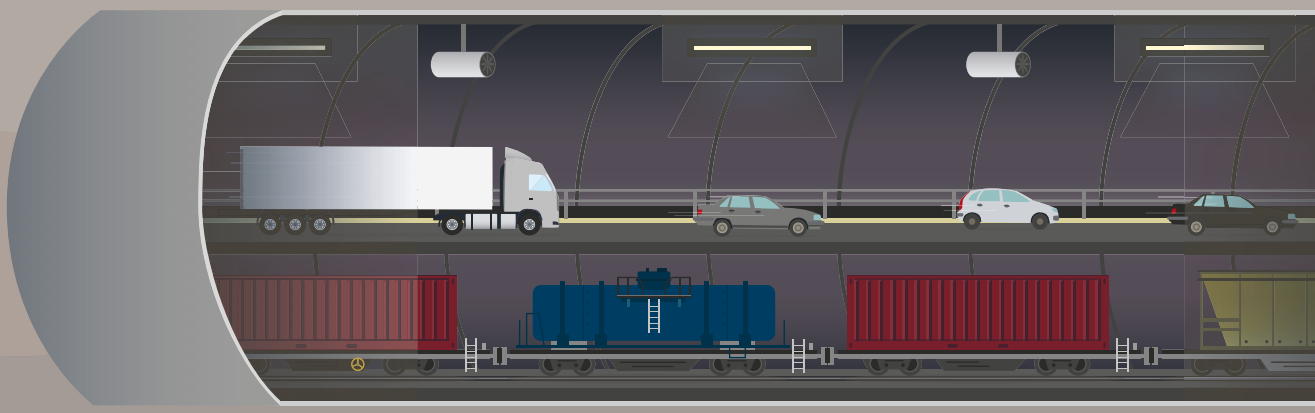
BLASTING WORK COMPLETE

Construction work on the “Varberg Expansion”, a rail project on the west coast of Sweden, has been ongoing since June 2018. The contract includes around nine kilometres of track, level crossings, new bridges and a new station and goods station. A tunnel is being constructed under the centre of Varberg for the project. Blasting work was completed in early November 2022, allowing concrete work to begin. Completion is planned for January 2025.

EXPERTISE

GOING UNDER-GROUND





Owing to megatrends like urbanisation and the housing shortage, combined with a growing population, more and more infrastructure is moving underground. We talked to Christian Späth, Head Division Civil Engineering, and Erwin Scherer, Global Head Tunnelling, to find out how Division Civil Engineering hopes to use all its experience and expertise to help build the infrastructure of the future.

EXAMPLES OF NEW UNDERGROUND ACTIVITIES

WHAT IS GOING ON BELOW THE SURFACE?

New applications for the future are already being trialled and researched underground. Here are two examples:

Logistics: As a shareholder in Cargo sous terrain (CST), Implenia is supporting a full logistics system for the flexible transportation of loose freight in Switzerland. Tunnels link production and logistics sites with urban centres. Above ground, CST distributes the transported goods in environmentally friendly vehicles, thus helping to reduce traffic and noise emissions. The first section will connect the Härkingen-Niederbipp area with Zurich from 2031, with construction of the remaining sections expected to be completed by 2045. CST is suitable for both supply and disposal. The electricity needed to operate the system comes 100% from renewable sources. **www.cst.ch**

Underground farming: In the Hagerbach test tunnel in north-eastern Switzerland, which Implenia is supporting as a shareholder, the Swiss Center of Applied Underground Technologies SCAUT is breeding, growing and harvesting plant-based food underground. It may be unconventional today, but this approach could play a key role in supplying urban areas with food in the years and decades to come.
www.scaut-association.com
www.hagerbach.ch

VISION UNDERGROUND – SUBSCRIBE TO THE NEWSLETTER NOW

Use of underground space is predicted to become one of the most important construction topics of the future. The experts in our white paper "Tunnelling & Underground Space 2050" agree. With "Vision Underground", we are launching a platform to examine the future of underground construction and instigate a broader discussion on a topic that affects not just the construction industry, but all of society. Well worth taking a look! Sign up to our "Vision Underground" newsletter and you will also receive access to a PDF copy of the white paper.
www.implenia.com/vision-underground

For Switzerland, the Gotthard is more than a mountain. It is a legend and a key gateway to the south. When the tunnel boring machine began work on the Gotthard in August this year, the construction of the tunnel between Airolo and Göschenen was in the public eye and the focus of media attention once again. Much of this attention centred on Implenia, which is building the tunnel with the "secondo tubo" joint venture.

Yet the second Gotthard tube is just one of four large-scale European transalpine routes currently being built with Implenia's involvement. That makes Implenia the only construction service provider to be involved in all the major transalpine routes at the same time: the expansion of the Gotthard road tunnel, the Brenner base tunnel between Austria and Italy, the Mont Cenis base tunnel for the new high-speed rail link between Lyon and Turin, and the Semmering base tunnel between Lower Austria and the Steiermark region as part of the new southern section of the Baltic-Adriatic corridor.

PRICE IS NOT EVERYTHING

How does Implenia manage to gain the contract for major tunnel construction projects again and again? "A key factor is our enormous experience from previous projects, which we are able to contribute to new projects," says Erwin Scherer, Global Head Tunnelling Implenia. "This allows us to use our expertise to simulate new projects, to plan them in a thorough and structured way, and, if the client permits or wants this, to respond to open points in our bid."

Implenia also benefits from the fact that price is no longer the only factor in decisions on bids. Christian Späth, Head of the Division Civil Engineering: "More and more clients are making decisions based on a comprehensive assessment matrix that takes into account not only the price, but also a host of quality criteria such as stability in construction execution, i.e. the schedule." Implenia's experience of implementing large, complex infrastructure projects is a major advantage here. "We can demonstrate references, including international ones." These show that Implenia is well versed in dealing with different local, formal and cultural requirements. After all, implementing tunnel constructions takes more than just engineering and technology.

DIVING DEEP UNDER THE CITY

It is not just in the Alps, but also in cities, that Division Civil Engineering is building a range of beacon projects – for example at Marienhof in Munich (see article on Page 12) and in Berlin, where a tunnel stretching around 6.7 kilometres is being constructed for a new 380-kV power line – part of the expansion of the cable network that will secure the supply of renewable energy to the city. Projects like this demand close cooperation and interdisciplinary expertise on the part of Business Units Civil Engineering, Special Foundations and Tunnelling. And they are pioneering.

GOING UNDERGROUND

According to the authors of our white paper "Tunnelling & Underground Space 2050" (see infobox on Page 8), uses of underground space are developing into a key construction topic of the future. One of the central challenges of our time lies in finding underground alternatives to compensate for lack of space on the surface.

Even today, underground space is increasingly being used for roads and rail, for energy, telecommunications and data, for sewerage systems and for extracting resources. In Paris, for example, the visionary project "Forum des Halles" created a station including a shopping centre that would never have been possible above ground, either in terms of dimensions or usage. And in future, underground connections and spaces could be used for purposes that today still appear unusual, such as warehouses, production facilities, logistics networks or underground recreation and entertainment facilities (see infobox on Page 8).

CONSTRUCTION SOLUTIONS FOR THE FUTURE

Implenia wants to play its part in building this infrastructure for the future – not by initiating projects, but by being ready to implement them with the right solutions. "After a phase of successful stabilisation, we are now getting our division ready for this," says Christian Späth. "Civil Engineering has identified potential business areas and fields of action that we are now working on." Megatrends like urbanisation, increasing demands on mobility, the ageing society and climate change have all been included in the considerations.

"We can already see these developments today, and will have to focus on them a lot more in future. They will have a major impact on fields like transport and energy infrastructure in particular." Guidance has also come from the United Nation's 17 Sustainable Development Goals, which outline the expectations of society and policymakers regarding topics like mobility, efficient use of energy and resources, and climate protection.

A CYCLE OF SUSTAINABLE CONSTRUCTION

A key topic for the future that Implenia is already implementing today is sustainability. Erwin Scherer: "In Tunnelling, our commitment to the circular

Erwin Scherer, Global Head Tunnelling

"Complex, large-scale projects are attractive."

Christian Späth, Head Division Civil Engineering

“Megatrends will have a major impact on transport and energy infrastructure.”

economy is reflected in the great efforts we make to ensure that more of the material we extract from the mountain is processed directly on our construction sites and funnelled back into the construction work. If we want to make progress when it comes to sustainability, however, clients also need to increase the emphasis on sustainability factors in their assessment criteria for calls for tender, as already happens in Scandinavia, for example,” says Christian Späth. He is convinced that working together is the only way to unlock the significant potential for increased sustainability that remains untapped.

PROGRESS THROUGH INNOVATION

Needless to say, innovation plays a key role in the discussions about the future that take place within Division Civil Engineering at Implenia. “We are constantly developing and refining technical innovations that allow us to optimise our work in terms of speed, efficiency and quality,” explains Christian Späth.

When it comes to digitalisation, he continues, the division very much wants to play a pioneering role in the construction industry with the goal of generating added value in planning and execution. The teams already frequently work with 3D visualisations, be it for planning and collision testing, for monitoring and steering construction progress, or for compiling cost trend analyses in real time. “Augmented reality, in which images from the real world are combined with digital elements, allows us to gain additional knowledge and insights.”

PASSING ON EXPERTISE

With every optimisation, every innovation and every new project Division Civil Engineering gains further experience and expertise, allowing it to plan and implement future projects even more successfully. But how is this expertise passed on internally? “Through a targeted system for supporting and promoting young talent. With this system we we give young colleagues time to learn and develop, so that they can use their expertise to initiate optimisations themselves,” says Erwin Scherer emphatically. The company’s good reputation and its beacon projects both help to draw in young employees despite the shortage of specialist staff, says the Global Head Tunnelling. “Complex, large-scale projects are attractive” – even if they are often not exactly on the doorstep and demand that employees adapt their lifestyles. “But it is beacon projects like this that enable young people to take on a lot of responsibility relatively quickly.” And it is with this kind of beacon project that Division Civil Engineering hopes to build the infrastructure of tomorrow – as it positions itself as a reliable partner for challenging, hybrid infrastructure projects with more than 100 years of experience. ■

SWISSLOOP TUNNELING

Swissloop Tunneling, a student society at ETH Zürich will be entering Elon Musk’s “Not-A-Boring Competition” for the second time in January 2023. The team is supported by Implenia, which has signed up as a Platinum Partner. The first time the tunnelling competition was held, in 2021, the team stood out among 400 competitors to win second place overall with its “Groundhog Alpha” tunnel boring machine. This has now been developed further – with the aim of celebrating further success in Texas next year. In the long term, Swissloop Tunneling hopes to establish itself as a research platform for students. One of its principal aims will be to advance the development of innovative (micro)tunnel solutions.

SCAN ME

EXPERTISE IN PRACTICE

GLOBAL

WINNING PERFORMANCE

With its "Winning Performance" programme, Implenia trains middle managers on topics like self-management, managing others, and management communications, as well as focus topics like lean and change management. "Winning Performance" also offers all the participants nominated for the programme the opportunity to network," says Andrea Wagner, Head Training Switzerland. You can find our management principles on the intranet under "Strategy and Values".

GLOBAL

LET'S TALK ABOUT THE FUTURE!

Whether it's life, work or new thinking on mobility – the "Future Talks" offered by the Implenia Innovation Hub always focus on fascinating topics for the future. "The talks give our employees the chance to gain new insights and inspiration from external experts in next to no time," says Senior Innovation Manager Karel van Eechoud. The series of talks will continue in 2023. Missed a Future Talk? Don't worry, they are all still available on the intranet under "Innovation".

GLOBAL

IMPLENIA "FIT FOR GROWTH"

"I am extremely proud of what we have achieved in recent years," said André Wyss at the Capital Markets Day in November. "We are well on the way to positioning Implenia as an integrated, leading multinational construction and real estate service provider." The day was an opportunity for Implenia to show analysts, investors and journalists how the Group plans to boost its competitiveness further in the "Fit for Growth" phase, following successful completion of the comprehensive transformation.

GLOBAL

FOR ETHICAL GOVERNANCE

In accordance with our "Ethical Governance" Sustainability Goal for 2025, we have a zero-tolerance policy towards compliance infringements and we base our business on responsible, ethical principles. To do this, our Compliance team uses various communication measures to attract attention to the topic and supports its implementation with training, guidelines and quick guides, which you can find on the intranet under "Global Functions" in "Legal and Compliance".

FIND OUT MORE ABOUT ALL THESE TOPICS ONLINE

SWEDEN

SUSTAINABLE HEAVYWEIGHT

A first in sustainability at Implenia Sweden The TORO™ LH517i – the world's first machine to use bio-based hydraulic oil, is the result of a collaboration between Implenia and the Finnish manufacturer Sandvik. "None of the suppliers had ever delivered a loader of this size with bio-oil. That is why we launched this development project together with Sandvik," explains Machine Manager Daniel Zetterman.

GERMANY

MORE THAN JUST A FAÇADE

Implenia Façade Engineering has added slatted façades to its portfolio of services. Rigid and motorised, adjustable slats made from glass, aluminium, wood etc., as well as sliding blinds, can be implemented to complement engineered façades or as individual projects. A noise protection slat system for large-scale multi-storey car park façades is also under development. This product will be designed as a modular system.

GLOBAL

HOW WE BECOME DATA EXPERTS

Whether it's information on employees, customers or clients, we all have to play our part in protecting personal data. You can find out about the most important principles for handling personal data by consulting in the Privacy Quick Guide on the intranet. Anyone who needs more detailed information can also find the Group's comprehensive Data Protection Policy on the intranet.

DOUBLE POWER FOR MARIENHOF

A project like this comes around once a century: In the heart of Munich, after more than fifty years, a second trunk section of the commuter railway is to be built to relieve pressure on the city's transport system. As part of the project, the joint venture between Implenia and HOCHTIEF is building the new Marienhof underground station directly behind the town hall. More than six years have now passed since the start of the bidding phase. How is the collaboration between these two large construction companies going? And how is it influencing the success of the project? We visit the site.

It is a hot July day. The sun beats down on the Marienhof construction site, stretching to 5,500 square metres. The 30-year-old Japanese pagoda trees that provided such beautiful shade here until 2011 have found a new home in the city's arboretum in Allach. Once construction is completed, a host of new trees will be planted in the green space in the heart of Munich, behind the town hall.

NEW CONSTRUCTION 42 METRES UNDERGROUND

But beneath the former green space at Marienhof, nothing is what it was. Embedded in six alternating sequences of tertiary clays and sands, 200,000 cubic metres of reinforced steel will carry a construction that stretches up to 42 metres underground and will improve the infrastructure for Munich's local public transport in a sustainable way. The new commuter rail station is part of the 10-kilometre second trunk section that crosses the centre of Munich largely underground – from Laim in the West to Leuchtenbergring in the East – passing under houses and business, churches and museums, and even existing stations and tunnel systems for the current underground and commuter railways. The crowded space underground has forced the construction companies to dig deeper than anyone in Munich has ever done before – an undertaking made all the more difficult by the crowded space above ground. "One of the biggest challenges in this project full of challenges is logistics," stresses Jens Classen, who heads the Marienhof syndicate as overall project manager. "We are bringing enormous machinery into extremely tight spaces in the centre of a very busy city, ideally without being seen and, above all, heard."

"Anyone who wants to build here needs to be proactive in their efforts to nurture good relations with their neighbours," adds Michael Müller, Construction Manager and deputy overall project manager. One example he mentions is the city's mayor, whose office is in the town hall next door. "We talk to each other all the time. Today, for example, the Bettenrid store is having new shop windows delivered in the central courtyard directly opposite, blocking our access to the north of the site. We need to find a solution."

↑ Just a stone's throw away, the striking towers of the Frauenkirche, one of the Bavarian capital's key landmarks, are clearly visible from the construction site.

COMPLEXITY AT EVERY LEVEL

Finding solutions is the central theme of this project, which unites the two major construction and real estate corporations in a joint venture. This joint venture in turn works closely together with the client, Deutsche Bahn, and numerous subcontractors. "It is rare for a construction site to bring together so many different disciplines and for every single one of them to face such enormous challenges," says Michael Müller, describing the complexity of the project. In the first phase of the construction project, Special Foundations had to erect 15,700 square metres of diaphragm walls and 50 primary supports extending up to 67 metres into the ground.

CONSTANT MEASUREMENTS AND STABILISATION MEASURES

To ensure that neither buildings nor existing rails are damaged, the consortium installed a measurement system with around 2,000 measurement units and well over 5,000 individual sensors that constantly deliver data on subsoil and building movements. Drilling for extensive elevation injections will begin in late 2022; these prevent the surrounding buildings from subsiding as a result of settling following

MARIENHOF: A SITE OF SUPERLATIVES

42	metres deep – the same height as a 15-storey building dug into the ground
100 × 55	metres – the size of the area being dug down
210	metres – the length of the underground station, providing space for the 180-metre commuter trains
267,500	cubic metres of earth is being dug out for the construction, including the finest tertiary sand
200,000	cubic metres of concrete will flow into the construction to replace it
15,700	square metres of diaphragm wall stabilise the trench
50	primary supports, anchored at a depth of up to 70 metres, support the construction
136	wells and ground water measurement points are being dug for drainage
2,000	measurement units are installed in and around the construction site to warn of subsidence in the neighbouring buildings

the tunnelling. Another issue is dealing with ground water. More than 130 wells ensure that the water pressure on the surrounding diaphragm wall and tunnels does not become excessive. The water treatment plant to the south of the site prevents potential contamination from the site's waste water from entering Munich's water supply system.

companies moved into the project directly from the bidding phase. That allowed us to use their expertise, and meant that we didn't have to integrate a lot of new people into the team."

Today, the Marienhof team benefits from the combined expertise of two major construction companies. Does tension ever arise? Jens Classen: "Not really. Despite all our experience, we are all learning all the time – including from one another. For example, we use HOCHTIEF's SAP system for our invoice checking. In return, Implenia contributes the quality management system and the iTWO software solution for controlling."

> **"One of the greatest challenges in this project full of challenges is logistics."**
>
> Jens Classen, Overall Project Manager, Marienhof consortium

Currently, the engineers are working to produce the first ceiling under the top ceiling (E-1), eight metres below ground. This involves joint venture 72-metre special crane, capable of lifting loads of up to 48 tonnes. This transports reinforcement rods through one of the openings on the level below, supported by just one member of the joint venture team in the burning July sun. The rest of the crew is enjoying more comfortable temperatures below ground.

LONG-PLANNED COLLABORATION

↑ Implenia or HOCHTIEF? On the Marienhof project, everyone has grown together as a single team since the bidding phase.

It was clear from the very start that the project would be a technical and logistical challenge. The joint venture partners therefore put a great deal of work into the very long bidding process, which went on for almost three years. This period brought them very close as a team, says Jens Classen. "The good thing about our joint venture is that a lot of people from both

Making the partnership work demands a solid basis of trust and a conscious commitment to avoiding turf wars. After five years of collaboration, such conflicts are no longer an issue between the joint venture partners, says Michael Müller emphatically. "The good thing is that we can put all our expertise into the technology and the project – that is what makes construction fun." Face-to-face discussion is also a major feature of the very friendly atmosphere in the construction office. Most people here do not even know for sure who joined the group from Implenia and who from HOCHTIEF. They are one team.

OPEN COMMUNICATION

Relations with the client, Deutsche Bahn, are also maintained proactively – supported by a shared understanding that both parties want to advance the project through collaboration. "The approach has allowed us to optimise the project right from the bidding phase," believes Jens Classen. "The lean concept, which is set out in the contract, also brought us together very quickly, especially at the start of the project, in workshops with the client, the planners and construction supervisory bodies."

A WORKING PAIR

How do Implenia and HOCHTIEF work together in practice? We introduce some working pairs.

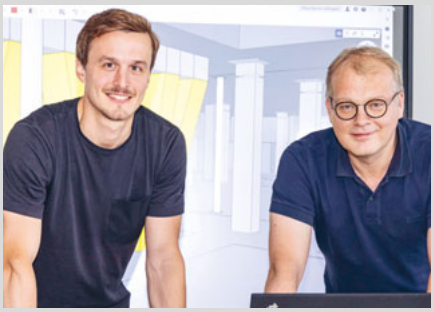
They manage all the skills in the Marienhof joint venture: Overall Project Manager Jens Classen (Implenia, left) and his deputy, Construction Manager Michael Müller (HOCHTIEF). In a conventional set-up, one partner would provide the technical leadership and the other the commercial leadership – but the significance of the Marienhof project means that a larger team is needed. Michael Müller largely takes care of the operational business, while also ensuring that the HOCHTIEF organisation is always up to date with all technical decisions. "We get on very well on a personal level and together have built up trust that the joint venture is acting for the good of both organisations," explains Jens Classen. I am quite proud that we have managed this so well and that our construction site is considered a beacon project for successful joint ventures."

JV TEAM: CONSTRUCTION MANAGEMENT ENGINEERING

Anton Schmuttermeier (HOCHTIEF, left) and Louise Lund (Implenia) have both been working on the Marienhof project since 2019 – Louise is the only person from Implenia on the engineering team. "But no-one asks about that," says Toni. "No-one does their own thing here – it is all about our shared project." The young construc-

tion engineers agree that this is an enormous opportunity to work together with experienced colleagues and benefit from their experience. “Both our Senior Construction Manager and our Senior Foreman have more than 30 years’ experience. When a problem arises, one of us suggests a considered solution. We then analyse it as a team, discussing any weak points and possible additions. That means that all the expertise and experience is contributed and we can all learn something from every single problem.”

JV TEAM: BUILDING INFORMATION MODELING (BIM)



André Wesch (Implenia, left) and Markus Wessels (HOCHTIEF) take care of surveying, geomonitoring, data management and building information modeling (BIM) on the Marienhof project. Together, they have developed a method for calculating the earth dug out quickly and easily using an iPad 3D scan. “It was actually a lucky coincidence that brought us to the method – and now we have a great solution,” says Markus Wessels. As part of a pilot project for foundation engineering in Germany, they are currently simulating the installation of reinforcement rods in the 3D model before the actual construction work begins. They complement each other perfectly: “Markus is a geoinformatics expert, so he specialises in surveying, geomonitoring and data retention. I know all about 3D models. We really enjoy working together,” says André Wesch emphatically.

According to Jens Classen, the collaborative, lean-based relationship with the joint venture and project partners forms the foundation on which hybrid large-scale projects can be conducted efficiently and profitably. Preventing conflict allows everyone involved to concentrate on resolving complex technical challenges and on processing and negotiating follow-up orders quickly. When you put them all together, these factors deliver a stable, constant contribution to success.

INVESTING IN STAFFING LEVELS

The consortium also consciously invests in resources. “We have a more appropriate staffing level than on other major construction sites,” explains Michael Müller. “The fact is, with execution planning and work preparation running in parallel, followed by implementation at very short notice on site, more staff are needed in order to prevent time being lost or quality suffering. Here at Marienhof, for example, we have invested in planning coordination to ensure that the plans made by the client are actually implemented. When problems emerge, we sound the alarm early – and put our energy into finding solutions, rather than resolving disputes.” Open exchange creates an understanding of the issues, problems and challenges faced by the other party in each case – and using this communication saves the team a great deal of written correspondence and subsequent negotiation. “We ask where the problem is, and then we work together to find a solution. And we do this as a team, not against one another – both within the joint venture and with the client and subcontractors,” says Müller.

It is no wonder that the project is a kind of flagship: for successful collaboration in a joint venture, as well as for solution-orientated execution of a complex infrastructure project. This all prevents unnecessary costs and helps avoid any unnecessary extensions to the construction period. It is why Jens Classen and Michael Müller are so annoyed that recent discussions in the press about extended construction periods and increased costs have shown Marienhof in a bad light. “It’s nothing to do with our work!” ■

This article has been produced jointly by the Communications departments of Implenia and HOCHTIEF.

EXPERTS IN HEALTHCARE AND LAB CONSTRUCTION

Real estate for healthcare and research is a market with huge potential for Division Buildings. Our healthcare and laboratory construction activities are shaping the market – be it large-scale hospital buildings or highly complex research laboratories.

↑ Implemented, under construction, in the planning phase (from top): The new BSS building at ETH Zürich, the "Dreiklang" hospital in Aarau, and the new laboratory being built for the University of Basel's Department of Biomedicine.

Projects in healthcare and laboratory construction share a particular feature: they are among the most challenging buildings to plan and execute. Wherever our teams are called upon, specialist expertise and well-founded operational knowledge are needed. The new BSS building at the Department of Biosystems on the Schällemättli campus in Basel is no exception. Here, Implenia is creating a new research building for experimental biologists and bioinformatics experts on behalf of ETH Zürich.

Other projects are under construction, such as the new "Dreiklang" complex at Kantonsspital Aarau hospital, where Implenia is implementing what is currently Switzerland's largest new hospital construction project as total contractor, or the new buildings for the hospitals Kantonsspital St. Gallen (KSSG), Ostschweizer Kinderspital (OKS), the children's hospital at Kantonsspital Luzern (LUKS) and the women's hospital at LUKS, as well as Kantonsspital Baden (KSB), where Implenia is working as master builder. The next major project, construction of the new laboratory at the University of Basel's Department of Biomedicine, is also ready for implementation.

EXPERTISE IN DEMAND

Implenia's expertise in healthcare and laboratory construction is in high demand: "Our combined expertise enables us to offer consulting, planning and implementation for healthcare and laboratory buildings from a single source," says Jochen Dietmeier, our Head of Healthcare and Laboratory Construction. The team sees itself as a partner that supports clients in successfully bringing even the most complex projects to completion with regard to costs, quality and deadlines – through collaborative and user-orientated partnership.

FUTURE MARKET HEALTHCARE CONSTRUCTION

Two key reasons why healthcare construction is a future market:

- Many hospital buildings in Switzerland date from the 1970s and are coming to the end of their lifespans.
- Hospitals need to prepare their real estate and their infrastructure for the operational requirements of the future.

With its expertise in healthcare and laboratory construction and Real Estate Consulting, Implenia offers comprehensive consulting, planning and implementation services for large and challenging real estate projects in the healthcare and research sectors.

LEAN PROCESSES THROUGH DIGITALISATION

Digital and data-supported methods like building information modeling (BIM) and lean construction make an invaluable contribution towards controlling costs, schedules and quality in healthcare and laboratory construction. They make planning and construction processes easier, while also promoting collaborative cooperation and enabling planning errors to be identified and corrected at an early stage of planning. That saves time and costs. The three-dimensional model view also gives those involved a good impression of the space. And virtual reality tools can be used to simulate processes in the future workspace, so that future users can put them to the test. ■

SUSTAINABLE SERIES PRODUCTION

What does future-orientated, sustainable, resource-optimised hospitality for tourists look like? Division Real Estate is currently working to answer this question with “Green Hospitality.”

On behalf of Rubus Development, a 50/50 joint venture between Implenia and Deutsche Seerederei (DSR), our experts at Real Estate Products are developing a scalable hotel design for the German, Swiss and Austrian market that will set new standards in design automation, prefabrication, sustainability and the circular economy.

↑ Successful presentation of the first package of work for Green Hospitality.

A first package of work has already been completed, including specifications for planning and designing the hotel rooms and guidance for digital service solutions to enable resource-optimised hotel operation. The Real Estate Products team, which has assumed overall leadership of “Green Hospitality” product development and combines specialist expertise in computational design, user experience (UX), customer experience (CX) and sustainability, among other fields, works together with various specialists. The internal expertise of Implenia Timber Construction and Real Estate Investment is incorporated alongside input from external partners with international experience in architecture, interior design, building technology, structural engineering and production.

CONFIGURATOR FOR DESIGN OPTIONS

Real Estate Products’ approach is based on computational design, which allows different configurations from a catalogue of elements that can be industrially produced. “That makes the entire process more efficient – from design to construction to commissioning,” explains Severin Boser, Head Real Estate Products. And how does it work? “We do this by using the digital configurator we have developed ourselves, which generates the design variants and optimises them in relation to one another based on specific aspects. The configurator delivers BIM models directly and with them building volumetrics, material lists, and performance and cost indicators.” This allows the various options

BENEFITS

Standardised real estate products offer a host of benefits:

- High product quality through industrial production, focus on the user experience and continuous improvement
- Lower costs at large volumes through standardisation, industrial production and fast delivery
- Reduced risk of running over deadline or budget

to be easily tested, compared and optimised until the best solution is found for the relevant site – taking into account relevant criteria such as light conditions, noise emissions, view and topography.

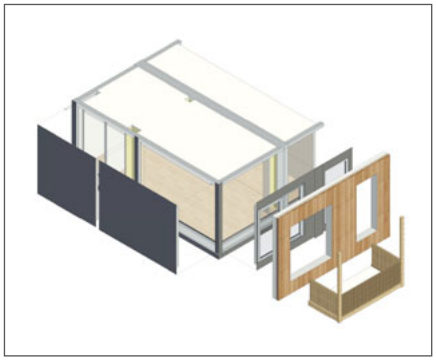
COMPUTER-AIDED FOR GREATER SUSTAINABILITY

Implenia is constantly developing the configurator's abilities further – often in discussion with ETH Zürich, universities, think-tanks and specialists. "The configurator is a powerful instrument for planning real estate products in such a way that they are compatible with the circular economy, can be continuously optimised throughout their entire life cycle, and add maximum value."

The development work for Green Hospitality is expected to continue until at least spring 2023, before the product is used in the first specific hotel project. Severin Boser sees the Rubus project as pioneering. "With its clear focus on sustainability, Green Hospitality will become a beacon project for us – especially when it comes to the use of computational design, industrial construction, and our ambitions for construction within the circular economy."

POTENTIAL FOR THE FUTURE

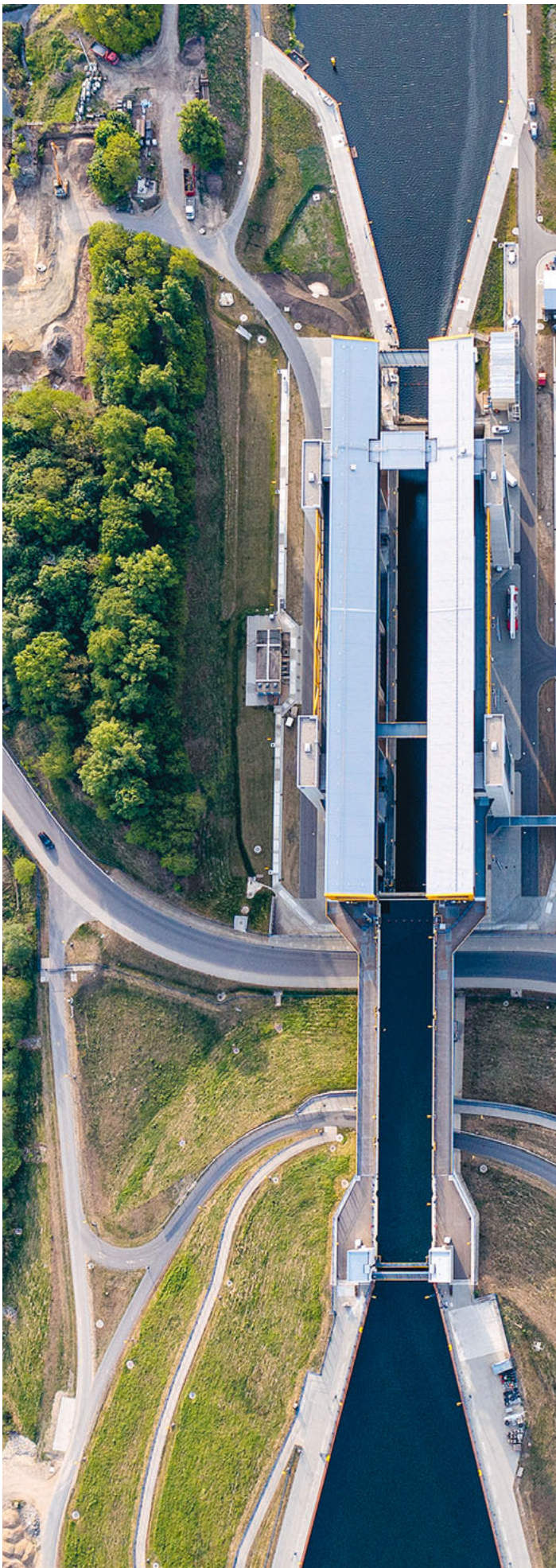
Real estate products are of interest wherever there is potential for optimisation within an individual building and wherever there is potential for scaling in design and production through a project pipeline. "We are currently concentrating on healthcare and hotel real estate and on housing for different user groups, including Best Agers and supported/affordable housing," says Severin Boser. ■

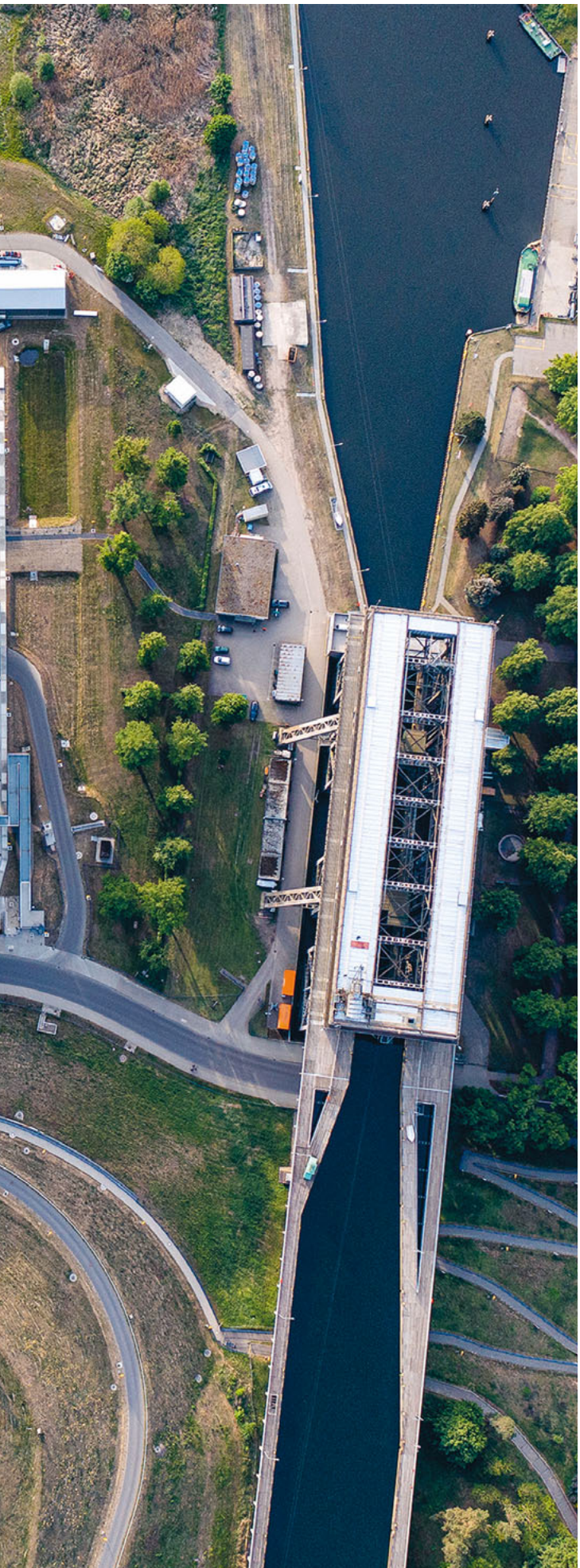


↑ Computer-aided for the optimum concept.

WHERE SHIPS TAKE THE LIFT

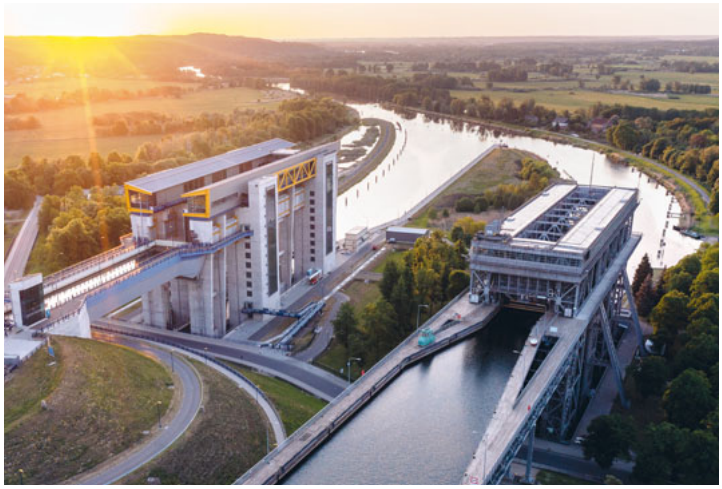
The construction period of around 14 years was intensive and challenging, but the result is impressive and unique. The new, 55-metre-high Niederfinow Boat Lift in Brandenburg is not just one of the most spectacular examples of engineering construction on Germany's waterways – the lift also contributes to sustainable goods transport. We demonstrate how Implenia's specialist expertise has contributed to this once-in-a-century project.





When travelling between Berlin and the sea port at Stettin in Poland, large modern goods ships came across a bottleneck. The old Niederfinow Boat Lift from 1934 was too small for today's fleet and had become very expensive to maintain. The new lift solves the problem. Looking to the future, it was designed to allow 110-metre-long, bi-level loaded container ships to pass through the Oder-Havel Canal. The system works like a giant elevator: ships are raised or lowered in an enormous trough to overcome the 36-metre height difference between the two rivers. The raising or lowering process lasts approximately three minutes, with the entire process from entry to exit taking around half an hour.

The new Niederfinow Boat Lift has been built on behalf of the Federal Waterway and Maritime Administration (WSV), with technical leadership by Implenia in a joint venture with its partners DSD Brückenbau, Johann Bunte and SIEMAG TECBERG. "This was an extremely challenging project on an enormous scale," says Henning Schrewe, Head Civil Deutschland (see image right). And it was a project in which Implenia was able to contribute once again prove its expertise in the implementation of complex projects. "We are all very proud that we are now in a position to hand over this impressive structure to the client for operation."



↑ Both engineering knowledge and comprehensive management expertise needed: the new Niederfinow Boat Lift.

Henning Schrewe, Head Civil Germany

"It was an extremely challenging project on a gigantic scale."

IN-HOUSE DISCIPLINES ENSURE SUCCESS

The construction period between 2008 and 2022 was not only long, but also intensive – from the very beginning. "Many aspects of the planning put out for tender had to be re-examined. As a result, we produced a completely new full structural analysis and deformation calculation while construction was already ongoing," explains Project Manager Carsten Genetzke (see portrait on Page 23). "It was so lucky that we were able to provide this service for Implenia's part of the project from our own technical office and thus to ensure close collaboration with the construction site." Incorporating Implenia's own expertise was also a central success factor when it came to building the load-bearing structure from reinforced concrete, which was subject to very strict tolerance limits. "We could count not only on a motivated and highly qualified team on the ground, but also on the services of our Special Foundations, Formwork Construction and Concrete Laboratory departments – it was a truly integrated project." Skills and expertise from Implenia's Engineering, Special Foundations and Civil Engineering departments were all incorporated throughout the project.

ENGINEERING AND MANAGEMENT EXPERTISE NEEDED

Just as ships are transported up and down in the lift, there were also highs and lows during the construction period. "We as a construction company wanted to complete our construction role in line with the contract we had signed, to the specifications in the design, and within the planned schedule; and we had to think about the economics of the construction site. Meanwhile, our client wanted the highest quality

HOW IT WORKS

The principle of the new boat lift is as simple as it is ingenious. The trough in which the boats travel within the lift is connected to counterweights by steel cables and cable pulleys. The entire system is perfectly balanced. When the counterweights travel upwards with the cables on one side, the trough travels downwards. The cable weight compensation chain, which is connected to the trough and the weights, changes the ratio of the chain length at the trough to the chain length at the weights. This compensates for the changing cable lengths and thus for the changing weights of the trough and counterweight. A small amount of electricity is needed for the lift drive, in order to get the system with its balanced weights moving.

in line with the latest standards and had to keep its planned budget in mind. And between us lay a contract that needed to be drafted and brought to life," explains Henning Schrewe.

Essential to the project's success was the firm intention of all parties involved to bring the project to a close together – despite all the challenges – and to make the necessary decisions with the involvement of all experts involved. That took intensive discussions and a willingness to compromise on the part of both client and contractor. "Once we had completed the project to a high degree of quality, which was acknowledged by the client, we were able to agree remuneration in line with the market for the additional services and construction period needed. Ultimately, both the client and the contractor were equally satisfied with the construction service and the business results of the project."

In future projects involving the German waterways, a charter will govern the most important aspects of collaboration on

construction sites. This charter is the result of dialogue between the Federal Ministry for Digital and Transport, the WSV, the Verband der Bauindustrie, and construction companies and partners in various projects.

Carsten Genetzke also knows that, "for all the standardisation in engineering, this project also needed a high level of creativity and the ability to communicate." Be it technical aspects or contractual considerations, Implenia was involved in finding solutions to a wide range of problems, all of which needed to be discussed and implemented in a very large team. This process was helped along by a number of factors: knowledge transfer was guaranteed at all times thanks to continuity of management, there was close collaboration with the joint venture partners, and teamwork happened easily across the various levels of the hierarchy.

A MASTERPIECE OF MECHANICAL AND CONSTRUCTION ENGINEERING

All in all, the new Niederfinow Boat Lift took around 65,000 cubic metres of concrete and reinforced concrete, 8,900 tons of reinforcing steel and 40,000 cubic metres of sheet pile steel. The dimensions of the massive structure are as impressive as that suggests: 55 metres tall, 46 metres wide and 133 metres long. "One of the aspects we had to consider when implementing the project was the fact that the four separate pylons become warped during different loads. The pylons were therefore constructed pre-warped, so that they stand vertical once the loads are applied," explains Henning Schrewe. But the boat lift is also a masterpiece from a technological point of view, equipped with modern technology and controlled completely electronically.

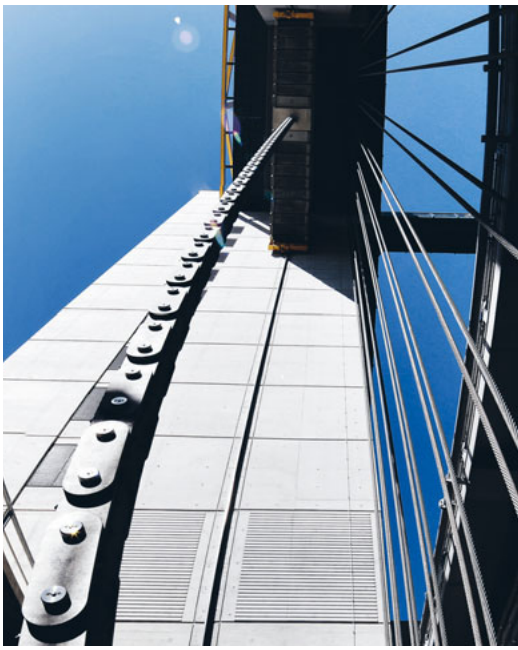
GREEN LIGHT FOR CLIMATE-FRIENDLY TRANSPORT

This section of the Havel-Oder Canal, which is not just a tourist magnet but also a key axis for the transportation of goods and abnormal loads between Western and Eastern Europe, can now carry up to four million tonnes of goods annually. Around 12,000 ships pass through the locks each year, a third of which are goods ships. The new boat lift thus plays a key role in protecting the environment. After all, every load transported by river boat is one more load that is not being taken by road. For comparison, a river boat has around the same load capacity as 200 trucks.

BIG STRUCTURE, BIG FEELINGS

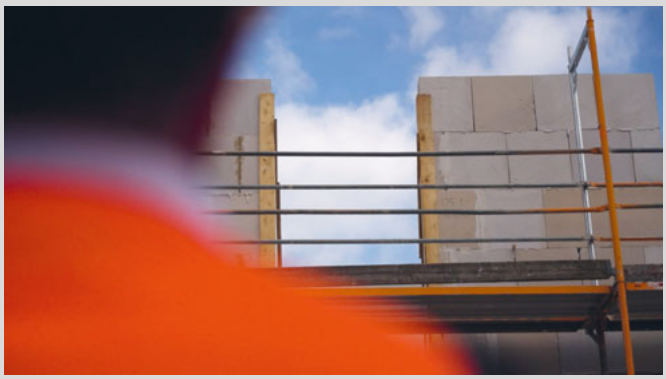
The complexity and imposing nature of the structure, and the time it took to complete this massive project, all trigger emotions among those involved. "We spent so much time poring over documents and plans, but when we see the lift operational and moving, it is an overwhelming feeling," says Carsten Genetzke. He and everyone else involved share a sense of pride and of having done the right thing as a team over so many years, and having all contributed to the project's success together. ■

↓ The new Niederfinow Boat Lift is an impressive 55 metres tall. The cable weight compensation chain (right) is a core part of the weight compensation.



AWARD-WINNING: CLEVER METHODS FOR GREATER SAFETY

HEALTH & SAFETY AWARD 2022
The eighth Health & Safety Award has been presented to three teams that have developed and introduced particularly valuable solutions in the field of occupational safety and health protection. The winning teams impressed the judges with their pragmatic, comprehensive and effective approaches.



PRAGMATIC INNOVATIONS FOR CONSTRUCTION SITES
Preventing critical situations before they arise: The Südcampus Bad Homburg team has developed two solutions that are as innovative as they are easy to implement. Wanting to minimise the danger of falling masonry parts, Wolbertus Middendorf designed and built a wooden frame that encloses and reinforces openings in masonry walls. Meanwhile, his colleague Janez Knaflic invented a wooden element that protects workers from falling into shafts. It is easy to install and can be moved flexibly. Both these construction managers' solutions are suitable for any site. Imitations welcome!

2

TEAM RÜMLANG,
SWITZERLAND

SAFE WORKING IN TIMBER CONSTRUCTION PRODUCTION
A lot of material, large machinery and a lot of people in a small space at the same time: safety is a core issue in the production hall for wooden element construction in Rümlang. The Timber Construction team initiated an entire package of measures for greater occupational safety. It includes daily stand-up meetings to discuss safety aspects as a team, as well as clean hall logistics with clear safety markings. Equipment is used to suck up the dust at every individual workspace and thus reduce the dust load, and a system has been developed in house to ensure safe working at height.

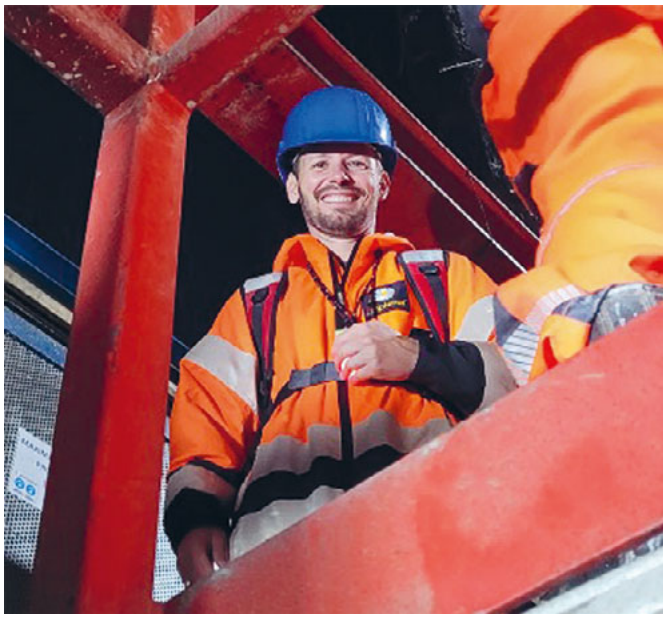
3

TEAM TELT,
FRANCE

SAFETY IN EVERY LANGUAGE
Breaking down language barriers to ensure safe tunnelling. The complex, large-scale TELT infrastructure project brings together a large number of people with different languages and professional backgrounds – not to mention groups of visitors. All of them receive training in the form of a short occupational safety video in the most common languages. Only those who achieve a certain score in the quiz that follows are allowed to enter the site. The videos currently focus on occupational safety, but the plan is to add further topics, such as environmental protection.

A FEW TIPS TO GET YOUR HEALTH & SAFETY PROJECT OFF THE GROUND

The next Health & Safety Award is just around the corner. Perhaps your team or project could make it onto the winners' podium next year? Rolf Riser (below), Project Lead for the Health & Safety Awards, has a few tips to increase your chance of victory.



TIP 1: START NOW.
The next Health & Safety Award is coming. Now is the time to start finding ideas and approaches for how your team or project can improve health and safety.

TIP 2: THINK BEYOND STANDARD SOLUTIONS.
Impress the judges with solutions that are unique and innovative. Ideas that go beyond standard solutions have the best chance. The award rewards free thinking, not obedience. Safety scaffolding that would have to be installed anyway to comply with the law, or presenting a safe site, will not win any awards. We want your innovative ideas and to see them put into practice.

TIP 3: COMMUNICATE THE ADDED VALUE.
Show what added value your solution offers and communicate clearly in your submission what your approach brings. Perhaps your solution not only enhances occupational safety, but also makes your work easier and reduces costs? The judges need to know. ■

WE ARE IMPLENIA

More than 7,700 people in an enormous range of roles at Implenia ensure that we can successfully design, plan and build the world of tomorrow. Here we introduce a few of our colleagues. Much more on them and many others can be found online.

PRECISION IN THE TEAM

He is a team player with years of experience: Sebastiano Cerbone has been a mason at Implenia for 22 years. One way he unwinds from the stress and time pressures he faces is by riding his Ducati.

APPRENTICESHIPS AT IMPLENIA

Implenia offers training in a range of professions. Here we introduce two of our apprentices: trainee builder Luisa Gabriela Rodriguez Restrepo from Switzerland, and student Moritz Cramer from Germany.

BUILDING A FUTURE

Luisa Gabriela Rodriguez Restrepo, originally from Panama, began her apprenticeship as a construction practitioner in the summer. She hopes the programme will lay the foundation for her career.

OUTSTANDING RESULT

Moritz Cramer from our building construction branch in Frankfurt is completing a dual course of study in civil engineering with industrial training as a reinforced concrete builder. He topped the year in the first, commercial part of his training.

NEW EXPERIENCES EVERY DAY

Peter Allgeier, qualified carpenter with a degree in construction engineering, is Planning Coordinator at the large-scale Marienhof project in Munich, where he is gaining new experience every day.

MENTOR FOR THE NEXT GENERATION

Richard Bruggmann, Project Lead at Lokstadt in Winterthur, has been a mentor for junior construction managers for many years. He enjoys working with these young experts.

OUTSTANDING WORK

Dominic Jäger was awarded the "Swiss Life Studienpreis" for the best bachelor's thesis in Switzerland in the financial field. The Real Estate Asset Manager has been at Implenia since starting as an apprentice in 2013.

THE RIGHT LOOK FOR IMPLENIA

Work is never a drag for Gabriela Fleck, who has turned her passion into her career. In Marketing/Communications, her role includes designing this magazine and working on many Implenia videos.

HITTING THE MARK IN AN INTERNSHIP

Construction engineer Mareike Otzdorff developed a BIM-supported application tool during her internship at Implenia, winning first prize in a Germany-wide competition. "The tool developed by Mareike Otzdorff allows us to optimise processes on the construction site, logistics and, above all, interfaces. That gives suppliers greater planning reliability," reports Jan Gäbler from the PES department at Implenia, who supervised the development project. "It also frees up expert resources."

The tool is already in use on construction sites in order to test and improve it.

MORE PORTRAITS ONLINE

"IT WORKS!"

German Tim Pergande came to Sweden for an internship, working on the construction of the country's longest tram bridge. His role is to take care of the installation of prefabricated elements.

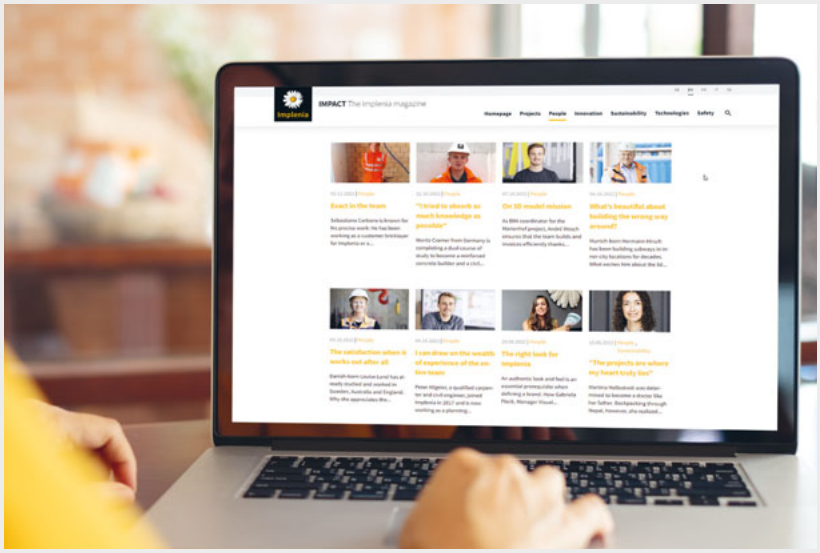
PASSION FOR THE ENVIRONMENT

Martina Hellestveit was set on following her father into the medical profession. But while backpacking in Nepal, she realised that environmental work was her true calling.

ABROAD WITH IMPLENIA

Mathieu Manjarres seized the opportunity to take up a position abroad, moving from Implenia France to Implenia Germany. To start with, the language was the biggest challenge.

IMPACT ONLINE:
EVEN MORE PORTRAITS AND PROJECT REPORTS, REGULARLY UPDATED



THANK YOU FOR TAKING PART IN THE SURVEY!

In the last edition, we wanted to find out from you which team is your favourite at Implenia and what makes them special. The competition winner, Georg Helfert, IT Business Partner / IT Special Tasks in Group IT, won a trip to Berlin. His favourite team is the cloud team GIT, because it has excellent social skills and was using the cloud before most people had heard of it. This time, all you have to do is answer a single question. Find out more on Page 4. **Take part and win a trip to Munich!**

RATHER WATCH THAN READ?

Enough reading already? Would you prefer to watch and listen? You can find plenty of Implenia videos on YouTube. Take a look to find out, for example, how a tunnel was blasted in Sweden and much more.