Implenia

IMPACT

THE MAGAZINE FOR OUR EMPLOYEES

ISSUE
SUMMER
1/2021

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IMPACT ONLINE

Don't forget: there is also a digital version of IMPACT, where we look at the topics in more detail and augment our reporting with numerous videos. **It's definitely worth a visit!**

Imprint

IMPACT
The magazine for Implenia employees
Issue 1/2021

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Printing
Neidhart + Schön Print AG, Zurich

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RECYCLED
Paper made from recycled material
FSC® C016003

“Sustainability is an integral part of our DNA.”

Sustainability is one of our five company values, and we have set ourselves ambitious targets for sustainability that we want to achieve by 2025. We are devoting much of this issue of IMPACT to the question of how to position ourselves as a sustainable construction and real estate services provider – and what we are already doing in practice to achieve this.

Why is this so important? Because what we do really matters: our industry emits very large volumes of greenhouse gas, so we have to be careful how we use resources. But sustainable construction also makes economic sense. By investing in smart technologies and efficient working practices we can avoid wasting time and expense. And a safe, low-pollution work environment makes things better for everyone.

The stories gathered from all over the Group and published in this issue will hopefully demonstrate what is possible and inspire imitation. This is how to make sustainable thinking ever more part of our corporate culture and our DNA. It is also how we, as a vigorous and dynamic company, can achieve our goal of constantly finding new ways to build tomorrow’s world. Sustainable, innovative and as diverse as our teams.

André

NEWS

INSPIRE ROLL-OUT IN SWITZERLAND

ONGOING IMPROVEMENTS AND ADJUSTMENTS TO THE SYSTEM

INSPIRE, the Group-wide project to harmonise and integrate our processes, went live in Switzerland in February. It has created some challenges. The project team and management are aware of these. Thank you for the large amount of specific feedback you have provided on the implementation of INSPIRE. Your responses have been very helpful with regard to what has already been implemented as well as to the planned improvements and adjustments. These improvements are being implemented according to priority by means of new releases in the system.

One important step has been the definition of lighthouse projects: all releases are tested on these before being rolled out to the other projects. The introduction of the Business Advisory Board in May has helped us give operational units a better and stronger say in INSPIRE, as well as accelerating decision-making. Planning has begun for the roll-out in Germany. The go-live in Germany will only happen after sufficient stability has been achieved in Switzerland, including the necessary training for employees.

You can always find the latest information about releases and improvements by visiting the INSPIRE Help Center on the intranet. Please send any questions, further feedback or comments to: **inspire@implenia.com**.

SWEDEN

SLUSSEN PROJECT SN91 SUCCESSFULLY COMPLETED

In September 2018, the City of Stockholm commissioned Implenia to build a bus station inside Katarinaberget hill that will serve as the hub of the local public transport between Stockholm city centre, Nacka and Värmdö. This complex, technically challenging project has now been completed successfully and on time.

Slussen is a historically important part of central Stockholm, and Project SN91 is a small but integral part of the whole area's renovation. The new bus station is sited in three caverns, up to 24 metres in height, providing waiting areas for passengers and room for the buses to manoeuvre. Construction work involved blasting around 270,000 cubic metres of rock from inside the hill.

With many buildings nearby, large spans and thin rock cover, the blasting and excavating required for Project SN91 presented huge technical challenges. The logistics and the coordination of the many people involved also proved extremely demanding. Now the work is complete, some of our colleagues have given short interviews for our online edition about their experiences on the project.

SURVEY

Win a trip to Innsbruck!

Do you read IMPACT on paper? Or on your smartphone? Or your office computer? We have launched an anonymous online survey to find out how you would like to receive the magazine in future. Take part and win a trip for two to Innsbruck in the Austrian Alps. The city lies just north of the Brenner Base Tunnel, at the southern end of which Implenia will soon be starting construction on the Fortezza – Ponte Gardena railway. A highlight of any trip to Innsbruck is a ride on the Nordkette cable car, with futuristic stations designed by Zaha Hadid, which takes you from the city centre straight up to an altitude of 2,300 metres.

ON TRACK WITH OUR STRATEGY: TUNNELLING BOOM

SWEDEN

"SOFIA" METRO STATION, STOCKHOLM

"Region Stockholm" has commissioned Implenia to build its new "Sofia" metro station along with the requisite tunnel, in a contract worth SEK 1 billion (around CHF 110 million). Located approximately 100 metres underground, the new hub will be one of the deepest underground stations in the world. Eight large, high-speed elevators will take commuters back and forth from the surface to the platforms in around 30 seconds.

NORWAY

LYSAKER-FORNEBU TUNNEL, OSLO

Fornebubanen has awarded the Lysaker-Fornebu tunnelling and civil engineering contract to Implenia. The job involves planning and construction of a 2.3-kilometre tunnel, including cross-sections. Construction pits and shafts are also being built for the Flytårnet and Fornebuporten stations. The contract is worth an estimated NOK 1.2 billion (CHF 131 million) and marks the beginning of tunnelling work for the Fornebubanen railway.

↑ Fornebuporten station designed by Zaha Hadid Architects

SWITZERLAND

ST. GALLEN CITY EXPRESSWAY REFURBISHMENT

Switzerland's Federal Roads Office (FEDRO) has awarded a contract for construction work on the St. Gallen city expressway, worth CHF 165.1 million, to the "Stadtautobahn" joint venture, in which Implenia has a 30 % share. The contract includes surfacing, drainage systems, kerbs and noise abatement walls, as well as the renovation of various bridges, galleries, retaining structures and the Stephanshorn Tunnel, plus construction of a new footbridge.

ITALY

FORTEZZA – PONTE GARDENA RAILWAY

In a joint venture, Implenia and its partner Webuild Group have been awarded the contract for the planning and construction of a high-speed railway line worth EUR 1.07 billion. The line will run for approximately 22.5 kilometres from the Brenner Base Tunnel between Fortezza and Ponte Gardena. The project will be a key element in an improved European mobility network.

SWITZERLAND

NORTHERN ACCESS SHAFT ON THE GOTTHARD

The "secondo tubo" joint venture, in which Implenia has a 40 % stake, has been commissioned to build a 4-kilometre access shaft for the second Gotthard tube (Lot 243). As well as the shaft itself, the Lot 243 contract, worth CHF 86.6 million, includes various logistics works in preparation for the main lot. This is the second lot that Implenia has won within the project to build the second tube of the Gotthard road tunnel, having already been awarded Lot 242 for the conversion of the northern safety shaft.

GERMANY

A7 TUNNEL ALTONA, HAMBURG

Implenia, together with project partner Hochtief, has won the contract to build the 2.2-kilometre Altona noise protection tunnel on the A7 motorway in Hamburg. The contract is worth a net total of around EUR 580 million. Implenia will take the commercial lead on the project as part of the joint venture; Hochtief has the technical lead. The top of the tunnel will be covered with allotments, greenery and parks to create a recreational zone and improve the quality of life for residents.

SUSTAINABILITY

TOP MARKS FOR SUSTAINABILITY

We at Implenia create and build tomorrow's world. To help us do this sustainably we have set new and ambitious goals for 2025 and are asking the following question for each project: What impact will this have on the environment, society and the economy? This is how it works in practice.

SUSTAINABILITY GOALS

2021 – 2025

1. SUSTAINABLE DEVELOPMENT & CONSTRUCTION
We develop and build according to the highest sustainability standards and help to develop these standards further.

2. SUSTAINABLE SUPPLY CHAIN
We work with sustainable partners and continuously improve together.

3. GREEN CONSTRUCTION SITES
We win over and help our customers with project-specific sustainability concepts and sustainable solutions.

4. CO_2 REDUCTION
We are aiming for net zero CO_2 emissions by 2050 and a 15% reduction in our Group-wide CO_2 emissions by 2025.

5. ENVIRONMENTAL PROTECTION
We apply professional environmental management to all our projects in order to prevent environmental incidents.

6. CIRCULAR ECONOMY
We develop new circular business models and promote closed materials cycles.

7. SUSTAINABILITY IN OUR DNA
We practise sustainability in our daily actions and communicate transparently about experiences and outcomes.

8. COMMITTED EMPLOYEES
We aim for zero accidents at work, safe and modern working conditions, high employee satisfaction and low fluctuation rates.

9. IMPLENIA WITHOUT BORDERS
We engage in social partnerships and collaborate with our stakeholders beyond the construction site.

10. ETHICAL GOVERNANCE
We conduct our business in line with compliance rules, our sense of responsibility and ethical principles, and we demand the same from our partners.

11. SUSTAINABLE FINANCE
We integrate ESG criteria into our business and investment decisions – for clients, investors and society as a whole.

12. DIGITAL & INTEGRATED PROCESSES
We reinforce our reputation for operational excellence and high quality standards.

Anita Eckardt, Head Division Specialties and Chair of Implenia's Sustainability Committee

"Sustainability has been embedded in our strategy for years."

Sustainability is one of the most crucial challenges of our time. It is particularly significant for real estate and construction companies because of their use of scarce raw materials and because of the industry's contribution to global greenhouse gas emissions. It is also important because of the demand for housing and infrastructure in densely populated urban regions: 84.6% of people in Western Europe will live in urban centres by 2040.

AMBITIOUS GOALS

Implenia decided early on that sustainability should be a leadership issue and the subject of strategic development. "Sustainability is one of our five corporate values and has been part of our strategy for over a decade," says Anita Eckardt, Head Division Specialties and Chair of Implenia's Sustainability Committee. "We have now given our sustainability goals a fundamental overhaul, resulting in twelve ambitious objectives which we will have to work hard on if we are going to achieve them by 2025."

We want to embed sustainability even more systematically in our day-to-day work and in the company's DNA. Rolf Wagenbach, Global Head Sustainability, explains the approach: "In order to put our integrated vision of sustainability into practice, we always define it in three dimensions: environmental, social and economic." He and his team expect the following three goals to have a particularly significant leverage effect:

GOAL 1: SUSTAINABLE DEVELOPMENT & REALISATION

We want to develop and build to the highest sustainability standards. This includes reducing grey energy in our development projects and consistently promoting timber construction. With 90 years of experience in building with wood, Implenia is a pioneer with a long tradition behind it – just like the material itself. Technological progress means that wood can meet all the requirements relating to strength, fire resistance, etc. And its qualities as a renewable raw material and store for CO_2 make it much more environmentally friendly than concrete.

No wonder, then, that Implenia is using 50,000 cubic metres of wood a year – and developing ever more complex timber buildings. Like the Haus Furrer in Winterthur's KIM neighbourhood: 5,500 cubic metres of wood are being used to build this residential and commercial complex, which includes a total of 208 apartments. Anita Eckardt: "We now check every project at a very early stage to see if timber construction is an option. If it is, we take it to the next stage."

GOAL 2: SUSTAINABLE SUPPLY CHAIN

Like any integrated provider of construction services, Implenia buys many of its materials and services – interiors and plumbing, for example – from external planners. Our target for 2025 is that at least 75% of these materials and services are purchased from suppliers that we have assessed against transparent sustainability criteria and that meet our higher-level requirements. For some years now we have systematically checked the social, environmental and economic standards of a growing number of subcontractors and suppliers.

We distinguish here between two things: minimum standards that everyone has to meet if they want to do any kind of business with us; and additional higher-level requirements that allow our partners to set themselves apart. Rolf Wagenbach: "We have already assessed around 40% of suppliers, and we continue to work on this at high speed. The fact is that nobody in the construction industry can yet claim to have properly assessed all suppliers down to the individual trades. We want to change this."

GOAL 6: CIRCULAR ECONOMY

You can't make an omelette without breaking eggs, and you can't build without creating waste. We want to use closed-cycle models to reuse valuable raw materials rather than destroy them or send them to landfill. It's high time the construction industry embraced the circular approach properly and addressed a very specific problem: the fact that often nobody knows

what exactly was used to build a building, where precisely it was used and what the quality was. The first step is to take an inventory of all the materials involved. We use BIM for this.

Industrialisation has a significant role to play here, too. If we can produce modular construction elements in a way that makes it possible to sort and separate the materials at the end of their life, they can be returned to the production cycle as secondary raw materials. So there is less waste. Anita Eckardt emphasises: "The more care we take in the development phase when we're planning a building, the more efficiently it can be built, and then operated, and then at some point dismantled and integrated into the cycle for a future building. Digitalisation is crucial here as an enabler for sustainability."

RECOGNISED INDUSTRY LEADER

A continuous improvement in the scores we are given by various ratings agencies confirms that this is the right approach. Sustainalytics, a global leader in research and ratings for environmental, social and governance issues, currently has Implenia on an outstanding 84 points. This makes us a recognised leader in the industry. ■

Rolf Wagenbach,
Global Head Sustainability

"We work with sustainable partners and continuously improve together."

THIS IS SUSTAINABILITY

SWITZERLAND

A LARGE DOSE OF GREEN: GREEN VILLAGE GENEVA

The World Council of Churches has called its construction project "Green Village" in Geneva for good reason: Implenia is developing the major project according to comprehensive sustainability principles. When finished, it will provide the head office for the World Council of Churches (WCC): a central listed building is being renovated, while six new buildings, providing offices, apartments and a hotel, are being built in the surrounding gardens. The project follows the "One Planet Living" philosophy for sustainable neighbourhoods. Developed by Bioregional and WWF International, this philosophy aims to reduce CO_2 emissions and waste, while prioritising environmentally friendly mobility and biological diversity. Emphasis is also placed on social issues, such as encouraging neighbourliness, using regional resources, involving local businesses and promoting community well-being.

GROUP

SUSTAINABILITY REPORT

We published our fifth Sustainability Report in March – exclusively online – alongside our Annual Report. It contains interesting benchmark figures and background reports on Implenia's sustainability efforts, and shows where we stand in relation to the Group-wide Sustainability Goals 2021 – 2025. The report is updated on an ongoing basis, so is always worth a look.

NORWAY

RECYCLING USED BRIDGES

Extreme recycling: instead of demolishing an old bridge in Sandvika, crushing and sorting the material and taking it away for recycling, the team at Implenia Norway gave the beams to a client who paid to have them transported and reused in a new bridge. “The parts were as good as new! I think a lot more materials and equipment from the building industry can be repurposed,” says the new owner.

GERMANY

SAVING 4 MILLION LITRES OF WATER

Implenia is building the eight kilometre-long Albvorland Tunnel for Deutsche Bahn, one of the longest railway tunnels in Germany. The construction project has its own sustainability report, which includes a particular success story: careful treatment of concrete scrubbing slurry has saved around four million litres of fresh water. As a result, the concrete was produced using around 20% less water than usual.

NORWAY

IMPRESSIVE WASTE SEPARATION

Implenia has been building a new coastal highway near Bergen in Norway since 2015. To improve the unsatisfactory level of recycling, managers decided to publish monthly waste-sorting reports. The competition between the sites clearly sparked a passion for collecting: one year after the initiative was launched, an amazing 98.8% of construction waste was finding its way to the right container.

SWEDEN

PIONEERS IN CLEANING

If there is any leakage of oil or fuel, DissOil, an innovative material made from cork, absorbs it immediately. Moisture from the ground, dew or rain activates the degradation process, which breaks the oil down into harmless fragments, carbon dioxide, water and heat. Implenia is the first construction company in the world to test this sustainable alternative to conventional absorption methods, and is an absolute pioneer.

SWEDEN

FROM COMPUTER TO TREE

It’s a different sort of recycling: Implenia Sweden is turning used computers into new trees. We are doing this in collaboration with Vi-Skogen, a Swedish aid organisation that plants trees in Kenya, Rwanda, Uganda and Tanzania. When we sell decommissioned IT equipment to employees, the proceeds go to Vi-Skogen. In 2020 we were responsible for planting 600 trees.

SWEDEN

CRUSTACEAN PURIFICATION

Stricter rules on water quality prompted our team in Stockholm to search for innovative technologies. The result is now being tested successfully on our construction sites: chitosan, a substance derived from crab shells discarded by the fishing and aquaculture industries, binds with impurities in the water and sinks to the bottom, where it can be filtered out.

MORE ON ALL THESE TOPICS ONLINE

FROM DRONE TO CLOUD

"Reality capture" scans objects, buildings and sites, and replicates them digitally in 3D. This allows us to carry out many work steps more efficiently and more accurately, reducing costs, improving quality and saving a lot of trouble.

"Reality capture" is one of those new digital technologies that insiders have been talking about for a long time. For everyone else, here's a short explanation: objects, buildings or even whole sites can be recorded digitally using stationary and mobile laser scanners on the ground as well as air-borne drones. The data is translated into a point cloud on a computer, from which it is possible to create a high-precision 3D digital image based on millions of individual data points.

Every phase, from initial planning to the finished project, can be recorded, meaning that it is available in digital form at any time. Yves Serventi, one of our builders in Zurich, first encountered reality capture a year ago. In preparation for a tender for a major project he used a drone to record the current situation on site. "I was surprised how easy it was to create a point cloud," he says. "It's intuitive and you quickly see how it all works."

Not long afterwards he came up with the idea of using drone recordings to map the layout of the construction site. "It was a great success," says Yves. "We flew the drone over the site, took more than 200 photographs and then assembled an orthophoto that gave us a distortion-free, true-to-scale representation, similar to the ones you see on Google Maps, including buildings and the cars that happened to be there."

Once you have a calculation model, reality capture lets you visualise projects in 3D – a big advantage when bidding for work and something that always impresses potential clients and investors. When modernising existing buildings, reality capture can deliver precise measurements without having to get lots of different people on site.

↑ Sebastian Mattes of the Global BIM Team is Implenia's contact person for reality capture

Sebastian Mattes, BIM specialist

"Reality capture facilitates communication between everyone involved."

PROJECT EXCELLENCE AND SERVICES

AGILE WITH LEAN

Collaboration and agility are two of Implenia's values. The Lean philosophy helps put these values into practice through the simple use of short daily meetings.

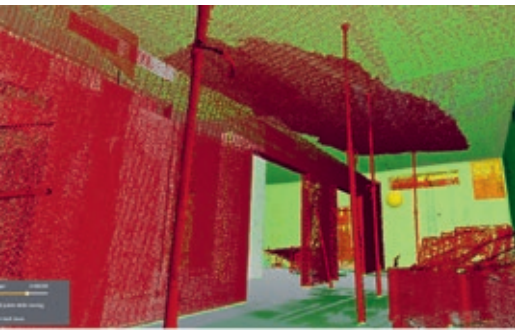
Long meetings can be exhausting. "Daily huddles" are a much more agile option for project or team meetings. Participants spend 15 minutes on their feet talking transparently about experiences, problems, obstacles and plans, and helping each other achieve the goals they have defined together.

Thanks to our Lean Construction approach, daily huddles are already the norm on many of our construction sites, with site managers, foremen and workers meeting every day for a short discussion about the project. The very short feedback rhythm allows the team to accelerate decision-making. Obstacles and problems are addressed early and resolved promptly.

Daily huddles are also being used successfully away from the construction site. Jörg Bussmann, Team Leader at DWS Collaboration & Enterprise Application, part of Group IT, tells us about his team's experience: "Daily huddles help us develop an overview of the latest issues and find solutions quickly."

TIPS FOR DAILY HUDDLES

- **No interruptions:** 15 minutes of full focus
- **Fixed length:** no extension of the time window
- **Everyone stands up:** concentration and dynamism
- **Full participation:** everyone speaks
- **Focus:** Only current issues are discussed
- **Relevant:** Only things that concern everyone are discussed
- **Binding:** Tasks and objectives are fixed



↑ Red alert: the red area indicates a need for intervention on the ceiling

Automated target-actual analysis using artificial intelligence is being used increasingly during project execution to co-ordinate individual construction stages and improve the quality of implementation. Last but not least, reality capture simplifies communication between all parties, because everyone is basing their work on the same digital model.

SINGLE POINT OF CONTACT

Sebastian Mattes of the global BIM team is Implenia's contact person for everything to do with BIM in general, and reality capture in particular. "Mr. Reality Capture" is adept at using laser scanners, flying drones and producing 3D models. "If we record the latest state of a construction site every week with laser scanners, and compare the data within the BIM system, we can identify the tiniest deviations, defects and conflicts before they develop into real problems." If a ceiling starts to sag, for example, the 3D model immediately shows you whether it is still within the deviation tolerance or whether action is required.

With all these benefits, it's not surprising that the use of reality capture is increasing within the construction sector. Implenia is at the forefront of the ongoing development of this technology. In future our models will also be able to show the progress of the project and highlight delays. Our specialists are working with technology start-ups on the development of new solutions.

"We in the Global BIM team are the people to come to with any questions about reality capture, drones or laser scanners," says Sebastian Mattes. "We advise project teams on the use and purchase of digital surveying services and train them in the use of drones." An awareness of legal issues is also crucial: "Data protection and image rights are as important an issue as the correct handling of drones." ■

THE BENEFITS OF REALITY CAPTURE

- More precise calculations with more accurate data
- Shared database with constant synchronisation
- All the latest relevant data available to all parties
- Improved exchange of information between everyone involved in planning
- More efficient planning of costs, deadlines and quality
- Impressive, clear visualisations

CLICK FOR A DREAM HOME

It's the latest trend: future owners at the Lokstadt development in Winterthur can use a digital configurator to determine the standard of fit-out for their new homes. It's a win-win: happier home owners and more efficient construction.

↑ Visualisation of a dream apartment: Jelena Radovic shows how it works

The goal is customer satisfaction: when the apartments in the "Tender" building at Lokstadt in Winterthur are ready in 2023, the new residents will find that their new homes have exactly the interior fit-out they wanted.

Implenia has always tried to introduce a certain amount of standardisation to avoid a design free-for-all that would be excessively expensive for everyone involved. The most recent solution to this issue was used for Project Tender. Apartment buyers open the digital fit-out configurator and select from eight parquet floor options and a nice range of ceramic tiles and sanitary fixtures, all organised into three price categories. To make the decision easier, the configurator creates a visualisation of the selection; the different designs and surfaces can also be inspected live in the showroom.

"We want anybody who buys an apartment from us to have a positive all-round experience," says Jelena Radovic, Head Real Estate Marketing. "Many buyers feel overwhelmed by the almost limitless amount of design options. We help them by making a preselection of styles in collaboration with leading interior specialists."

CLEAR VISUALISATIONS AND FIXED COSTS

Thanks to the standardisation, there is no need to negotiate with customers and suppliers about countless different options. The cost of the various fittings are calculated at fixed rates and disclosed right at the start of the sale so there are no surprises later. Thanks to the preconfigured selection we can negotiate the best terms and products for our customers.

The process also delivers valuable insights into customer preferences for future project developments. The configurator is constantly being expanded, which requires a fully integrated process between real estate marketing, real estate development, procurement, buildings, customer services and the guarantees department.

Implenia aims to present itself to the end customer as a competent partner for living spaces and interior design, and it is planning new partnerships with external providers to maintain this position: "The vision is that our future offering should extend from financing solutions to built-in wardrobes and curtains," Jelena explains. "If you buy a home from Implenia you should also be able to get supplementary services from us so that you feel well taken care of." ■

BENEFITS AT A GLANCE

For customers:
- Fixed, transparent costs
- Visualisation of your dream fit-out
- Preselection makes decisions easier

For Implenia:
- Process security thanks to standardisation
- Improved expectations management for satisfied customers
- Insights into customer preferences for future projects

JOINING FORCES

The German construction industry is very disputatious. The A7 Altona Tunnel project team wants to do things better and is exploring new forms of cooperation.

When news came in on 21 December that Implenia had won the contract for the major A7 Altona Tunnel project, Jan Göttsche was delighted, and not just because it was the most important acquisition of 2020, a challenging year dominated by the coronavirus. It was also a special moment for him personally, following an intensive tendering phase in which things went rather differently from most other projects he has handled in his career.

↑ After more than 30 planning meetings, everyone is ready to start building: Jan Göttsche, Head NL Northeast (left), and Dennis Günther, Commercial Project Manager

Over the decades, German procurement law has created a confrontational culture. The cheapest provider automatically has the advantage in a pure bidding process, so the interests of the parties involved are often not aligned to the same objectives. And often the specifications set out in the tender differ significantly from what actually gets built in the end. Disputes are almost inevitable. Especially if each company is solely focused on their own success.

JOINT PLANNING

But what if people got together with the express purpose of getting a project up and running that not only stays on schedule and budget, but that also turns out to be profitable for everyone involved? What if these people devoted twelve months, more than thirty planning meetings and all their combined expertise to optimising the project, from the technical and financial side, in order to reduce the risks involved in actual construction to the bare minimum? And what if these people also explicitly agreed to take the team spirit that has thus been created into the execution phase, and to ensure that the expanded project team also upholds the principles of fairness,

honesty and respect at all times and in all its dealings?

"I am extremely optimistic that during the next eight years of construction we will continue to find solutions to any problems that arise," says Jan Göttsche, Head NL North East, Civil Germany, who represents Implenia on the joint venture's management committee. The foundations have been laid. All of the parties showed themselves to be flexible during the bidding phase: the client, DEGES, altered the tender three times, while bidders Implenia and Hochtief voluntarily brought their execution planning forward. This meant that optimisation potential could be utilised with regard to construction schedule and alternative solutions, and risks could be shared more equally by e.g. agreeing price adjustment guidelines and amending the service agreement. "Above all, though, the clear desire to try a new approach to the contract brought our team together," says Jan Göttsche. "We now have to take this spirit into the wider project team, which in just a few months will expand to a hundred people."

CULTURAL CHANGE IS THE GOAL

To make sure this happens, the project participants want to develop guidelines for a culture of cooperation and all work under the same roof: the new office right by the construction site offers enough space for the client's employees, the construction managers and supervisors and the joint venture team. All rooms are shared, so that information can be exchanged easily at all levels, all the time. Creating the best conditions for a successful project. ■

A7 ALTONA TUNNEL

Project: 2,230 metre noise protection tunnel and enlargement of the A7 motorway to eight lanes
Total capacity: EUR 580 million
Planned construction period: eight years
Joint venture partners: Implenia / Hochtief
Implenia share: 35%, commercial lead

DRILL, SINK, REPEAT

We are currently using a vertical shaft sinking machine to produce four shafts below groundwater level for ventilation and emergency access on the future Grand Paris Express line 17. The technology is impressive: the machine drills and lines shafts in a single step – cleanly, safely, relatively quietly and within very tight confines.

"With this method, all the work inside the structure is carried out without the need for human intervention. This reduces the stress on our people created by vibration, dust and fumes. The excavation work is remotely controlled from the surface and carried out below groundwater level. Because there is no need to reduce this level artificially, the risk of unexpected subsidence is greatly reduced. And the method is also more environmentally friendly because we have less excavation liquid to deal with."
Mohamed Talla, QSE Manager

"The VSM method allows simultaneous excavation and installation of the concrete segments, which are driven into the ground as excavation progresses. This reduces the length of the job, the amount of concrete used, the volume excavated, etc."
Hugo Launais, Plant Engineer

"Feedback from the first complete drilling shows that the technique is well suited to the Paris underground. The drilling went smoothly overall and came in on budget. This test drilling makes us confident about the next shaft we'll be drilling on the site, and we're thinking about using the same technology on other projects."
Thomas Brochot, Plant Engineer

The Grand Paris Express is one of the most ambitious construction projects of the 21st century, not only because of the size of the infrastructure and the budget, but also in terms of the civil engineering techniques required. Implenia is proud to be playing an important role in the project, which also gives the company an opportunity to demonstrate its mastery of the very latest technology. For example, we are using VSM technology (VSM = vertical shaft sinking machine) developed by German manufacturer Herrenknecht to sink four shafts, the first two of which were completed in January 2021 and May 2021 respectively.

VSM technology facilitates the construction of vertical shafts below groundwater level using a roadheader and concrete segments. Traditionally, this type of project would rely on diaphragm wall construction; but the structures located around the future metro line 17 leave little room for manoeuvre. The use of VSM technology allows us to significantly reduce the size of the construction site. It also cuts construction time, because excavation and lining take place at the same time – a huge advantage when running a construction site in a congested urban area. There is also much less noise generated than there would be if we were using diaphragm wall cutters and earth-moving equipment. The technology also complies with all the altitude restrictions that apply in the vicinity of the airport.

HOW IT WORKS

The vertical shaft sinking machine has three main parts: the shaft boring unit; the spoil removal system and the lowering unit. Unlike horizontal tunnelling machines, instead of a cutting wheel the VSM system has a rotating cutting drum, mounted on a swivelling telescopic boom, which excavates the shaft and removes the spoil. This excavated material is removed hydraulically through a submersible pump and transported to a separation plant on the surface. The water is separated from the rock and soil and returned to the shaft. At the same time, the shaft lining is assembled on the surface from precast concrete segments, which are continuously lowered into the shaft.

1 The first ring of the shaft lining, the so-called "cutting edge", is put together before the machine is installed and placed on the surface site of the shaft. Subsequent rings are built on this so that the shaft drilling machine can be installed within them. Three arms on the machine are fixed to pre-installed steel elements to brace the machine in the shaft. The shaft is connected to the lowering unit with steel cables to keep it in place. In this way, the entire shaft structure can be held and lowered in a controlled manner.

2 As the VSM gradually drills into the ground, the prefabricated concrete rings that form the shaft wall are installed at the upper end of the shaft. As the shaft is sunk, they slide into the hole and the next ring can be placed on top.

3 This process continues until the shaft reaches the desired depth. The vertical

THE TECHNOLOGY EXPLAINED:

VIDEO ONLINE

↑ VSM technology: clean, safe, quiet and usable in small spaces

↑ Precast concrete segments from our production facility in Limoges-Fourches stand ready for use

shaft sinking machine is designed to work under water in order to balance the pressure and prevent earth movements.

IN-HOUSE PRODUCTION

The concrete segments are made in Implenia's own production facility in Limoges-Fourches, so we can control the planning, the quality of the segments and their structural resilience. The segments meet the Grand Paris Express specifications (load cases, exposure class, material performance) and are manufactured using a new-generation procedure.

Once excavation is complete, the shaft floor is poured and barrier mortar is injected between the vertical walls and the surrounding ground. As soon as everything has cured and hardened, the water in the shaft is pumped out. The concrete segments ensure that the shaft remains waterproof. ■

SMART TECHNOLOGIES

WATERPROOF TUNNEL LINING

Our team in Sweden is using an interesting technology to stop water dripping through the roof of the newly built Förbifart Tunnel in Stockholm, and thus ensure the necessary level of traffic safety. The first step is to install prefabricated wall elements on each side of the tunnel. We then hang a 200,000 square metre membrane in the roof area between them, using anchors to fix it to the rock above. The next step is to apply shotcrete to reinforcing mats that are also mounted on the bolts. This creates a free-standing waterproof concrete vault between the wall elements.

LIGHT CEILINGS FOR TIMBER CONSTRUCTION

At 80 metres high and with 27 floors, our "Pi" project in Zug is Switzerland's tallest wooden building. In order to minimise the overall structural load, our Timber Construction team worked with the civil engineers at WaltGalmarini to develop a composite timber ceiling that only uses 90 millimetres of concrete. Adrian Ulrich, Team Leader at Wooden Construction: "Our structure is not only lighter than conventional concrete ceilings, but also significantly thinner. This meant we could accommodate an additional floor within the prescribed maximum height of 80 metres." The patent is pending.

INNOVATIVE DRILLING

Can you really lay pipes for hundreds of metres without digging up the ground? Yes you can: the E-Power Pipe can install small-diameter underground cable conduits quickly and safely. Developed by Herrenknecht, the system is being tested exclusively by Implenia in pilot projects. This trenchless technology can be controlled precisely and deployed in settings with minimal ground cover (approximately 2 m). As an alternative to conventional open construction methods it has much less impact on the surface site, on the natural world and on existing infrastructure.

SAFETY

EXPANSION TO FOUR TRACKS, LIESTAL

Project: Expansion of 2.5 kilometres of SBB rail line from two to four tracks. Station upgrade, new platforms, adjustments to infrastructure
Construction period: 2019 to 2025
Size of contract: CHF 115 million

STRESS IS THE BIG ENEMY

The message is clear: safety at work is Implenia's top priority – always and everywhere. A visit to the major railway construction site in Liestal in Canton Basel-Land, demonstrates how this works in practice in the face of time pressure and the human tendency to take the easy way.

This is where you'll find the really big machines: rotary drilling rigs, excavators, dumpers, trucks, cranes – along with up to 140 employees each day on the 2.5-kilometre-long construction site around Liestal train station, by the tracks and right into the built-up area of the town. Moving soil, concreting the retaining walls and building rail lines, platforms, underpasses, bridges and car parks. Implenia has been working on this CHF 115 million project since June 2019; completion is scheduled for 2025.

As in all construction, efficiency is a central issue in Liestal. But how does the issue of safety fit in? Walter Wolf, Head of Market Northwest Switzerland/Bern and Construction Unit Northwest Switzerland, and his team have had very low accident rates for years: “Safety comes first for us. That’s been the case for many years, with top management setting the pace and driving the safety agenda hard. Safety is more important than profit, more important than punctuality. Anyone who doesn’t want to commit to Safety First can leave.”

SAFETY IS A LEADERSHIP ISSUE

This is not just an empty slogan. Irresponsible behaviour is simply not tolerated at Implenia and is a grounds for sacking, Walter tells us. “I have first warned and then had to sack very good workers for precisely this reason. Everyone knows the score now.” At every stage managers must make sure there is no compromise in adhering to safety rules, even if this is difficult or it makes the manager unpopular, he emphasises.

Felix Akeret, Global Head Safety at Implenia since February 2021, is in full agreement: “Safety is a leadership issue. Take our Safety Rule No. 1 for example: if you suspect there is danger, you must stop yourself and others – immediately, firmly and respectfully. This is easier said than done, because you put yourself on the line. So you have to practise – practise saying stop and practise complying. This requires a fundamental change in the way the organisation thinks.”

Saying stop has been established as part of the culture on the Liestal construction site. Rifat Hasanai, who works in all kinds of teams whenever help is required, doesn’t mince his words: “If something is not safe, I say so – and refuse to continue.” How do his bosses react to this? “Positively. No problem at all!” This hasn’t happened by chance. Like Walter Wolf’s entire team, David Sauerborn, who runs the construction site, has safety right at the top of the agenda. “The crucial thing is for the climate to be right and to trust people to look after themselves and others.”

Jörg Haller, as safety officer at Engineering Switzerland, is also responsible for Liestal. He has identified the main enemy of safety: “When they’re under time pressure, people look for shortcuts and that’s when accidents happen. The only cure is to take the time needed to do the job properly. If I see a dangerous situation on the construction site but then just quickly say: ‘Watch out!’, I might avert the immediate danger, but it doesn’t change what happens in the future. I have to give people the opportunity to see themselves and the situation from the outside. Then they have a rethink and do it differently next time.”

ROUTINE CAN BE DANGEROUS

As well as time pressure and stress, human complacency can also compromise safety. Complacency is what makes people drive without a seatbelt or work with machinery they haven’t learned to use properly. Other recurring issues include missing barriers and signs, and equipment that hasn’t been cleaned. And, paradoxically, being too much in a routine can create as many safety hazards as chopping and changing to much. “People get used to things,” says Felix Akeret. “If you successfully ignore a risk, you lose your fear. ”

That’s precisely where good managers are needed. Walter Wolf tells the story of an argument with a client: “We were

INTERVIEW ONLINE

THAT’S HOW SAFETY WORKS

BY WALTER WOLF

- LOOK
- TAKE RESPONSIBILITY
- TALK ABOUT IT
- CORRECT THINGS IMMEDIATELY
- BE CONSISTENT
- SHOW COURAGE

HEALTH & SAFETY **AWARDS 2021**

The annual Implenia Health & Safety Awards celebrate a construction site, team or individual for their contribution to health and safety at work. Our jury of experts reviewed the 19 proposals submitted this year and picked the best five, which we present here. You then picked the winner of the **"Golden Helmet"** from this top five in a Group-wide vote.

1

PROJECT DÜDINGENPLUS, SWITZERLAND

WINNER

CLEAR STRUCTURES FOR ACCIDENT PREVENTION

Up to 80 employees work at peak times on this large bilingual construction site, so the implementation of safety measures has to be very well structured. A good example of this are the digitalised safety inspections that help to identify and eliminate potential risks.

2

NOISE ABATEMENT WALLS TEAM, GERMANY

ACCIDENT-FREE THROUGH THE NIGHT

The team works eight out of twelve months under time pressure during the night as trains continue to pass by. The fact that this work has gone on for six years without an accident is due to close cooperation in the preparation phase, thanks to which everyone knows where they need to be and what dangers could occur.

3

PROJECT CERN, FRANCE

SPREADING THE MESSAGE THROUGH PERSONAL EXPERIENCES

The team led by Michel Leandri interviewed five colleagues who described their experiences as victims of construction site accidents. The impact of the video comes from the authenticity of the reports and the immediate relevance to the day-to-day working environment, prompting valuable discussions in team meetings.

PROJECT MÉTRO LYON, FRANCE

HANDLING OF HAZARDOUS MATERIALS

Simplified safety data sheets are put up as close to possible to where chemicals are used so employees can learn more about the products they are handling. As a result they can protect themselves more effectively and respond quickly when needed.

PROJECT E16, NORWAY

DAILY FOCUS ON SAFETY

Health & Safety Coordinator Anette Sørensen uses daily tours, team discussions and weekly planning and reporting sessions with the construction site team to ensure that health and safety stay right at the top of the agenda.

working in a road tunnel and closed one of the lanes. I wanted to put up a crash barrier to stop cars hitting our people. The client didn't have any readily available and wanted us to keep working. But I said 'stop', even though the site managers threatened to throw us off the job." It shouldn't have got so far, but he refused the order: "I know that Implenia would support me if I made a decision like that."

Felix Akeret believes that safety only works properly if managers take their responsibilities seriously and if people are consistent, risk-aware and show moral courage. "Our accident numbers have been falling for years. That's great, but we can't rest on our laurels: there are still accidents happening with serious consequences and we can't accept that. Safety culture varies greatly across the Group and the main thing we are fighting against is long-entrenched ways of thinking, on site and in the office. The journey we're on is a long one, and we have to keep at it!" ■

Felix Akeret, Head Safety

"Safety rules are based on zero-tolerance. There is a clear directive on alcohol, for example, and this has to be enforced without compromise!"

Stefan Fuchs, Foreman

"I'm happy to be working in a company that makes employee health a high priority."

Laurence Spaar, Site Manager

"Our people are very committed. If I point out a safety risk, they sort it out straight away."

Rifat Hasanai, Group Leader

"It's good that the foreman tells us precisely what we are doing and what aspects could be dangerous."

David Sauerborn, Site Manager

"The crucial thing is that people are confident about looking after themselves and each other."

ON THE ROAD AGAIN …

Karin Haave Oskasin (26) loves to bring a lot of energy to the challenges she tackles. Since graduating with a degree in environmental science, she has been making sure that at Implenia Norway we build roads sustainably.

Shifting earth, building bridges, drilling tunnels: in a mountainous country like Norway, road construction is a multifaceted affair that presents different challenges every day – including environmental challenges, which is what Karin Haave Oskasin has been working on since 2018. As an environmental engineer she ensures that Implenia builds sustainably: by defining procedures and implementation plans, by monitoring chemical usage and compliance with species protection regulations, and by producing environmental reports for projects.

The fact that she can now be found in all weathers on large construction sites is fitting for a young woman who has always wanted to choose her own path. "I come from a family where it's important to be allowed to do what you love to do," she explains, going on to recount that she has been hunting elk since early childhood. After completing secondary school with a focus on forestry, and earning a bachelor's degree in environmental science, Karin studied surveying/geoinformation systems (GIS) for another year before applying for a three-month summer job at Implenia. "After a month, I was offered a permanent position," she laughs.

She says she has found her dream job here: "I love challenges and enjoy tackling stressful and varied workdays by applying commitment and energy – whether it's in the office or out on the construction site."

Karin is particularly fascinated by on-site work: "Working together on such large projects is really special. People from very different backgrounds come together in the team and create something new. Implenia has shown huge confidence in me: I have been able to take on different roles in just a short period time and I've learned an incredible amount. That's why I love my job." ■

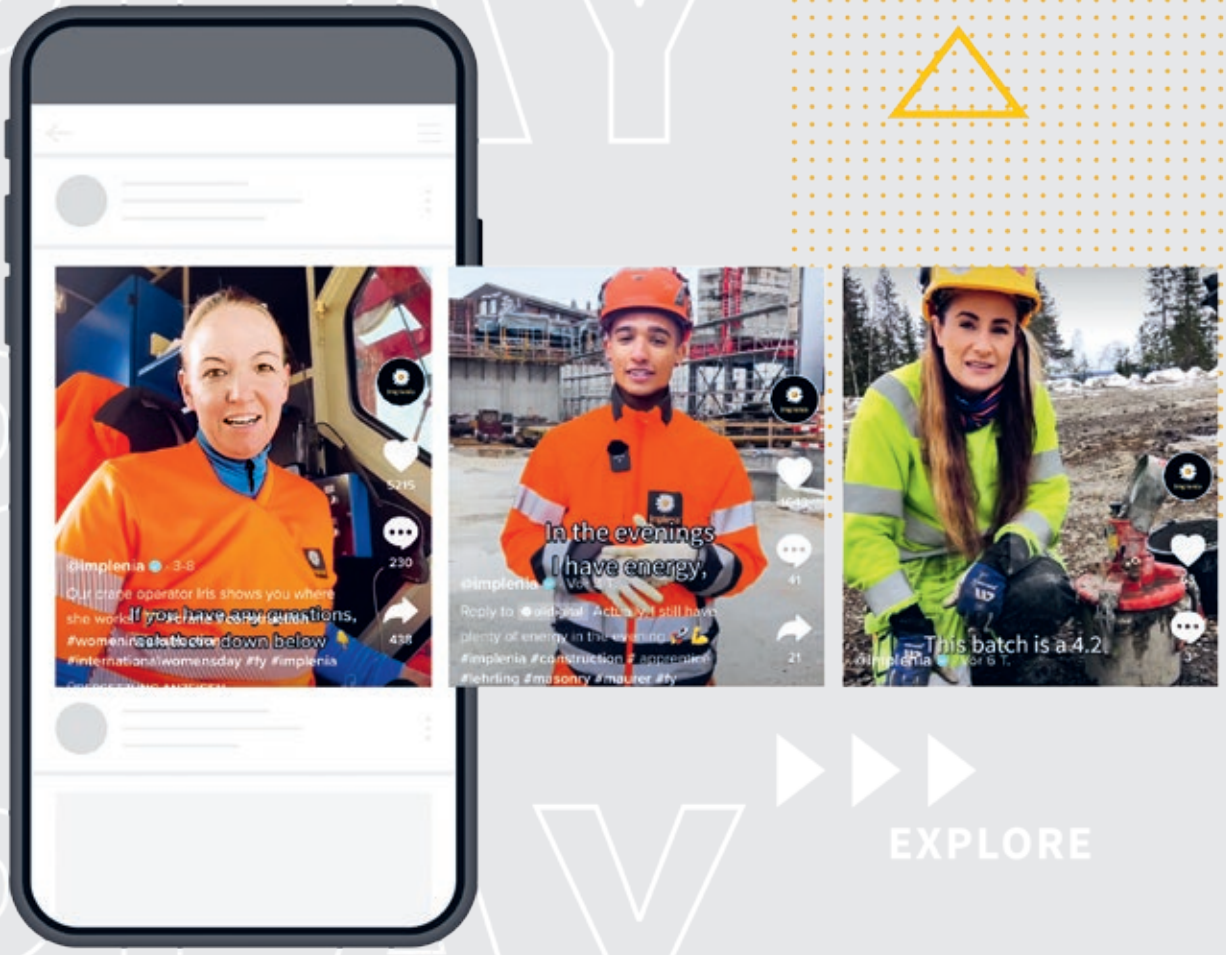
Karin Haave Oskasin, Environmental Engineer

"People from very different backgrounds create something new together."

MORE STORIES FROM AROUND IMPLENIA'S WORLD

Keep up to date with what's going on at Implenia by checking in on LinkedIn, Instagram, Facebook, YouTube and now TikTok. We are attracting a wide audience: more and more followers are joining us on LinkedIn and TikTok thanks to stars like crane operator Iris, apprentice bricklayer Gabriele and environmental engineer Karin Haave giving us an authentic insight into their work.

FOLLOW US AND JOIN THE CONVERSATION!



EXPLORE

SOCIAL MEDIA GUIDELINES

You can find all the dos and don'ts of social media here:

LinkedIn YouTube TikTok