Implenia

IMPACT

THE MAGAZINE FOR OUR STAFF

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IMPACT ONLINE

COLLABORATION

How we foster a collaborative approach – with customers, with partners, and among ourselves / Page 6

TOPGOLF
How we are helping to adapt the American concept to European conditions
Page 12

SAVING TIME AS A TEAM
How an almost impossible schedule is working thanks to teamwork
Page 17

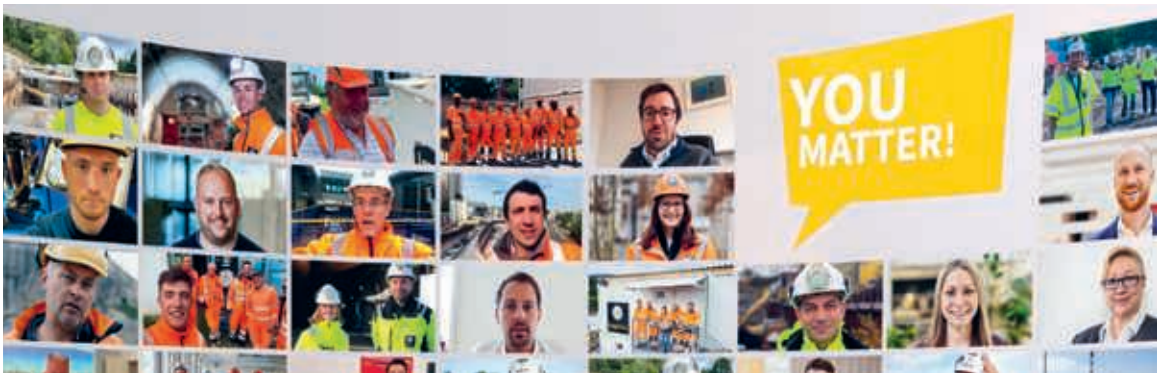
TUNNEL WITH BUFFERS
How new thrust elements are defying pressure in the mountain
Page 21

10,000 SEGMENTS
Making concrete tubbing rings for the Grand Paris Express
Page 23

CONTENT

INTEGRATED PROJECT DELIVERY
How the collaboration model of the future works
Page 8

PROJECT MILESTONES
Next steps for our large-scale projects
Page 5



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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

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Editorial team
Jessica Bessin
Julia Dieziger
Ulli Janett
Mark Lauzon
Kristina Berg
Bettina Bjørn

Design
Gabriela Fleck

Picture material
Page 1, 6, 7: new office
Page 4: istock/bluejayphoto

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Contact
redaktion@implenia.com

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“Collaboration forms the basis for a successful future.”

Working together collaboratively with customers and all the other people involved is becoming ever more important when leading complex, large-scale real estate and infrastructure projects. It is therefore no coincidence that we have chosen “collaboration” as one of our five corporate values. The goal is to bring together our wide range of market expertise and specialist skills to benefit our customers and other interest groups.

The idea is simple: Projects can be implemented better, faster and at lower cost when everyone involved is working towards a common goal. That starts within teams and business units and includes everyone involved in the project, from the client to all the various subcontractors. Digital Lean Construction, BIM and Integrated Project Delivery make collaboration easier across all project phases.

But the most important factor is the attitude of every single individual. By creating trust through fairness, transparency and respect, and being open to the ideas of others, we live up to the principle of collaboration in our work every day and with all our partners. That is how we form the basis for a successful future.

André

NEWS

MAJOR PROJECT FOR ELBE BRIDGE

Together with DSD Brückenbau and Stahlbau Niesky, Implenia has been chosen to construct the new Elbe bridge at Wittenberge. The complex, large-scale infrastructure project is part of the new section of the A14 motorway in Brandenburg and Saxony-Anhalt. With a planned duration of 44 months, the construction lot has a total order volume of around EUR 140 million. Implenia holds a 55% share in the joint venture and is responsible for technical leadership of the project.

NEW BUILDINGS AT LIESTAL STATION

Implenia is creating two sustainable buildings for SBB Immobilien at Liestal station, at a cost of around CHF 41 million. The first new building, replacing an older one, will house the ticket office as well as retail, office and auxiliary space. In addition, Implenia is putting up a new residential and commercial block with hospitality, retail, office space and housing on five floors. Implenia is already involved at Liestal station with the project to expand the underground railway to four tracks.

RENOVATION OF GUBRIS TUNNEL

Zurich's northern bypass is currently being expanded with a third tube for the Gubris Tunnel. Once it is completed, the existing tunnels will be comprehensively renovated and their safety enhanced. The order for the third lot in this renovation project was acquired by ARGE GUBRI, led by Implenia. The total order volume is CHF 184 million, with us holding a 40% share. Starting in autumn 2022, the project has a planned duration of four years.

ORDER FOR EUREF CAMPUS

Implenia has won the general contractor order for North Rhine-Westphalia's first sustainability and innovation campus. Acting as an international showcase for the energy and mobility transition, the Düsseldorf-based project has a volume of EUR 181 million. We are bringing our expertise in real estate planning and construction for the research and development sector to an innovative, cooperative contract model.

BUILDING BRIDGES IN NORWAY

Norway's state railway company has commissioned Implenia to build the Tangenvika rail bridge, with a total order volume of CHF 190 million. As well as the 1,022-metre prestressed concrete bridge, the order also comprises a two-kilometre overland section, including a wild animal crossing. The construction is challenging in terms of sustainability, as the Mjøsa lake is both a key source of drinking water and a rich habitat for wildlife.

SURVEY

Win a trip to Berlin!

Do you also read IMPACT online, on your smartphone or on a screen at the office? It is worth checking it out, as many of the stories that we outline briefly in the print version are provided there in full length. And there is some totally new content, too: portraits, videos and lots and lots of pictures. We want to know what you like the most. Complete our brief survey and tell us what your team is especially good at. If you're lucky, you could win a trip to Berlin, where our team is currently working on the new 380-kV electric line.

PROJECT MILESTONES

NEW RAIL BRIDGE IN LUDWIGSLUST

Implenia's specialist underground construction team is currently building a rail bridge at Ludwigslust station. The first section of the construction project was successfully completed on time at the end of last year, in a high-intensity phase of work. It included hoisting and installing four auxiliary track bridges and three platform bridges, including the entire supporting structure. The bridge is expected to be operational in 2025.

GRAND PARIS EXPRESS: LOT COMPLETE

The Grand Paris Express will provide a better connection between the French capital and its suburbs, with construction of a six-line driverless metro system scheduled for completion by 2030. Among other lots, our team has worked with our joint venture partners to build seven kilometres of tunnels and seven ventilation shafts for Line 15 South. After five years of work, Implenia France's first tunnel project has now been successfully completed.

↑ Breakthrough for Line 15 South of the Grand Paris Express: After five years, our team in France has successfully completed the project.

FIRST FOR SUSTAINABILITY IN WESTERN SWITZERLAND

SNBS 2.1 Hochbau is a comprehensive, certifiable standard for sustainable buildings in Switzerland. In a project completed in June 2021, Implenia modernised the building at Rue de Lausanne 42–44, in the centre of Geneva, as sole contractor. As well as other certifications, the project was awarded the SNBS Gold label for sustainable construction – the first SNBS Gold certificate in Western Switzerland.

NEW FAÇADE FOR THE ALSTER-SCHWIMMHALLE POOL

Having been in use for almost 50 years, the historic glass façade of the Alster-Schwimmhalle pool in Hamburg, with an area of more than 2,000 square metres, and the large-scale, highly complex half-timbered structure that goes with it, needed a makeover. Implenia Fassadentechnik GmbH conducted the renovation and rebuild. Once the partial demolition had been completed on schedule, we began building the new façade in spring 2022.

CAR PARK AT KUNSTMUSEUM BASEL IN OPERATION

After around three years of construction, the car park at Basel's main art museum was opened in mid-December. The project had taken almost 22 years, from the initial idea in 1999 to opening. Yet it took just 38 months for Implenia as sole contractor to build the Kunstmuseum car park on behalf of a Credit Suisse Asset Management real estate fund. The car park provides 350 spaces on four floors.

UNDERGROUND STORAGE FOR RÖNNSKÄR IN SWEDEN

In Rönnskär, outside Skellefteå in northern Sweden, Implenia built a unique underground repository for process waste from Boliden's copper smelter between 2018 and 2021. To create the eight storage spaces, the team drilled a series of large rock chambers 300 metres below sea level with enormous precision and care, blasting out 345 ,000 cubic metres of rock.

COLLABORATION

PARTNERSHIP ADDS VALUE

Every construction project relies on collaboration. Ideally, this begins even before the start of planning and shapes every relationship – be it between clients and contracted companies, among service providers, or within teams. We explore why collaborative working models have such a huge impact on a project's success and what changes the construction sector is currently seeing.

COLLABORATION MODEL OF THE FUTURE

INTEGRATED PROJECT DELIVERY (IPD)

Integrated project delivery (IPD) aims to increase efficiency in real estate projects and improve results. Using this approach creates an environment that fosters collaboration, innovation and value creation in project work. Lean construction methods are also incorporated.

IPD's recipe for success:

- **Involving stakeholders at an early stage:** Continuous collaboration between clients and those planning and executing the project from start to finish
- **Shared opportunity and yield strategy:** Transparent, success-related pay for everyone involved in the project, in line with the principle of "everyone wins or everyone loses"
- **Joint project management:** All members of the project team work in an integrated way even beyond the company, have equal status, and share responsibility for the project's success
- **Multi-party contract between clients, planners and executing companies:** Targets are defined together by everyone involved, forms of collaboration decided on in terms of culture, organisation, methods and processes, and the payment system agreed
- **Liability and project insurance:** Mutual exclusions of liability foster a shared alignment of interests and allow collaboration based on trust

For all the technical progress, one thing has not changed since the pyramids were built: large construction projects involve a lot of people. And when problems arise in large-scale projects, it is often the result of failed collaboration. This was the finding of comprehensive investigations and analyses conducted in 2014/15 into project failures such as the construction of the new airport in Berlin and the Elbphilharmonie in Hamburg, which both produced a lot of negative headlines and caused an enormous loss of trust in German engineering and architectural expertise.

The Federation of the German Construction Industry played a major role in developing a ten-point plan, lighting a new spark in the industry. The plan included cooperative execution and contract models which resulted in a different approach, fair risk distribution, more open agreements, and the effective use of building information modelling (BIM) and lean construction in projects.

Eight years later, the way collaboration works in Germany has fundamentally changed, believes Matthias Jacob, Country President and Head Buildings Germany. "The sector has totally rethought how it works, especially in building construction, where we tend to work with private clients. Our project portfolio reflects this transformation: we usually work together in a very cooperative way," he explains. "Civil engineering, where the clients are mostly public sector bodies, is unfortunately lagging behind despite some initial successes."

FOCUS ON OVERALL PROJECT SUCCESS

It is a similar story in Switzerland, where, according to Jens Vollmar, Head of Division Buildings, classic project processing models often reinforce inefficient incentive structures. "Once the contract is concluded, the parties involved often begin discussing responsibility and blame as soon as something unexpected happens – which can lead to resources being allocated incorrectly," he says of the usual practice. "The unexpected is unavoidable in complex projects. To prevent inefficiency, delays and drops in quality, everyone involved needs to work towards the success of the project as a whole, instead of trying to come out of it best themselves."

How can new models of collaboration prevent these kinds of failure and the resulting legal disputes? Matthias Jacob: "The most important thing is to commit to a cooperative approach. That starts even before planning begins, by getting the client and as many of the people involved as possible around the table. When experts from a wide range of fields work towards a shared goal, it increases the chance of spotting and avoiding potential problems early on. This reduces the risks to scheduling, costs and quality."

THE CLIENT AS A PARTNER

In legal terms, the approach works through two or three-level contract models: for the initial phase of getting to know one another, for setting up the project, and for the implementation itself. For large-scale projects, this often means investing months in setting up a project correctly. And although cost targets are agreed, no-one takes on contractual risks that are not yet clear. "If the total project amount is EUR 180 million, for example, only around EUR 70 million of the costs might be set out contractually in the first stage," explains Jens Vollmar. "The remaining budget items are developed together with the subcontractors as the project progresses." This cooperative model of collaboration benefits everyone involved, even if clients often have the sense that they are giving up some privileges. Experience shows that clients, too, have everything to gain. Instead of having to ensure adherence to 300 or 400 individual contracts, they benefit from teamwork between everyone involved. As a result, in almost every case, they get a higher quality property, earlier and at lower cost than planned, and achieve the returns they want.

No wonder that clients who have experienced cooperative construction swear by this kind of collaboration. Like Implenia customer Marc Bosch, Managing Director of Wüstenrot Haus- und Städtebau GmbH: "When we succeed in establishing trust, agreeing on shared goals, and balancing the interests of all parties effectively, we ultimately achieve much better results."

Both Matthias Jacob and Jens Vollmar work actively in associations to spread this message and thus propagate more progressive contract models, both in German civil engineering and in Switzerland. "We are trying to convince public clients and architects in particular of the benefits," explains Jens Vollmar. For this purpose, the Schweizerische Baumeisterverband [Swiss association of master builders] has issued a publication named "Using the right collaboration model for project success".

INTEGRATED PROJECT PROCESSING

At the same time, his team is actively trialling new models of collaboration, for example using the IPD (integrated project delivery) method to develop its own projects. The method originated in the USA, where it has become established as an alternative to traditional forms of project execution (for more information, see Page 8).

"In cooperative multi-party contracts like IPD, everyone involved benefits from the project's success," explains Jens Vollmar. "By the same token, they share liability when something goes wrong and one of the partners is at fault. A model like this

Matthias Jacob, Country President and Head Buildings Germany

"The sector is thinking differently"

Jens Vollmar, Head of Division Buildings and Member of the Implenia Executive Committee

“With cooperative contracts, everyone benefits from a project’s success.”

suddenly triggers different discussions. If the structural engineer makes a calculation error, for example, that would previously have been the problem of the sole contractor, the construction engineer or their insurance. Now, all the partners try to find solutions together – perhaps reducing the weight or trying different processes. That is much more likely to make the project a success than asking who bears the contractual risk.”

This new way of collaborating demands a new way of thinking – and some persuasion, sometimes even within one’s own company. Many staff have already fully embraced this new mindset,” says Matthias Jacob. “But in some places, we still have our difficulties. The construction industry has been in combative mode for so long, that cannot change from one day to the next.”

The best way to actively guide the transformation is by setting an example, he believes. And sometimes, the make-up of the team needs to be changed in order to achieve the goals.

What discussions and workshops show? Matthias Jacob: “The ability to walk in the other person’s shoes – accepting and understanding the other position – is vital to good collaboration. If we can do that, there will be no losers in a project, only winners.” Jens Vollmar: “Collaboration works when we begin discussions early and transparently, both internally and externally. This includes an open feedback culture, regardless of hierarchies and roles. That is the only way to resolve challenges before they develop into massive problems.” ■

CITY PARTNERSHIPS

Gaining greater expertise together: time and again discussions and workshops show how much teams of experts benefit from intensive collaboration, even across national borders. Discussions give them access to the combined expertise of the group, allowing them to offer customers the ideal solution for every project. Division Buildings has now installed a platform to boost collaboration. In “city partnerships”, branches in Germany regularly exchange information with regions in Switzerland about best practice and things they have learned. The motivation to learn from and support one another is clear to see.

COLLABORATION IN PRACTICE

NORWAY AND SWEDEN

TUNNEL SYNERGIES

The tunnel markets of Norway and Sweden are geographically close, and often have very similar equipment needs. That is why the team at Implenia Sweden has worked so closely with the machinery department at Implenia Norway ever since it was founded. Today, the two Scandinavian organisations pool their resources and use machinery together.

SWITZERLAND

TEAMWORK FOR PROSPECTS

Following illness, Sarah Barraud is happy to be working on reception at the Implenia branch in Crissier, thanks to a lot of hard work and support from the Swiss disability insurance system and the Mode d'emploi foundation. Recruitment specialist Frédéric Lablanquie firmly believes that Implenia can benefit from this kind of collaboration with partners.

GLOBAL

COMMITMENT IN CAMBODIA

Ylyes Hadj-Bouziane works as a junior construction manager in Western Switzerland. In 2021, he completed a three-month placement for Implenia at Smiling Gecko. The charity has been working since 2014 to sustainably improve the lives of people in Cambodia by creating jobs and training positions. Ylyes helped manage the expansion of the project's own hotel.

NORWAY

BVA FOR GREATER FAIRNESS

Larissa Gustafsson, project manager at Implenia Norway, is the first in the Group to receive A+ certification in BVA (Best Value Approach). The course teaches new methods for fair collaboration and a healthy corporate culture. "It could give a boost to the entire sector," she explains, recommending the course to anyone working in project management.

MORE ON ALL THESE TOPICS ONLINE

GERMANY

PENSIONERS AS EXPERTS

Employees who reach retirement age are experienced, have good networks, and know the company inside out. Implenia Germany wants to make use of this potential in future. The Senior Expert Pool allows retired specialists to remain working for the company for a limited period after they leave – continuing to contribute their expertise and experience in an individual, flexible way.

GLOBAL

SAFER SITES

As Global Head Safety, it is Felix Akeret's job to make sure that all of Implenia's more than 8,000 staff go home safe and healthy at the end of the day. With constant pressure on time and costs at construction sites, he knows that can only happen if everyone works as a team. "We regularly discuss specific requirements, tried-and-tested safety measures, and any incidents that do occur, so we all benefit from the experience of the entire network."

SWEDEN

GUEST IN THE TUNNEL

Sara Svärd, who works in value assurance for Implenia in Liljeholmen, wanted to enhance her understanding of infrastructure projects and the many challenges of tunnel construction. So she arranged to visit the Johannelund tunnel project to complete three days of work experience. Her conclusion at the end of her stint: "Communication is crucial to a project like this! I now understand much better what really matters in practice."

GLOBAL

FACE-TO-FACE AGAIN

As the pandemic fades away, many of us are returning to everyday working patterns that we have not experienced for almost two years. Change Manager Mark Lauzon casts a critical eye over embedded habits that many of us have fallen into as a result of working from home, like hiding behind our screens, and offers specific tips and ideas for how we can all benefit more from being back together in the office.

TOPGOLF: PARTNER-SHIP PROVIDES A SOLUTION

Where once a steelworks stood, today people stand to tee off. Greenreb AG opened continental Europe's first Topgolf facility in Oberhausen in January 2022. First established in the USA, the Topgolf entertainment concept has been successfully implemented in Germany, with construction and operations optimised for local conditions – not least thanks to a collaborative, holistic partnership with Implenia. Further facilities in Germany, Italy, Austria and Switzerland are planned.


TOPGOLF OBERHAUSEN

COLLABORATION AS EQUALS

"I was able to experience the Topgolf experience in the USA as a guest. Having observed and analysed it from an external perspective, I knew that it could be an attractive business for continental Europe. I got in touch with the Topgolf CEO and, after long contractual negotiations, founded Greenreb AG together with my partner Eric Grob. Now we are licensees for Germany, Switzerland, Italy and Austria.

Oberhausen lies within the densely populated Ruhr region. The town has excellent transport links and we were able to site our facility right next to "Centro", Germany's largest shopping mall.

David Speiser, Topgolf pioneer in Europe

When implementing our facility in Oberhausen, using a general contractor to supervise the project from beginning to end really paid off for us. In Implenia, we found a partner with whom we could work as equals and based on trust. They quickly developed an understanding of our project, found creative solutions with a powerful team of internal and external specialists, and understood how to demonstrate the technical options to us clearly, without becoming bogged down in expert discussions.

The result is popular with our visitors, too. They love this leisure experience, which is totally new to them. They are pleased with the friendliness of the staff and impressed with the size of the facility – the 500-space car park, the three-storey building, the 102 tee-off bays, the hospitality on offer with three bars, our 350 screens, and a megascreen measuring 34 square metres for broadcasting sporting events."

In a small group, guests stand in the tee-off bay to hit their balls up to 200 metres over the green outdoor fairway and, ideally, onto one of the ten circular target greens. A screen tells them straight away how accurate their stroke was, with a digital system determining the precise landing position of the ball – which is fitted with a chip – and therefore the score. Players can enjoy a beer and burger in the cosy seating area between strokes – or wait until after the game to have a meal and drinks in one of three bars. The atmosphere at the Topgolf facility in Oberhausen is relaxed, the surroundings generous – just like in America.

Topgolf is a popular leisure pursuit in the United States, with around 40 percent of people aware of the brand. The concept is also established in the United Kingdom, Australia and Dubai. A total of 23 million guests visit one of the 70 Topgolf facilities every year. Up to now, continental Europe, however, has remained a Topgolf desert. David Speiser wanted to change that. In 2019, he joined up with Eric Grob to found Greenreb AG, in order to bring the entertainment concept to Germany, Austria, Italy and Switzerland as a franchise business. The Topgolf facility in Oberhausen is the first step towards making this vision a reality.

"The challenge in planning and building the facility lay in implementing the core of the American concept, while still adapting it to local conditions in terms of both construction and operation," explains David Speiser. In order to achieve this, he wanted a company that would supervise and implement the entire project holistically, from planning to construction. "I believe that giving full client responsibility to one company in partnerships like this can reduce risks and costs," he says. Ultimately, his choice was Implenia.

"We quickly built up trust and, right from the very beginning, I could sense that they were very interested in fully understanding our project, which is quite unusual after all." In order to familiarise themselves with the Topgolf concept, a team of experts put together by Implenia flew with the Greenreb team to the USA. As well as cementing the relationship, this boosted the conviction that the partnership had a future.

MAJOR CHANGES

Marc Siepmann, Technical Lead at the Essen branch, was on board from the very beginning. "We divided the construction task into two phases: pre-construction and implementation. The client was able to opt out after the first phase," he says. In the first phase – the pre-construction phase that ran from January to March 2021 – the Implenia planning team worked with Greenreb to bring the designs forward and get them ready for a building application. "This is the phase in which most can be

"The holistic collaboration with Implenia really paid off for us."

David Speiser, Co-Founder Greenreb AG

THE TOPGOLF PROJECT IN OBERHAUSEN

On the site of a former steelworks in Oberhausen, Implenia has planned and built a turnkey leisure facility with a total usable area of around 40,000 square metres for Topgolf licensee Greenreb. The site includes a three-storey building with a restaurant and three bars, 102 full-service tee-off bays, a 200-metre outdoor fairway, and more than 500 guest parking spaces.

Start: October 2020
Client: Greenreb AG
Construction period for shell construction: 15 weeks
Construction volume: CHF 24.5 million

↑ A strong team for a large-scale project: Greenreb co-founder and Topgolf Europe pioneer David Speiser (right) with Marc Siepmann, Technical Lead of the Implenia branch in Essen

changed, so it carries a huge responsibility." Implenia carefully clarified the constraints, developed environmental and fire safety concepts, commissioned pollutant and grid surveys, and took care of bird protection requirements – all in collaboration with authorities, political committees and the fire service.

The team continued to look for opportunities to adapt the construction measures to European standards and optimise operating costs. At the German facility, for example, the target greens were sloped in such a way that the balls roll off automatically and are therefore transported back to the tee-off bay more economically. In the USA, the balls are collected by staff – an option that would be impossible with Germany's high labour costs. This meant that, unlike in other franchise concepts, the facility in Oberhausen is not a carbon copy of an existing facility, but instead is a version developed especially for the location in close collaboration between the client and Implenia.

David Speiser sees the fact that Implenia can draw not only on many years of experience and established processes, but also on a local network of specialists in every discipline, as a major advantage. "The earlier the right people can be brought to the table, the more purposefully the project can be set up; the more effective the phase before the planning application, the better the result."

CREATIVE SOLUTIONS NEEDED

This approach made the Topgolf site in Oberhausen the fastest-built Topgolf site outside the USA, despite the COVID-19 pandemic and delays in the supply chain. And that is not all: it implemented creative, workable ideas that will pay off in the long term. For example, the Topgolf facility is the first in the world not to need a sprinkler system, as fire safety regulations were met in other ways. The fencing needs around half as many steel posts as comparable systems elsewhere. Last but not least, the facility was planned and built with prefabricated parts, which will help to implement further Topgolf sites in continental Europe.

After all, Oberhausen is only the beginning. "Our ambition is to roll out the concept across continental Europe, and we are already working to develop the next sites," says David Speiser. "With our first facility, we have proved that guests in continental Europe like the Topgolf concept." The road is clear for new projects.

The first project in Oberhausen was comparable with constructing an aeroplane that was already taking off, continues Speiser. The next facilities will have even more potential for optimisation. "In our team, for example, there was no-one who

had already led a Topgolf kitchen or who knew all the details of the Topgolf technology. Now we have staff with the right experience, who can tell us exactly what we need to do better at the next facility."

SUCCESS THROUGH COLLABORATION

The Greenreb CEO sees the team's interdisciplinary make-up as the crucial factor in the success of a project like this. "Implenia really knows exactly how to bring in the right experts at all times." In a future project, he continues, he would be in favour of expanding the round table earlier in order to bring responsibilities even closer together – for example in interior design and technical equipment. "Although Greenreb now has around 350 staff, we are still a start-up – and still rely on bringing together the complexity of a project like this and the responsibility with a strong partner that supervises every phase of the project," says David Speiser. ■

"We took on an intensive consulting role from the very beginning."

↑ Marc Siepmann, Technical Lead at the Implenia branch in Essen, worked together with the customer and used great creativity to create a European version of Topgolf.

Why could we not just build a copy of an existing site in the USA?

Because, given the operating costs and procurement, it makes more sense to adapt the concept to European conditions. We optimised the system in terms of operating processes and adapted it to European purchasing conditions. One example: The use of steel is very common and much more economical in the USA than it is in Europe. The cost profile on this side of the Atlantic makes it totally impractical to build such a facility out of steel in Germany.

Another example: The USA has very different fire safety rules from us. Unlike in the American model, we did not need to install a sprinkler system, but instead ensured safety by switching materials and using reinforced concrete. This means that the customer saves costs not only when making the initial investment, but also over the whole service life of the facility, because it is cheaper to maintain the technical systems.

What demands did the planning and construction place on the Implenia team?

The initial situation alone was very unusual: We flew to Chicago and returned with the order to to replicate the Windy City's Topgolf facility in Oberhausen. The building did not fit any conventional standard. It is not a classic administrative or office building, but a unique construction – equipped with a 52-metre-high fence of a kind never before built in Europe. This triggered a lot of questions from the authorities and political committees; and these questions were of a sort that do not usually arise in a conventional construction project – from the site plan hearing to animal protection, environmental protection and transport connections. Given the many technical features of the building, dealings with the authorities were very intensive in this case – but always very open, communicative and ultimately fruitful.

What were the success factors in collaboration with the client?

We took on an intensive consulting role from the very beginning. It did not take long to agree with David Speiser and his team at Greenreb that the facility would not be a carbon copy, but would have to be adapted to the local conditions for all the aforementioned reasons. Because we were involved from a very early phase of the project, we were able to examine a huge number of aspects in very close detail with the client and demonstrate the various options.

TEAMWORK AGAINST THE CLOCK

How does collaboration need to work when the schedule for a complex project is so incredibly tight – as in the case of the temporary laboratory for the Functional Genomics Center Zurich (FGCZ), which is to be handed over to the client after less than 18 months' planning and construction time?

Barely begun and already on the home straight: At the groundbreaking ceremony in May 2021, there was nothing to see but green meadow at Irchel Park. Now, not even a year later, the shell construction of the new two-storey temporary laboratory building stands tall. The numerous preinstalled pipes for ventilation and air conditioning, and the fully equipped cold store, give some indication of the building's purpose. "We are now working on the interior, and the laboratory fittings will soon be delivered," says José Pedro Castro, Project Lead Implementation at Implenia, when we visited the site in April 2022.

The building will be handed over to the client ready to use this summer, with

the new temporary laboratory building of the Functional Genomics Center Zurich (FGCZ) providing workspaces for around 80 staff and visiting academics from late autumn 2022. From then on, everything here will focus on genome research. The FGCZ is operated as a joint research and training platform by the University of Zürich (UZH) and ETH Zürich. In order to meet all the different working needs, there will be more than 20 different types of space over around 3,000 square metres. The equipment laboratories form the heart of the research platform, which is the only one of its kind in Switzerland.

TEMPORARY LABORATORY AT CAMPUS IRCHEL IN ZURICH

The Functional Genomics Center Zurich (FGCZ), a research and training platform run jointly by the University of Zürich (UZH) and ETH Zürich, will offer space for 80 lab staff and scientific equipment on a total area of around 3,000 square metres. For the area outside the laboratories, an innovative office concept that allows different forms of collaboration is planned. The new temporary building is part of the first stage of construction at the campus and, with a lifespan limited to 15 years, is a particular challenge in terms of sustainability.

Client: Construction Department of Zurich Canton

Construction volume: approx. 12,500 cubic metres

AMBITIOUS SCHEDULE

The schedule for the temporary building is tight from start to finish. Having come out victorious in the full-service tendering process, in April 2021 Implenia was granted the order for planning and execution; the definitive construction approval for the wood and concrete building came following various partial approvals in October. There is not much time left until the handover. But there is no sign of a rush when we visit the construction site. Why not?

Knut Brunier, Implenia Planning Lead for Full-Service Tendering and Planning, explains the success factors: “This extremely tight schedule is only feasible because we have been able to combine lots of construction tasks, because we are working closely and cooperatively with the excellent planning team, clients and users, and because we have a team on the ground that works in an agile way.” He argues that the fact that the planning team already knew each other from the project at Empa Campus Düsseldorf, where Implenia constructed a laboratory building, a multifunctional building and a multi-storey car park, also helped the entire process.

Implenia’s ability to lead highly complex projects as a sole contractor by incorporating various in-house disciplines from an early stage was also a major advantage in the construction project at Campus Irchel in Zurich. “Civil Engineering and Timber Construction were involved throughout the entire process – from the full-service tender to planning to execution,” says Brunier.

Implenia’s Timber Construction division, for example, was responsible for creating the supporting structure, comprising a prefabricated wooden stud structure in the façade and the prefabricated wooden panels that form part of a hybrid roof made from concrete and wood. “Timber Construction gave us the best possible support in everything from planning, cost optimisation and wood selection to the construction process and coordination with the other disciplines and specialist planners.”

Implenia’s Building Technology has also been involved right from contract award. “Even just the variety of different substances – different classes of nitrogen, argon, helium, osmosis water – used in the labs demonstrates how specific the

↓ Left to right: Philip Hilbert, Ronny Caduff, José Pedro Castro and Knut Brunier work closely together to ensure that the temporary laboratory at Zurich’s Campus Irchel is ready on time.

requirements for building technology in a facility like this are," says Ronny Caduff, Project Manager Execution Building Technology. On top of this is the huge range of specialist parts, highly technical lab hoods, and the need to connect the controls to the university's management system. "What we are implementing in the temporary laboratory here is totally different from conventional residential construction." Close discussions with the laboratory planners and weekly tours with the future users are just as essential as high-precision execution – the responsibility of Lukas Bürgler, Construction Manager Building Technology at Implenia.

Because Implenia used its own tradespeople, it was possible to implement rolling planning. After weighing up the risks and in consultation with the authorities this meant that deadlines could overlap and Implenia could retain control over the process at every stage. "Thanks to two partial construction approvals, we were able to begin construction even though a change to the façade and the roof design were still being planned and processed," says the Planning Lead.

PARTICULAR EXPERTISE

The temporary laboratory is a particular challenge for the team in terms of both the schedule and the complexity. The incorporation of low-vibration floors that were not planned from the start, ensuring the ideal humidity ratio, and designing the laboratory workspaces defined by the academic staff at FGCZ were just three examples. "We do not tackle a project like this every day. That makes it all the more beneficial that we have access to a range of skills and a very motivated and agile team," says José Pedro Castro.

The building certainly looks as though it has been built to stay. But the usage concept is actually limited to 15 years. After this period, the genome research centre will return to its current location on the Irchel campus, which is to be used for other purposes and then renovated over the next few years. The temporary building therefore puts particular demands on sustainability. "We work with prefabricated wooden modules that are easy to dismantle again," says José Pedro Castro. Individual components can also be reused or recycled separately. Last but not least, the building is being constructed to the Minergie P-ECO standard and is aiming for SGNI Gold certification.

TOGETHER FOR GREATER EFFICIENCY

Trust-based, flexible and collaborative: these are the three key terms for this kind of cooperation. "It starts with discussions with those responsible at the Construction Department of Zurich Canton and ends here with the team on the construction site," says Knut Brunier. "Experience has shown once again that the earlier people become involved, the stronger their commitment to the project and the more efficient the collaboration." In projects like the temporary laboratory at Campus Irchel, this is not only a welcome side effect, but an essential factor. Without everyone pulling together, it would be impossible to implement this project on such a tight schedule. ■

Knut Brunier, Overall Project Manager

"Involving our own tradespeople made it possible for us to react flexibly to changes despite the tight schedule."

CRUMPLE ZONE IN THE MOUNTAIN

Some mountains fight back against tunnel construction – and are brought to heel with technical expertise. Thrust elements, for example, work as a buffer when rock masses put too much pressure on tunnel tubes. Up to now, these elements have been made of steel and have been heavy, expensive and difficult to work with. Manuel Entfellner, construction manager for the Semmering Base Tunnel and Implenia Intrapreneur, knew there had to be a better way! Today he presents a model made from polystyrene – lighter, cheaper and safer.


M. ENTFELLNER
Implenia

Not all mountains are the same. It is a fact familiar not just to mountaineers, but also to tunnel builders. Some mountains, like the Semmering in Austria, are geologically challenging. Tunnelling causes the very soft rock to shift, putting enormous pressure on the tunnel structures. Precautions need to be taken when building the tunnel. “Instead of creating a closed, rigid shotcrete lining, we make it flexible by incorporating thrust elements,” explains Manuel Entfellner. “This way, we absorb the pressure from the mountain and ensure that the tunnel is safe and stable despite the rock pressure.”

↑ Thrust element old vs. new: The conventional models (installed on the right) weigh 80 kg each; the newly developed alternative made from EPS/polystyrene (installed on the left) just 19 kg – with better performance and lower costs. The team led by Markus Viertler (second from left) is delighted.

HEAVY THRUST ELEMENTS

Hailing from Salzburg, the 29-year-old knows what he is talking about. His final thesis for his degree in Geotechnology and Tunnel Construction examined the use of exactly this type of thrust element. “These elements are under incredible pressure. Understanding the precise requirements regarding expansion and tension properties is absolutely crucial when choosing a material,” he explains. “Steel is the traditional choice.”

Manuel has observed the installation of thrust elements like this on his daily rounds of the tunnel construction site. Up to six elements are installed for each round. Each one weighs around 80 kg and is lifted into position by two men working in a very tight space at a height of four to five metres – a process that takes extraordinary strength. “It is extremely difficult work: laborious, exhausting, and a challenge ergonomically,” explains construction manager Markus Viertler.

“Things happen at work where you think: that can’t be the solution!” says Manuel Entfellner. “I already knew quite a lot about thrust elements – and I wanted better ones than were available on the market at the moment.” The construction engineer even already had a solution in mind: The Semmering construction site has its own small laboratory. He ordered materials to be delivered there and began testing new solutions – mostly in his free time.

Initial trials with commercially available polystyrene were not strong enough – the strength needed to be increased by a factor of 20. Success came through collaboration with an Austrian insulation producer. “We tested countless versions of thrust elements and defined the best possible one for use in the Semmering Base Tunnel,” says Manuel Entfellner. “We were then able to build a prototype and present it to the client, Österreichische Bundesbahnen (ÖBB).”

At 19 kilograms, the new thrust element weighs less than a quarter of the weight of conventional steel elements – yet offers the same performance. It also performed impressively on a 10 metre long test section in the tunnel. Not only that: the conventional steel thrust elements proved inadequate on a technically demanding part of the section. The new elements were installed there in consultation with the ÖBB, and have been performing impressively ever since. Now they need to be subjected to loads in the laboratory that prove they can guarantee a life span of 150 years.

Manuel Entfellner, construction manager

“Things happen at work where you think: that can’t be the solution!”

Semmering Base Tunnel project
The planned Semmering Base Tunnel (SBT) is currently one of the most important large-scale infrastructure projects in Central Europe and part of the new Austrian Southern Railway, which runs as a central axis on the trans-European route from the Baltic to the Adriatic. Stretching a total of 27.3 kilometres, the SBT links Lower Austria with the Steiermark region. Österreichische Bundesbahnen has commissioned Implenia to build the approx. 7.4 kilometre Eastern section SBT 1.1, as part of a syndicate with Hochtief Infrastructure GmbH and Thyssen Schachtbau GmbH.

↑ At the plant in Limoges-Fourches, an hour outside Paris, 180 staff are busy producing concrete elements for tunnel construction

10,000 SEGMENTS PRODUCED IN-HOUSE

Our team in France needed prefabricated concrete elements for its work on the Grand Paris Express – and decided to produce these themselves. Since opening in July 2017, the plant has now delivered more than 10,000 tubbing segments to Implenia and third countries.

The story begins in the middle of a field an hour outside Paris. Implenia France, just a few months old, was chosen for two large-scale projects on the Grand Paris Express as part of the Alliance consortium. To meet the needs of the construction sites, there are two options: commissioning a subcontractor to produce the segments, or producing them ourselves.

In-house production has many advantages, and not just in the tender process. In a project with so many unknowns, remaining independent of external suppliers also guarantees greater flexibility. As we had been awarded two projects, the consortium decided to do it themselves, with Implenia France opening its first prefabrication plant for tunnel segments together with other members in February 2017.

FACTORY CONSTRUCTION IN RECORD TIME

The customer in Paris expected the first tubbing segments in the summer. But there was a lot to do before then: emptying, cleaning, renovation, fitting and, of course, production! The first staff worked hard to achieve this demanding challenge on time, tearing down unsuitable structures and creating a warehouse platform within just a few months. The segment production line took form, a concrete plant was constructed and the offices set up. The concrete plant went into operation in mid-July 2017, and the first test tubbing was produced on 4 August. After a few adjustments, the production line was fully ready for use and can now produce a concrete segment every ten minutes. The machine is in operation every day, producing enough segments for ten tubbing rings every day. The plant produced enough for the consortium's first two projects and also quickly began delivery to Grand Paris Express lines 17.1, 16.2 and 16.3 – the first project not built by a member of the Alliance consortium.

↑ The concrete segments spend seven hours in the oven at 50°C.

↑ There is now a second cement plant on the site.

FIVE YEARS AND 10,000 SEGMENTS LATER …

In 2022, the plant has produced its ten-thousandth segment and employs almost 180 people – profitably. With 81,660 cubic metres of concrete produced in 2021 alone, the plant, now managed by Lucas Mouton, is looking forward to a prosperous future with new international development projects. The adventure continues – thank you so much to everyone involved. ■

← The team at the start: (from left) Simon Joët, Hugo Le Fol, Alberto Da Silva Teixeira, Philippe Javelle, Vincent Meunier, Michel Petit and Thibaud Ceccon

↑ Won over by the new solution: Markus Viertler (left) and Manuel Entfellner

Rudolf Knopf, Head Tunnelling Austria

“The trend for putting more and more roads and railway tracks underground is making tunnel construction an ever more important discipline.”

↑ Thrust elements work like buffers when the mountain presses down on the injected concrete shell.

↑ Geologically demanding: With so many layers of rock, Austria’s Semmering presents a major challenge for tunnel construction.

The product will then be ready for the market. “Many colleagues were sceptical at first,” says Manuel, when asked about the reaction to his love of innovation. “Luckily, two people really supported me from the word go: our geotechnical engineer Helmut Wannenmacher and Rudolf Knopf, Head Tunnelling Austria.”

SUPPORT IN PATENTING AND MARKET ROLL-OUT

Rudolf Knopf loves working with his dedicated team and actively supports initiatives that aim to create cheaper and better products. “It was like a protected market for thrust elements, with inflated prices and unsatisfactory quality. We are very glad of this solution.” He also encouraged Manuel to submit his suggestion to Implenia’s innovation programme, Kickbox. Since then, the team at the Implenia Innovation Hub has supported him in patenting the product and preparing for market roll-out. Other companies are also interested in the solution.

Manuel Entfellner can soon expect to see his development being used to enhance tunnel construction far beyond Austria’s borders. And that is no bad thing. “The trend for putting more and more roads and railway tracks underground is making tunnel construction an ever more important discipline,” says Rudolf Knopf with conviction. “Innovative minds like Manuel Entfellner are making sure that we at Implenia not only deliver good work, but are playing a significant role in shaping the way construction will look in the future.” ■

↑ Manuel Entfellner, 29-year-old tunnel constructor and intrapreneur at Implenia, can soon expect to see his development being deployed to enhance tunnel construction far beyond Austria’s borders.

WE ARE IMPLENIA

More than 8,000 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 these colleagues. More on them and many others can be found online.

HOW DO YOU ENSURE SUSTAINABILITY?

As Project Leader Sustainability, Bernadette Arbogast does everything she can to commit the entire organisation to this core issue. We look at how she brings together requirements and reality.

HOW WAS THE WOW EFFECT?

Stefan Koller, Co-Project Leader on Implenia Connect, explains how he felt on moving into the new headquarters and what he has learned from the project for the future.

WHAT LIES BENEATH THE EARTH?

Foreman Joel Fernando Dos Santos Vieira leads a 19-person team at the large-scale Grünau construction site in Zurich. He tells us why he loves seeing what so few people get to see.

SAFETY IS A MANAGEMENT MATTER

Walter Wolf, Market Lead North West/Bern and Construction Unit North Western Switzerland, and his team have the lowest accident figures anywhere in the group. He explains in an interview how he does it.

HOW DO YOU KEEP US ALL TRAINING?

As Learning & Development Specialist at Implenia Switzerland, it is Andrea Wagner's job to put the organisation into continuous development mode. She tells us how she does it.

IN THE PROFESSIONAL FAST LANE

After ten years as a demolition expert, Johan Hillmann from Implenia Sweden is now taking on the role of Project Manager for the first time – showing that you don't need years at university to build a career.

OBSTACLES FOR AN ADRENALINE KICK

Marcus Gelotte, Purchaser at Implenia Sweden, loves extreme obstacle courses. He explains what a demanding race on difficult terrain with numerous obstacles has in common with the challenges of his day-to-day work.

WHAT IS THE BEST WAY TO LEARN?

Sigrid Fuchs works as an assistant, but she is also an instructor for those undergoing commercial training and coaches those who want to learn – including in the art of acquiring new knowledge efficiently.

"PAPA, WHY ARE YOU MAKING PIZZA?"

Iraqi construction engineer Abdul Themir worked as a pizza baker in Sweden for 19 years, before returning to tunnel construction as a measurement engineer at Implenia.

MORE ON ALL THESE TOPICS ONLINE

READY FOR ACTION

Philip Hilbert, José Pedro Castro, Knut Brunier and Ronny Caduff are currently putting up a temporary laboratory in record time at Zurich's Campus Irchel. The extremely tight schedule demands maximum coordination between everyone involved. We explore the skills needed for this race against time and find out how the team is working so well.

"BE KIND TO YOURSELF!"

Claudia Bidwell is Chief Human Resources Officer at Implenia. She tells us about her career, what is important to her at work, and what advice she would give her younger self.

TWO APPRENTICESHIPS AT IMPLENIA

Gregor Thürlemann tells us howhe had to stop work after his carpentry apprenticeship owing to health problems - but then how he was able to start all over again at the age of 27.

A LOVE OF COMPLEX PROJECTS

Project Lead Antonio Romeo manages three Implenia road construction projects in the Zurich region from the Grünau construction site. We hear what this is teaching the experienced professional.

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EVEN MORE PORTRAITS AND PROJECT REPORTS, ALWAYS NEW

THANK YOU FOR COMPLETING THE SURVEY!

Your opinion is important to us! In the last issue, we asked you about your favourite articles in IMPACT online. Our competition winner, Andreas Blank, Senior Construction Manager at Implenia Specialist Civil Engineering in Nuremberg, will be travelling to Stockholm. This time, we are looking for top teams. You can find out more on Page 4. **Join in and win a trip to Berlin!**

HELP FOR UKRAINE

JOBS FOR REFUGEES AND A THANK YOU FOR YOUR DONATIONS

The war in Ukraine and its devastating effects are on everybody's minds. We at Implenia, want to do our bit to help refugees and those in war-torn areas. In our donation campaign in March and April, we topped up your donations to a total of EUR 120,000. We are also offering refugees – who are now seeking shelter in every European country and who need work as well as accommodation – temporary jobs in our offices and on our sites for a period of 3-6 months. Anyone interested can simply apply to **ukraine.jobs@implenia.com**. Pass it on!