

keep track



a success story
goes on

THE CUSTOMER MAGAZINE OF THE RHOMBERG SERSA RAIL GROUP

Highlights in this edition

06 10 years of the Rhomberg Sersa Rail Group

35 More than BIM

61 Koralmtunnel complete



KEEP

TRACK

HERE'S TO TEN YEARS AND THE FUTURE

2022 is a special year for us at Rhomberg Sersa Rail Group. A decade ago, the two rail technology specialists Sersa Group and Rhomberg Rail merged to create what is now the Rhomberg Sersa Rail Group, a strong, reliable partner for customers from the main line railway, local public transport and industrial sectors, as well as for operators, owners and proprietors of track-laying machines.

The recipe for this success is consistent investment in people and machines. We strive to work safely and efficiently to make a positive difference for our clients. To achieve this, we need the most qualified employees, the most modern machinery, the most future-proof technologies and the most innovative products and services. That was the case ten years ago, it is still the case today – and it will also be the case in the future. Worldwide.

That is why we are sticking to our recipe for success. We would like to tell you more about this in detail on the following pages. Inside, you will find introductions to our latest machines, valuable products for slab track and construction site safety, information about our HR strategy, innovations and the latest RSRG trends in digitalisation. Most importantly, however, you will learn about exciting, highly successful projects that we are carrying out for and together with our customers.

We hope you enjoy reading the current edition of “keep track”!



■ Garry Thür, CTO; Thomas Bachhofner, CEO; and Thomas Mayer, CFO

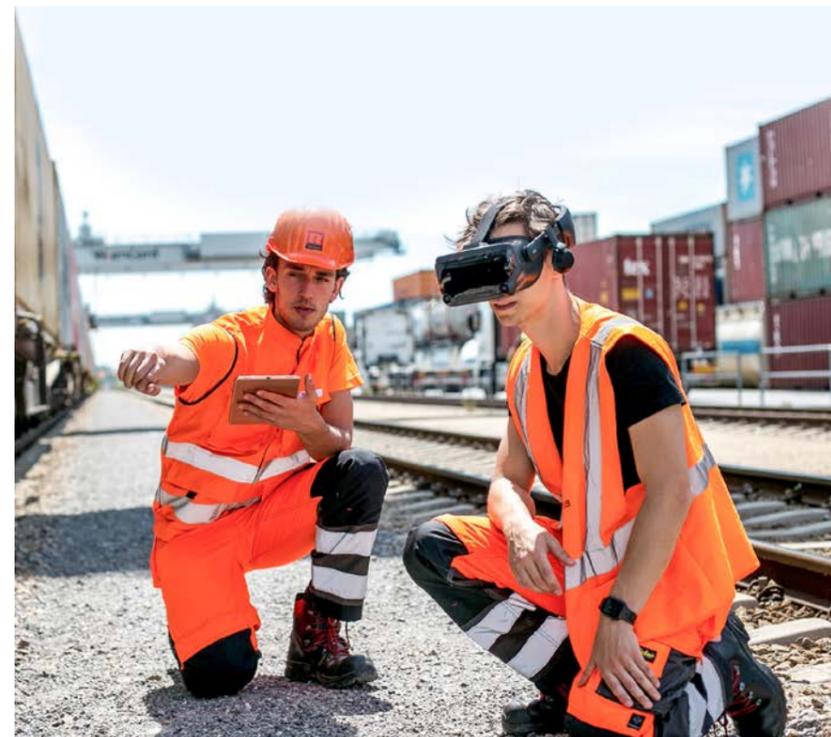
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ONLINE MAGAZINE



We are delighted to be able to welcome you online again this year. You can find the online edition of our customer magazine at: magazine.rhomberg-sersa.com



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ENABLING FUTURE MOBILITY



a success story
goes on



10 YEARS OF THE RHOMBERG SERSA RAIL GROUP

10 YEARS AGO, THE FAMILY-OWNED COMPANIES RHOMBERG RAIL AND SERSA GROUP JOINED FORCES – SINCE THEN, UNDER THE NAME RHOMBERG SERSA RAIL GROUP, THEY HAVE BEEN HEADING DOWN A COMMON PATH THAT IS CHARACTERISED BY SUCCESSES AS WELL AS CHALLENGES, THE WILL TO GROW AND DEVELOP FURTHER, THE COMMITMENT OF RESPONSIBILITY TOWARDS RESOURCES AND THE ENVIRONMENT, AND THE CONSTANT TRUST IN EACH OTHER AND IN THE EMPLOYEES. TO MARK THE TEN-YEAR ANNIVERSARY, THE OWNING FAMILIES AS WELL AS LONG-STANDING EMPLOYEES SHARE VERY PERSONAL PERSPECTIVES ON THEIR EXPERIENCES OF THE MERGER AND OVER THE PAST TEN YEARS, AND TELL US WHAT THEIR HOPES ARE FOR THE NEXT TEN YEARS. AN EXCERPT FROM THE STORIES OF KONRAD AND TRUDY SCHNYDER, WALTER-HEINZ RHOMBERG AND HUBERT RHOMBERG:

The owners: Konrad Schnyder, Trudy Schnyder, Walter-Heinz Rhomberg and Hubert Rhomberg



Trudy Schnyder
Wife of Konrad Schnyder
and co-designer

ONE BIG, FUNCTIONING FAMILY

The merger was a very lively, intense and exciting time for me. Conversations often went on late into the night. Both owners wanted the merger just as much as each other. It was clear to me that all other succession options were not such good solutions. When it came to making decisions with Konrad, I always knew the result in advance: I could tell by the glint in his eyes. When the idea of Rhomberg came up, I never had any doubts. Both were born entrepreneurs. For example, with Konrad, there isn't a day that goes by when he doesn't work. He says his work is "365 days a year of active holiday". He enjoys seeing how the group is developing.

I believe that the constant exchange between the owners and the C-level is a crucial factor for the success we enjoy today. People also communicate contrasting opinions. And, despite the merger, each leaves room for the other to develop. They meet and are happy to see each other. Konrad and Hubert are united by their considerable openness, honesty and friendship. We are already thinking about our grandchildren and often talk about them. Although they are still training or studying, they are welcome to attend events to get an idea of what it is all about.



Walter-Heinz Rhomberg
Owner, Vice Chairman of the Rhomberg
Group Advisory Board, with the family
company since 1963

BOTH SIDES WANT LONG-TERM SUCCESS

Success begins with a strategy, which for us is always long-term. Our employees from different levels are involved in our strategic considerations and discussions. Mutual trust is the basis for everything you need to succeed. Of course, there have also been some challenges in the markets over the course of these ten years, but we have always risen to and overcome them. Together, we have always kept on the right track. In difficult situations, it really shows what trust and cooperation mean.

When we face challenges, the ability to quickly analyse where the causes lie is one of our group's strengths. We always try to resolve the matter in the best possible way for the customer and to ensure that it still remains cost-effective for us. And, of course, fair treatment of all stakeholders is the most important thing to us.

Hubert and I cherish a stable friendly relationship with Koni Schnyder. We also meet once or twice a year to exchange ideas outside of business meetings. A good relationship succeeds when both parties are generous and overlook trivialities. These qualities were there from the very beginning. And we embrace this in our corporate culture.



Konrad Schnyder
President Owner Board, with
the company since 1984

TOGETHER RHOMB- ERG AND SERSA ARE UNBEATABLE

In all challenges, it has helped that we have reached a decision together, even when opinions differed, and communicated it to team members and management as a whole. Dust has often been kicked up during our discussions, but we have always been able to let it settle and sweep it up again.

There are many successes I could tell you about from our work together, but I am particularly happy about the most recent one: the alliance agreement signed in Cottbus in March. We started as outsiders and then won the contract. This was only possible thanks to our merger ten years ago. The decision-makers at Deutsche Bahn were convinced that they could rely on us in terms of scheduling and price. They believe they can do it together with us. We are very proud of this as a group, and that is what spurs us on.

The fact that we are a family business is crucial to our success – we think in the long term. We have quick decision-making processes as Hubert and I usually make decisions within a day. We didn't hire managers; we hired entrepreneurs. Today we have an excellent C-level, a CEO who can deal with the two strands of the company. We also have top leaders in the markets. As owners, we can focus on strategically securing the future. The feu sacré, the enthusiasm and passion, can be felt throughout the group. Our employees have imagination, a wealth of ideas and knowledge in equal measure, which enables us to solve all of the many problems our customers face. It is often the small ideas that inspire. This is something our people prove on a daily basis.



Hubert Rhomberg
Member Owner Board, with
the company since 1999

MAKING THE RIGHT DECISIONS NOW

We currently still operate our own strong brands within the group, but there are more and more market managers who want to adopt the Rhomberg Sersa Rail Group name. A development that I am personally happy about. It shows that the strength of the group is gaining more and more recognition. The factors for our success as I see them: We are a company that is run by its owners, invests in technology and focuses on niches. Our enormous potential, which we will explore even more in the future: We develop new business models and apply our expertise in all our markets.

The biggest challenge we have to solve is the labour issue. What I see for 2032: We are so attractive as a group that everyone we need is working with us. We have the best people in all areas. Our Group is also attractive for young people because they can work in different business areas and regions. In 2032, we are pioneers in the digitalisation and automation of construction site maintenance. The construction sites are gone through virtually with all those involved. We know in advance how many tools and machines we need, everyone knows what needs to be done. We optimise everything in advance and are better able to calculate in every direction. This is also very advantageous for on-site construction workers. The groundwork for all of this had been laid and promoted years earlier.

You can find all stories in full in our online magazine.

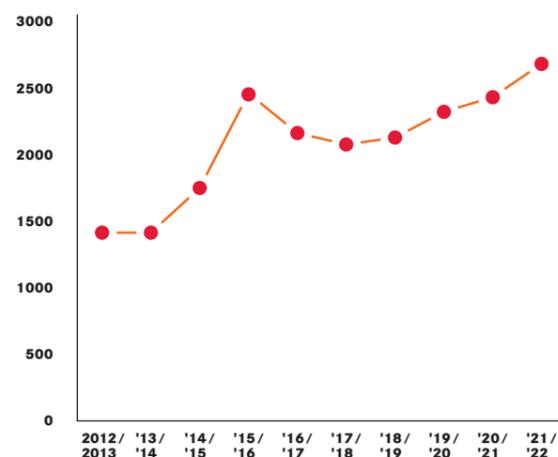


TEN YEARS IN NUMBERS

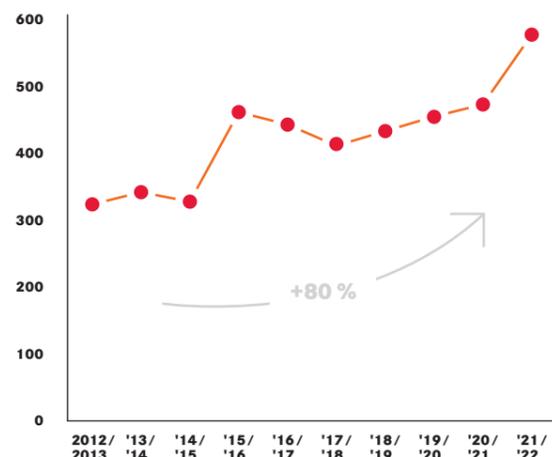


THE RHOMBERG SERSA RAIL GROUP IS A FAMILY BUSINESS. THAT IS WHY THOSE IN CHARGE THINK IN TERMS OF GENERATIONS. THEY MAKE DECISIONS WITH AN EYE ON THE FUTURE, IRRESPECTIVE OF BANKS AND POLITICS. AND THEY BELIEVE THAT ECONOMIC SUCCESS IS POSSIBLE WHEN COMBINED WITH RESPECT FOR PEOPLE AND THE ENVIRONMENT. LOOKING AT THE FACTS AND FIGURES OF THE PAST TEN YEARS CONFIRMS THIS APPROACH: RSRG IS GROWING SAFELY AND SOUNDLY.

EMPLOYEES



TURNOVER



OVER THE PAST TEN YEARS, WE HAVE EXPANDED TO BECOME AN INTERNATIONAL GROUP OF COMPANIES THAT

- is on a consistent path to doubling its turnover with a construction output of 574 million euros in 2021/22,
- operates in eight countries on three continents at over 100 sites,
- has more than 2,600 RSRG 'family members',
- has over 230 rail-mounted machines in operation and
- is more committed than ever to technology, innovation and the development of our workforce.

HEALTHY GROWTH AND INTERNATIONALISATION (SELECTION)

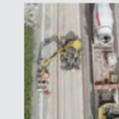


LIGHTHOUSE PROJECTS (SELECTION)



LÖTSCHBERG BASE TUNNEL, SWITZERLAND, 2002– 2007

This project can be seen as a crucial lighthouse project in the success story of the Rhomberg Sersa Rail Group. The Lötschberg base tunnel project led to initial contact and the opportunity for Sersa (handling logistics) and Rhomberg Bahntechnik to get to know each other.



NEW WENDLINGEN-ULM LINE, GERMANY, SINCE 2018

Planning, execution and commissioning of the high-speed line through the Swabian Alb: Together with Swietelsky, the Rhomberg Sersa Rail Group as a full-range supplier of railway technology won the contract for the major Deutsche Bahn project.



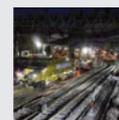
UNTERINNTAL – BRENNER BASE TUNNEL AND ACCESS ROUTE, AUSTRIA, 2009–2012

As general contractor, Rhomberg Sersa Rail Group making a major contribution in completing this European project. The route between Germany and Italy was significantly improved by the construction of the Brenner Tunnel.



SBB CONTRACT FOR SWITCH REPAIR, SWITZERLAND, SINCE 2004

On behalf of SBB/BLS, the Rhomberg Sersa Rail Group is carrying out the complete overhaul of switches through the use of sophisticated machine technology, optimised construction site planning and the use of synergies.



S&C NORTH ALLIANCE – UNITED KINGDOM, 2015– 2020

Rhomberg Sersa Rail Group shows international standing in the Amey Sersa joint venture by winning Network Rail's Alliance Contract for Switches and Crossings. Starting from London's King Cross Station, switches in the regions of North England, North Wales and Scotland were replaced and renewed using innovative Sersa technology.



TRACK AND SWITCH STOPPAGES ON THE AUSTRIAN FEDERAL RAILWAY (ÖBB) NETWORK, ONGOING

For decades, the Rhomberg Sersa Rail Group has been using track-laying machines throughout the entire Austrian Federal Railway network, carrying out track tamping and alignment work, switch tamping and alignment work, ballast levelling work and ballast bed stabilisation.

You can find more lighthouse projects on our website.



DEU

HIGH SPEED IN THE TENTH YEAR



**THE NUMBERS SPEAK FOR THEMSELVES:
A TOTAL OF FOUR LOTS, 200 KILOMETRES
OF SLAB TRACK WITH 95 SWITCHES AND
2 CROSSINGS, THOUSANDS OF METRES OF
CABLES AND HANDRAILIT HANDRAILS, UP
TO 400 EMPLOYEES IN OPERATION AT THE
SAME TIME – FOR THE MAJOR PROJECTS
STUTTART 21 AND WENDLINGEN-ULM,
IN ITS TENTH YEAR, RSRG IS TRAVELLING
FULL STEAM AHEAD!**

“Full steam ahead” is actually the completely wrong expression in this context: Nonetheless, the railway specialists from Bregenz, Austria, are working in two joint ventures to equip the Stuttgart through station as well as the sections between the state capital and Wendlingen and then on to the main station in Ulm with state-of-the-art railway technology – from the slab track to the electrotechnical equipment.

“Still, the expression fits perfectly,” explains Philipp Nachbaur, who as Managing Director of the RSRG subsidiary Rhomberg Bahntechnik is responsible for completing the orders on time and on budget. “Because we are always the last in the process chain. After us, the trains start running!” This, and the ambitious schedule, require forward-looking, comprehensive planning as well as perfect construction site management from the professionals. And a lot of speed.

The Rhomberg Sersa Rail Group, which together with Swietelsky, is equipping the high-speed line between Wendlingen and Ulm and, in a joint venture with DB Bahnbau and Züblin, is realising the section of line called “Talquerung” (valley crossing) directly at the new, underground main station in Stuttgart as well as the “Filderebene” (Filder plain) between the airport and the Neckar, is proving itself to be exemplary. “In Rhomberg Bahntechnik, we have found a partner that perfectly complements its expertise as a qualified

specialist company with a high level of commitment and an outstanding ability to adapt and learn,” praises Olaf Drescher, Chairman of the Management Board of DB Projekt Stuttgart-Ulm GmbH, for example.

“We benefit from the fact that we have been able to gain experience in a wide variety of large-scale railway projects all over the world,” explains Robert Kumpusch, Managing Director of Rhomberg Bahntechnik. Philipp Nachbaur also sees this as a great advantage: “We are not only convincing with our comprehensive range of services and our quality, but also – and above all – with innovative ideas and a cost-effective approach.”

One example is the vehicle-bearing level crossing segments made of in-situ concrete for slab track systems and was specially developed by RSRG together

with Züblin and used for the first time in all tunnels over one kilometre long between Wendlingen and Ulm. The client, as well as all other future customers, benefits from the ease of installation, the wide range of adaptation options for various installations, the robust and maintenance-free design and, ultimately, from a high level of cost-effectiveness. Other innovations include the RhoSAS lift and position system, which is used to set up all slab track switches in the thoroughfare station and on the Filder line, as well as the universal transition module V-TRAS for easy switching between slab track and classic ballast track.



01

FROM THE COMPANY



FROM AUSTRALIA TO CANADA

A very personal insight into the Rhomberg Sersa Rail Group.



Michael Match
Managing Director, Rhomberg Sersa North America

MICHAEL MATCH WAS MANAGING DIRECTOR FOR THE RHOMBERG SERSA RAIL GROUP IN AUSTRALIA, AND IS NOW WORKING IN THE SAME CAPACITY FOR THE GROUP IN NORTH AMERICA.

This means that, in geographical terms, the native Canadian is familiar with the entire railway technology group all over the world. And can thereby paint a clear picture of the power of collaboration in the Rhomberg Sersa Rail Group and how this collaboration brings benefits to rail operators around the globe.

“The merger of Sersa and Rhomberg Bahntechnik ten years ago was both a milestone and a starting point, showing how international and diverse the two companies were at the time of the merger and how these characteristics have evolved with the creation of an impressive international group.

All of us in the Rhomberg Sersa Rail Group know that our private ownership structure is one of the key elements allowing us to deliver our best work and to be innovative and create dynamic growth. The quick, well-founded decisions at owner-board level ensure that RSRG remains flexible at all times and can also drive things forward at short notice that are giving the greatest possible benefit to our customers.

I am confident that all of us in the RSRG will become the most dedicated and best railway experts in the world if we harness the power and strength that these two great companies have built and then become even stronger as one. The way I look at it is: In our own markets, we always have the chance to be the “best in business”, but, with the Rhomberg Sersa Rail Group, we get the even bigger chance to be the “best in the world”.

You can find a detailed account in our online magazine.



USA

RSRG GOES USA

Railway technology specialist expands into the United States.



LAST YEAR, THE RHOMBERG SERSA RAIL GROUP ACQUIRED THE BALFOUR BEATTY U.S. TRACK SOLUTIONS BUSINESS. THE ACQUISITION MEANS THAT RHOMBERG SERSA NORTH AMERICA (RSNA) WILL BE THE LARGEST SERVICE PROVIDER OF BALLAST CLEANING SERVICES IN NORTH AMERICA.



“WITH OVER 250,000 KILOMETRES OF FREIGHT LINES AND MORE THAN 40 MAJOR CITIES WITH URBAN RAIL INFRASTRUCTURES, THE AUTOLAND USA HAS BY FAR THE MOST MILES OF TRACK IN THE WORLD.”

Garry Thür
CTO, Rhomberg Sersa Rail Group

With a fleet of eight ballast cleaning machines, including the three newest and most productive Plasser RM80 machines in North America, and supported by more than 30 experienced and qualified technicians, RSNA aims to continue to offer customers the best value for money as well as the highest reliability of machines. The recent addition of ten Plasser MFS Wagons and two specialised Power Wagons further enables RSNA to offer even more end-to-end solutions for ballast renewal projects.

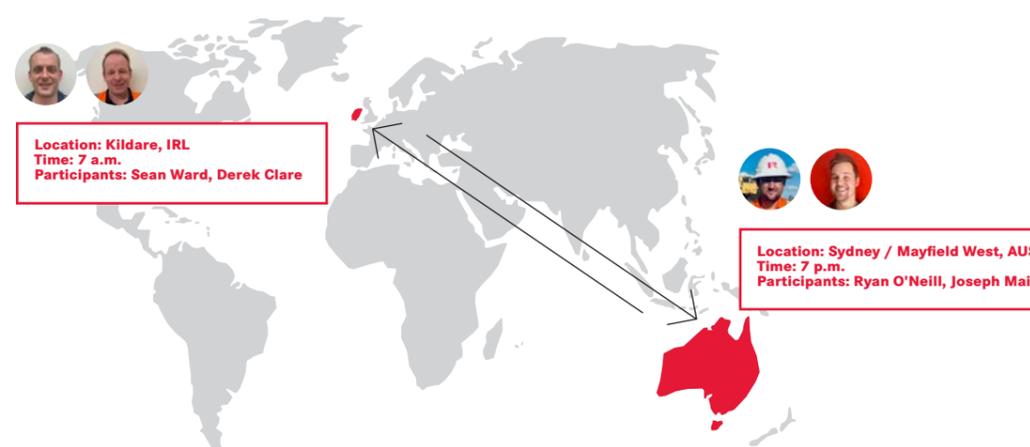
Thomas Bachhofner, CEO of RSRG: “As one of the technology leaders in the global rail business, we aim to support our customers everywhere in the world with an innovative, high-quality portfolio. The competencies and machinery of our team in the USA will clearly help us in this endeavour.”

For Steve Atherton, CEO of RSNA in the United States, the acquisition is an opportunity for the company to take the next step in developing and expanding the core competencies and services offered to the entire North American rail industry: “This will strengthen our position at the forefront in ballast maintenance and inspection technologies, including Ground Penetrating Radar, track geometry and automated vision-based track inspection solutions. It will also allow us to build with new solutions and engineering concepts, including rail milling, material handling and the engineering support functions developed from across the rail group and their partners in Canada, UK, Europe and Australia.”

IRL AUS

KNOWLEDGE SHARING ACROSS TIME ZONES

Remote diagnostics collaboration between RSIE and RRA



RHOMBERG SERSA IRELAND (RSIE) AND RHOMBERG RAIL AUSTRALIA (RRA) BEGAN A COLLABORATION IN AUGUST 2021 BETWEEN THE TWO BUSINESSES WHERE KNOWLEDGE AND EXPERIENCE IS SHARED ACROSS THE OPERATIONS AND MAINTENANCE FUNCTIONS.

The purpose of the collaboration between the sister companies is to learn from each other's successes and failures and accelerate the implementation of return on experience between them.

The RSIE team led by Sean Ward and Derek Clarke meet with their RRA counterparts Ryan O'Neill and Joseph Main every six weeks over teams. The meeting start time is a 07.00 call for the Irish Reliability Engineers in Kildare which across time zones is a 19.00 start time for their Australian peers in New South Wales.

During these calls the group can bounce ideas of each other. There is a transfer of maintenance knowledge as the fleet of OTM's are similar in each country. The collaboration also optimises the exchange of maintenance methods, ideas and experience.

As a result of the cooperation, RRA has provided a maintenance plan and instruction on yo-yo maintenance to RSIE which should significantly aid the reliability of these components on the Ireland fleet.

Further discussions have centered around remote diagnostics and data loggers for OTM 781 Ballast Cleaner. Data such as system pressures, temperatures, flow rates, engine revs and more machine variables can be measured and then recorded against future machine performance.

With data loggers – and the ability to examine the data remotely – there is an opportunity to anticipate when a maintenance issue may arise and carry out preventative maintenance.

RSIE are looking at installing a new remote diagnostic system on OTM 781 ballast cleaner, which has resulted from the experience and knowledge shared between the teams.

What started as an exchange of ideas between the two sister companies will also lead to the group meeting up in person at the end of May, when the RRA team will travel to Ireland.

THE COLLABORATION OF THE FUTURE

Deutsche Bahn uses an innovative contract model for the first time at the new Cottbus plant. The RSRG is also aboard.



DAVID WURNITSCH, Project Manager, Rhomberg Bahntechnik (left)
ROBERT KUMPUSCH, Managing Director, Rhomberg Bahntechnik (right)

DEUTSCHE BAHN (DB) PLANS TO CONSTRUCT ITS NEW ICE MAINTENANCE PLANT IN COTBUS BY 2026 ACCORDING TO THE INNOVATIVE "PARTNERSHIP MODEL RAIL". ONE OF THE FIRST PARTNERS IS THE RHOMBERG SERSA RAIL GROUP. ARCADIS GERMANY GMBH, LOGSOL GMBH AND WAYSS & FREYTAG INGENIEURBAU AG ARE ALSO CONTRACT PARTNERS.

Together with its partners, the Austrian-Swiss rail technology specialist is responsible for the traffic facilities, civil engineering, the railway infrastructure as well as the medium-voltage power supply.

For the first time, DB wants to implement one of its major infrastructure projects along with all parties involved in the new contract model.



The idea behind this concept is to implement the extensive and complex major projects quickly, to a high-quality standard, cost-effectively and on schedule by bringing the key project partners together as early as the planning phase.

Through early inclusion, all companies involved should be able to focus their full performance and

innovation capacity on the optimisation, rapid realisation and efficient operation of the construction project. "This approach naturally suits our competencies as a full provider for all rail services," explains Konrad Schnyder, President Owner Board of RSRG. "We can therefore fully support the holistic approach.



1 Four-track hall for ICE maintenance (construction period 2023-2026)
2 Existing maintenance facility
3 Two-track hall for ICE maintenance

This allows us to make optimal use of synergies in order to reduce sources of error and friction losses to a minimum".

Specifically, two maintenance halls for electric multiple-unit trains for the heavy maintenance stage of high-speed traffic are to be built. In both new halls, entire ICE trains of almost 400 metres in length can be serviced. The investment for this is about one billion euros.



SUPERSTRUCTURE RENOVATION ON THE GLATTALBAHN RAILWAY LINE

Innovative and holistic solution approach to ensure operational safety.



MARKUS BERGER
Project Manager at Sersa
Maschinenler Gleisbau AG

FROM DISCOVERING A PROBLEM IN THE COURSE OF A TRACK INSPECTION TO PROVIDING FULL SUPPORT DURING REPAIR – A CHALLENGE FOR SERSA'S SPECIALISED TEAMS.

Since 2019, Sersa has been responsible for the overall maintenance of the Glattalbahn, which covers around 26 kilometres of track. A quarterly inspection of the track revealed a number of places where grass was accumulating particularly heavily. After excavation and examination with various partners within the RSRG, a comprehensive repair concept was developed and implemented. In addition to the replacement of damaged sleepers, a system was developed to grout the damaged areas of the track panel with a special epoxy resin-based injection plastic during breaks in the night. To obtain early indications of possible points of damage, ARGE FahrwegDiagnose carried out a single-point measurement on the route network. Thanks to the close cooperation within the RSRG, operational safety was ensured at all times and there were no interruptions in railway operations.

SILVER ANNIVERSARY IN LAUSITZ

Customer since the beginning: LEAG and Rhomberg Sersa in Germany are united by 25 years of successful cooperation.



DAVID KUBICZEK
Site Manager, Team Leader at
Schwarze Pumpe

IN 1997, RHOMBERG SERSA DEUTSCHLAND, STILL KNOWN AS SCHRECK-MEVES AT THE TIME, BEGAN ITS VISION OF ADVANCING TRACK CONSTRUCTION IN LAUSITZ.

One of the first customers at that time was Lausitz Energie Bergbau AG (LEAG). Today, 25 years later, the company continues to be a customer and therefore has first-hand experience of how RSD has developed into a reliable, established service partner for infrastructure operators and industrial railways.

The cooperation between the two partners was constantly accompanied by the development of new methods, which also benefitted other RSRG partners and customers. One milestone was the digital status analysis of tracks and switches, which is carried out by Rhomberg Sersa Vossloh.

A major advantage of the many years of cooperation is the trust that has been built between LEAG and RSD. In addition, administrative costs could be noticeably reduced thanks to the long-term contracts.

AUT

DECADES OF PARTNERSHIP

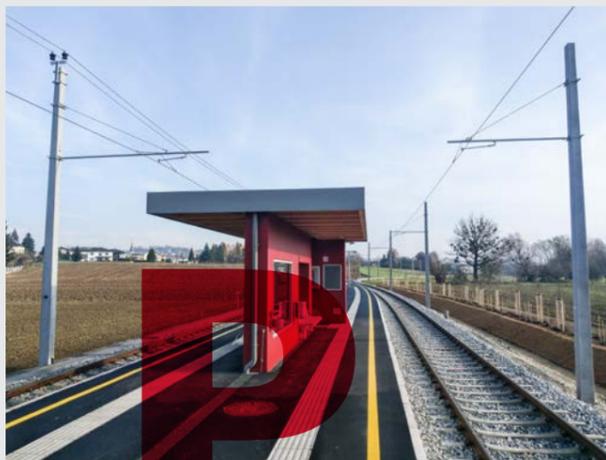
Private railway operator Stern & Hafferl Verkehrsgesellschaft mbH will continue to rely on Universale Bau in the future.



HANNES LINDERT
Construction Manager/
Calculator at Universale Bau

WITH THE NEW FRAMEWORK CONTRACT FOR TRACK CONSTRUCTION WORK ON THE STERN & HAFFERL VERKEHRSGESELLSCHAFT MBH RAILWAY NETWORK, THE SPECIALIST FOR COMMERCIAL TRACK CONSTRUCTION IN THE BBW GROUP CAN CONTINUE ITS DECADES OF EXPERIENCE IN THE FIELD CONTINUED SUCCESSFUL PARTNERSHIP.

2021 has been jokingly dubbed the “platform year”. In the construction projects Linzer Lokalbahn-Bergham, the narrow-gauge project Traunseebahn-Kirchham and the project Vorchdorfer Bahn-Waldl, Universale Bau was able to demonstrate the quality of its services in platform construction in addition to the classic track superstructure and substructure work, earthworks and cable construction work. In all three projects, the island platform had to be constructed in addition to the service turnouts. The excellent cooperation with Stern & Hafferl Verkehrsgesellschaft mbH, which has continued this year, deserves special mention.



You can find more information in our online magazine.



IRL

TAMPING GOES UP A NOTCH

Rhomberg Sersa Ireland streamlining the tamping process for its client Iarnród Éireann Irish Rail.



DARRYL GWILLIAM
Continuous Improvement
and Digitisation Manager

The continuous Improvement Group (CIG) is a joint group comprising staff from Rhomberg Sersa Ireland (RSIE) and Iarnród Éireann Irish Rail (IÉ). The group was set up to overcome complex issues, increase performance and improve processes for the benefit of all.

CIG's most recent task is to investigate a concern raised by IÉ over the lifting performance of 08 4X4 Compact machines in design mode with objectives set to investigate and find a sustainable solution for both parties.



Find out more about the full scope of the project in our online magazine.



DEU

BY THE CUSTOMER'S SIDE

With the Leipheim branch, the Rhomberg Sersa Rail Group has another location in southern Germany.



GERMANY
BAVARIA

TO BE ABLE TO PROVIDE THE CUSTOMER WITH SMALLER PROJECTS IN THE SOUTH OF GERMANY IN THE FUTURE, RHOMBERG BAHNTECHNIK, A RSRG SUBSIDIARY, HAS SET UP A BRANCH OFFICE IN LEIPHEIM NEAR ULM, CONVENIENTLY CLOSE TO THE A7 AND A8 MOTORWAY – THE SECOND GERMAN LOCATION AFTER ESSEN/NRW.



“WITH OUR NEW LOCATION, WE WANT TO REDUCE THE DISTANCE BETWEEN US AND OUR CUSTOMERS AND THUS STRENGTHEN OUR COOPERATION AS PARTNERS.”

Kai Ziegler
Managing Director,
Rhomberg Bahntechnik

From here, the rail technology specialist primarily offers its services in electrotechnical equipment as well as in the field of local public transport. For example, projects such as EWHA Kornwestheim, EWHA Munich Central Station, Fürstenfeldbruck, LindauReutin, MDA Augsburg, Betriebshof Munich, Rosensteinpark Stuttgart and Rheinstrandsiedlung Karlsruhe are currently being carried out via the new “home base”. The portfolio ranges from the new construction of switch heating systems and the new construction of complex lighting systems (GFB) to the construction of MV systems, the new construction of power supply systems for underground railways and the repair of complex 50 Hz systems, both existing and in operation.

For this purpose, about 500 m² of office space, 800 m² of indoor storage space and sufficient outdoor storage space were created on site. A conscious focus was placed on sustainability. Among other things, a solar power system with an annual output of 150,000 kWh was installed, meeting the entire electricity demand at the site and even supplying the Essen site. As part of this, the topic of electromobility, including charging infrastructure, was also rolled out.

START-UP POWER

RSRG cooperates with promising young companies.

AT RHOMBERG SERSA, WE BELIEVE IN PROMOTING YOUNG TALENT, AND NOT JUST OUR OWN HUMAN RESOURCES. THE GROUP ALSO PARTICIPATES IN EMERGING NEW COMPANIES FINANCIALLY AND IN TERMS OF CONTENT. ABOVE ALL, IT IS THE CUSTOMERS WHO BENEFIT.

Thomas Bachhofner, CEO of the Railway Technology Group, explains: “No matter how different our customers and their country-specific framework conditions and regulations may be worldwide, our task always remains the same: We want to cost-effectively build and maintain a very precise system in nature, on which our customers can safely transport people and goods ecologically, partly at high speed and preferably around the clock.” To ensure this, you need not only the best employees but also the best ideas and the best technology. That is why RSRG consistently invests in innovative minds with exciting business ideas. Three examples:



“WE NEED THE BEST IDEAS AND THE BEST TECHNOLOGY FOR OUR CUSTOMERS.”

Thomas Bachhofner
CEO, Rhomberg Sersa Rail Group

1

BII GMBH: CONSTRUCTION PROCESS OPTIMISATION



With its product dProB, Building Information Innovator GmbH offers a clever, digital tool that allows construction processes to be planned intuitively and interactively in a gaming environment. Based on the normal CAD planning for the building structures, dProB realises the construction sequence planning as well as the construction process planning. In doing so, the tool collects all relevant data and thus the recipe for success on how this project and similar projects can be carried out in the best possible way in the future. In the future, dProB will be able to pre-plan construction processes (partially) automatically. The innovation is in use in the RSRG projects for Stuttgart 21, the Koralmtunnel and the Weichenlos (‘switch lot’) in Switzerland, among others.

2

INOVITAS AG: INFRASTRUCTURE IN 3D



iNovitas is a partner of the RSRG-ARGE FahrwegDiagnose. The young company from Baden, Switzerland, provides its cloud-based technology, which enables the digitalisation as well as the web-based provision and use of road and railway networks in the form of intelligent 3D images. The core product is the infra3D service, which brings infrastructure facilities such as track corridors directly onto the user's screen in three dimensions. The accuracy facilitates the planning of construction projects, simplifies infrastructure maintenance or enables infrastructure management.

3

NEKONATA XR TECHNOLOGIES GMBH: SIMULATORS



The hardware and software specialist from Vienna supports the RSRG with lifelike mixed reality simulations. NXRT has developed, for example, high-precision virtual applications that allow real vehicles to be used as simulators. For instance, it can be used to simulate dangerous situations in a safe environment and provide training for driving, shunting and safety personnel. Furthermore, infrastructure components such as switches can also be visualised and virtually inspected during lessons.

AUSRAIL

Postponed, Relocated
and finally a Success.



AMBER BELLAMY
Marketing and Communications Manager



AUSRAIL PLUS IS THE LARGEST RAIL EXHIBITION IN THE SOUTHERN HEMISPHERE AND RHOMBERG RAIL AUSTRALIA PROUDLY EXHIBIT THE COMPANIES' CAPABILITIES AT THE EVENT BI-ANNUALLY.

Last year plans were in place for the event to take place in November hosted in Brisbane QLD, as the event drew closer the Covid pandemic heightened and exhibitors, visitors and organisers collectively became extremely nervous about the implications the pandemic would have on the event. Eventually the decision was made to postpone the event until Feb 28th, 2022 and relocate the venue to Sydney NSW based on the high vaccination rates and the stability of NSW's state governments Covid action plan.

Planning continued, Covid numbers stabilised and the event went ahead!! Funnily enough just days before the event the rule of wearing masks at indoor events was scrapped so everyone was feeling very uneasy about not only being at a face-to-face exhibition again but also interacting without wearing masks.

Both Rhomberg Rail Australia and RKR Engineering exhibited at the show, our stand was hosted by Subject Matter Experts who enjoyed networking with visitors of the show, our stand also featured a private boardroom where the SMT hosted VIP clients at catered meetings. Our staff attended the range of networking functions that surround the AusRAIL event including the Yellow Tie Dinner.

The features on this year's stand included a 65inch LED screen that played a 3-minute corporate DVD on RRA and RKR capabilities and project highlights on rotation throughout the expo, we also had our IVES model and Technical Manager Henrik Vocks on stand to explain the product benefits which attracted a high level of attention and traction.

Overall, whilst attendee and exhibitor numbers were down on previous years the event was a success for RRA and RKR with our stand delivering the desired impact of brand exposure and our attendance generating extensive networking and collaboration opportunities.



CHE CENTRE OF EXCELLENCE METER-GAUGE SWITZERLAND

The Rhomberg Sersa Rail Group Switzerland has already been based in Landquart for two years.



THOMAS MÄSER
On Site Manager,
Sersa Maschineneller Gleisbau AG

SINCE THEN, SERSA MASCHINELLER GLEISBAU AG AND DONATSCH SÖHNE AG HAVE BEEN WORKING TOGETHER TO IMPLEMENT CHALLENGING PROJECTS AND MAINTAIN TRACK CONSTRUCTION MACHINES.

In addition to the construction of new special vehicles for the meter gauge, retrofits are also being carried out in Landquart – all meter-gauge conversion projects in Switzerland are coordinated and implemented here.

Its central location has many advantages: It is located directly on the SBB and RhB networks, which ensures the best possible service and con-

nections to standard and meter gauge. To achieve Rhomberg Sersa Rail Group's planned step towards efficiency, we are optimising our buildings and track systems. Initial clarifications and project studies are already underway.

In future, mechanised track construction in Switzerland will be concentrated at the Effretikon, Hinwil and Landquart sites. The Effretikon and Hinwil sites will mainly be in charge of the standard gauge while Landquart will be responsible for the meter gauge. This focus reduces enormous logistics, time and transport costs and brings the company a significant step closer to our goal of "zero emissions" in mechanised track construction.

THE RHOMBERG SERSA RAIL GROUP'S GREEN STRATEGY

ENVIRONMENTAL PROTECTION AND CORPORATE SUSTAINABILITY ARE AN INTEGRAL PART OF OUR CORPORATE POLICY AND ARE FIRMLY ANCHORED IN OUR MISSION STATEMENT AND CORPORATE STRUCTURE. WHICH IS WHY WE ARE WORKING ON A VARIETY OF STRATEGIC FIELDS OF ACTION TO EMBED SUSTAINABILITY EVEN MORE FIRMLY IN OUR DAILY ACTIVITIES.



KATHARINA WILLAM
Junior Advisor Environmental and Resource Management

RSRG'S CLIMATE STRATEGY

Our vision is for RSRG to achieve climate neutrality. To achieve this vision, we are developing a climate strategy that focuses on successively reducing RSRG's carbon footprint, a strategy that all companies will follow, embedded in a Plan-Do-Check-Act cycle.

1 Know what it is all about

Calculate and analyse emissions

2 Define what we want – climate neutrality to what standard?

Develop and agree on goals, options for action and measures

3 Avoid the unavoidable – to what extent and how?

Review options for compensation, define and implement strategy

4 Do good and talk about it

Organise periodic reporting, internal and external communication

CLIMATE STRATEGY IN 4 STEPS

GREEN GOALS

Energy, but sustainable

Increasing and promoting sustainable energy systems in the company (by using solar panels, green electricity, district heating...)

From waste to reusable material

Increasing the proportion of recyclable materials in the waste volume for recycling (how: sorting by type...)

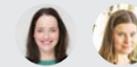
Green fleet

Reduction of fuel consumption in the fleet (by investing in more efficient cars with low fuel consumption, promoting e-mobility...)

OUTSTANDINGLY SUSTAINABLE

Eight members of the Rhomberg Sersa Rail Group receive EcoVadis status.

IN THE FUTURE, ECOVADIS WILL BE USED AS A COMPREHENSIVE SUSTAINABILITY ASSESSMENT TOOL IN ALL RSRG MARKETS.



EDEL KENNEDY, Manager Marketing and Communication (RSIE) (left)
KATHARINA WILLAM, Junior Advisor Environmental and Resource Management (right)



Ecovadis SAS is the world's largest and most reliable provider of sustainability ratings for companies. For more information, visit: www.ecovadis.com

With Rhomberg Sersa Ireland, Rhomberg Sersa Deutschland, Rhomberg Bahntechnik, Bahnau Wels, Sersa Schweiz as well as Donatsch und Söhne, Sersa Maschiner Gleisbau and Sersa Technik, a total of eight companies within the Rhomberg Sersa Rail Group have received the coveted EcoVadis status – with the first two even receiving gold status!

The RSRG companies are now part of the 285 companies in the rail and road transport sector that hold EcoVadis status. With Silver status, they are among the top 25% of all 85,000 companies assessed by EcoVadis, and with Gold status they are even among the top 5%.

The latest member to achieve EcoVadis Gold status is Rhomberg Sersa Ireland. "On behalf of Rhomberg Sersa Ireland and the team, we are delighted to have been awarded Gold status by EcoVadis," stated Billy Stamp, Managing Director of RSIE, when the company received the excellent news earlier this year. "We take our responsibility towards the environment, workers, human rights and ethics very seriously. This is confirmed by receiving this award."

Ecovadis SAS is the world's largest and most reliable provider of sustainability ratings for companies. The company examines, among other things, how well a company has integrated the principles of sustainability – environmental as well as social and governance issues – into its business and management system. The ratings are based on international sus-

tainability standards such as the Global Reporting Initiative, the United Nations Global Compact and ISO 26000, which cover over 200 categories and more than 160 countries. The Sustainability Scorecard uses 21 indicators in four topics to assess performance: Environment, labour and human rights, ethics and sustainable procurement.

For the Rhomberg Sersa Rail Group, the eight award-winning companies are just the beginning: In the coming months and years, the aim is for more companies within RSRG to be awarded EcoVadis status. Another goal is to make RSRG climate-neutral in the medium term. To this end, the group of companies focuses on increasing and promoting sustainable energy systems such as solar power, green electricity or district heating, on increasing the proportion of recyclable materials in our waste by separating it by type, for example, and on reducing fuel consumption in our vehicle and machine fleet by switching to eco-diesel or promoting e-mobility.

INTER-
VIEW

“EMPLOYEE LOYALTY IS CUSTOMER LOYALTY”

An interview with the new Head of Group Human Resources of the Rhomberg Sersa Rail Group

SINCE MARCH, MATTHIAS MONO HAS BEEN RESPONSIBLE FOR HUMAN RESOURCES FOR THE GLOBAL RHOMBERG SERSA RAIL GROUP. IN AN INTERVIEW WITH “KEEP TRACK”, HE TALKS ABOUT HIS VISION AND GOALS, THE CHALLENGES AHEAD - AND WHY GOOD HR ALSO BENEFITS CUSTOMERS.



Matthias Mono
Head of Group Human Resources

WHY SHOULD I, AS A RSRG CUSTOMER, BE INTERESTED IN HOW ATTRACTIVE YOUR COMPANY IS AS AN EMPLOYER?

Good, long-serving employees are an essential guarantee for lasting customer satisfaction, because they are the ones in the best position to know the wishes and the many small, individual specifics of each customer. Therefore, when a good employee leaves us with all their know-how, it is a great loss not only for us, but also for our customers. That is why retaining our employees is one of the main points in our human resources work. And there is an interesting parallel here: Employee loyalty, like customer loyalty, is much easier than recruiting new employees or gaining new customers.

WHAT GOALS AND VISION DID YOU SET OUT WITH?

Hubert Rhomberg, one of our owners, has expressed a wonderful vision regarding this: Our human resources work must be so good that our recruitment costs are close to zero. In other words, we have to be so attractive as an employer that people queue up because they want to work for us.

HOW DO YOU INTEND TO ACHIEVE THIS?

My philosophy is holistic, sustainable and appreciation-oriented human resources work. Appreciation is my favourite term here. Because employees only genuinely feel good in a company if there is immaterial appreciation over and above the material. And communicating this is one of the main tasks, if not the most important task, of the leaders.

This is one of the reasons why RSRG launched the Leadership Academy two years ago. The participants receive a variety of suggestions on how they can be highly individual in leading, accompanying and coaching their team members. Here, too, there is an interesting parallel to customers: Both customers and employees are very individual in their needs and wishes and also want to be seen as individuals.

You can find the entire interview as a podcast in our online magazine.



THE RSRG BIM-TEAM

6 WORKING LOCATIONS

SWITZERLAND

GERMANY

AUSTRIA

UK

IRELAND

AUSTRALIA

LOTS OF JOBS

BIM Modeller, BIM Manager, BIM Coordinator, Reality Capture Specialist, Information Manager, Data Engineer, Digital Construction Engineer, GIS & Geo Data Specialist, Process- and Logisticplaner, Lean Manager

15

NATIONALITIES



Find out more about the BIM team at Rhomberg Sersa Rail Group in our online magazine.



THE BENEFIT OF DIVERSITY

How RSRG can support its customers even better with diverse teams.

50 EMPLOYEES OF 15 NATIONALITIES IN SIX COUNTRIES, 25% OF THEM WOMEN – THE RSRG BIM TEAM IS A PRIME EXAMPLE OF DIVERSITY IN THE WORKPLACE. WITH TANGIBLE BENEFITS FOR CUSTOMERS.

They are happier, more committed, more productive - while the members of RSRG's BIM Team come from very diverse backgrounds, they work together towards a common goal: To find the best possible digital solution to their customers' challenges. To this end, BIM managers work hand in hand with data engineers, process and logistics planners, lean managers and software developers. They come from Austria, Germany, Switzerland, Italy, Norway, China, Syria and Argentina. There are young people just starting out in their careers as well as old, experienced “hands”. These differences are the strength of RSRG's BIM Team.

The interaction between different ways of thinking, experiences, competences, backgrounds and

cultural influences, but above all the exchange and the fun of doing things together, promote our employees' motivation and ability to perform. Diversity is therefore a win-win argument for employees and employers - and not least for customers.

“We are significantly increasing the innovative strength and consequently the competitiveness of the Rhomberg Sersa Rail Group and are therefore able to offer our customers products and services that are precisely tailored to their needs,” concludes Ralf Sommer, Project Manager BIM Implementation. The many different perspectives on practically every topic and every challenge in his team lead to unusual, but also unusually effective solutions in a constructive exchange. In addition, the employees' diverse backgrounds and wealth of experience make it possible to adapt processes and structures precisely to the respective markets and customer needs.

**RHOMBERG SERSA
IRELAND RECRUIT
AND EXPAND**

RSIE carried out a record recruitment drive earlier this year, adding significantly to their Operator Team.



EDEL KENNEDY
Marketing und Communi-
cations Manager



From left to right: Marius Ciorba, Deborah Larkin, Mikey Landers, Donal Walshe and Liam McGlynn.

A TOTAL OF SIX NEW APPRENTICE ON TRACK MACHINE DRIVER OPERATORS (OTMDOs) JOINED RSIE IN MARCH AND BEGAN THEIR STUDIES AT THE IARNRÓD ÉIREANN / IRISH RAIL (IÉ) DRIVING SCHOOL.

The trainees were the greatest number of new team members to join RSIE on a single day, with the six adding significantly to the existing Operations Team.

The six - Deborah Larkin, Marius Ciorba, Donal Walshe, Mikey Landers, Liam McGlynn and Connor Nicoll - had an initial nine-week training period in the Driving School, where the focus was on general practical knowledge (GPK) and specific practical knowledge (SPK) of the railway regulatory infrastructure. The course was divided into blocks

of two-week periods of theory in the Driving School and one week of practical out road experience covering rules, regulations and scenarios. The theory part related to the Rulebook of which 17 sections are covered.

The trainee drivers must be proficient in their knowledge of routes, complex signaling systems, junctions, sharp bends and inclines within the rail network.

The Driving School has a driving simulator, where the students learned to drive and follow a route which is an exact duplicate of a section of track. The simulator sessions focused on emergency procedures, calls and events. The out-road experience gave maximum exposure to the rail network and the trainees completed logbooks for different driving scenarios.

On completion of the professional training and on passing all assessments, a train driving license - a European Train Driving License (EDTL) - was issued by the Irish licensing body, the Commission for Railway Regulation (CRR), to the train driver. The license is valid for 10 years.

After completing training in the Driving School, the new cohort returned to the Kildare Depot where they underwent intensive internal training supervised by the RSIE training department. The full training period can take up to 12 months to complete.

The new OTMDOs will build up experience in route knowledge, driving hours, driving by day and by night, entering possession, mixed in with traction knowledge before they become fully fledged drivers. The apprentices will be mentored and supervised with ongoing assessments to obtain their competency for each specific machine.

The hiring of the new contingent fits into the overall strategy of Hiring and Training, which is part of the RSIE continuous improvement plan and will assist in boosting productivity and give more flexibility in managing staff rosters.

**THE KEY
TO SUCCESS**

How Rhomberg Sersa Deutschland inspires its employees on the construction site with digitalisation.



ELISA-MARIE MÜLLER
BIM Manager



SUCCESSFUL IMPLEMENTATION OF DIGITAL APPLICATIONS IS A HUMAN RESOURCES TASK AT RHOMBERG SERSA DEUTSCHLAND. BECAUSE THESE TOOLS ONLY BENEFIT THE CUSTOMER WHEN THE CONSTRUCTION TEAMS ON SITE USE THEM EFFICIENTLY.

The recipe for success: "Take a large portion of courage, openness and interest, mix them in a ratio of 1:2 with communication skills, empathy... If only it were as easy as baking a cake," jokes BIM Manager Elisa-Marie Müller. The goal is to "turn those involved into participants" and to explain to them that the digitisation measures are an opportunity and not an expense. "To achieve this," says Müller, "they have to recognise the added value and urgency behind the innovations and be shown concrete possibilities for use in their everyday lives. We focus on the three areas of influence of any change project - communication, empowerment and culture."

Communication includes active listening and targeted information. Active listening makes it possible to grasp ideas, problems or concerns and to respond to what is being said in the conversation. In addition to the usual 'Wh' questions, providing employees with targeted information also makes it possible to explain what is expected of the employee and the framework conditions.

Empowerment focuses, for example, on workforce training. Furthermore, it is about supporting and involving the teams in the process to ensure implementation, to build trust through presence and to gain experience for the future.

Culture takes into account organisational structures and the value of employees as human beings. After all, change can only happen if it is in harmony with the values of the company's employees.

DEU

WORKFORCE TRAINING FOR THE FUTURE

Apprentices and trainees at Rhomberg Sersa Deutschland.



ANNEGRET SANGER
HR Business Partner

UNTIL A FEW YEARS AGO, TRAINING WAS A RATHER COMPANY-POLITICAL TOPIC THAT WAS OFTEN USED TO ENHANCE THE COMPANY'S IMAGE. BUT THINGS ARE DIFFERENT TODAY. WITH INCREASING DEMANDS, A SHORTAGE OF SKILLED WORKERS AND THE SHIFT IN TRAFFIC, THE COMPANY'S OWN "YOUNG TALENT" IS BECOMING MORE AND MORE IMPORTANT, ESPECIALLY FOR A TRACK CONSTRUCTION COMPANY LIKE RHOMBERG SERSA DEUTSCHLAND (RSD). JUST AS IT IS FOR ITS CUSTOMERS!

The German subsidiary of the Rhomberg Sersa Rail Group traditionally trains civil engineering and track construction workers. And other professions, too, depending on demand. The actual training takes place locally at the locations and is supervised by certified trainers on site. Therefore, it was of great concern to the HR managers to create a network for the apprentices that spans all locations, and thereby allow them to grow together in a cultural sense. And where is that easier than in a place where they live and work together?

For this reason, the RSD decided three years ago to centralise the inter-company training. At the inter-company training centre (UAZ) in Holleben, a site of Bau Bildung Sachsen-Anhalt e. V., the RSD guys (the company currently has only male trainees) work together on various tasks and in this way get to know and understand each other better.

The aim of these measures is to get young people excited about the training opportunities offered by Rhomberg Sersa Deutschland, to attract them to the

company and to retain them in the long term - with clear benefits for customers and, not least, for society as a whole.

The success confirms that those responsible were right: 20 apprentices are currently learning track construction at RSD's four locations throughout Germany. In addition, the team includes four students who are studying to become site managers. As one of the students sums it in a nutshell: "The experience I am gaining at RSRG makes me feel ready and well equipped for my professional future. After completing my studies, I can easily imagine working as a site manager for RSRG."



Rhomberg Sersa Deutschland networks its apprentices across sites at the inter-company training centre in Holleben.

GEARED FOR THE FUTURE

All Sersa Technik AG welding masters in Switzerland are SoW-5 L75 and SkV-Elite L25 certified.

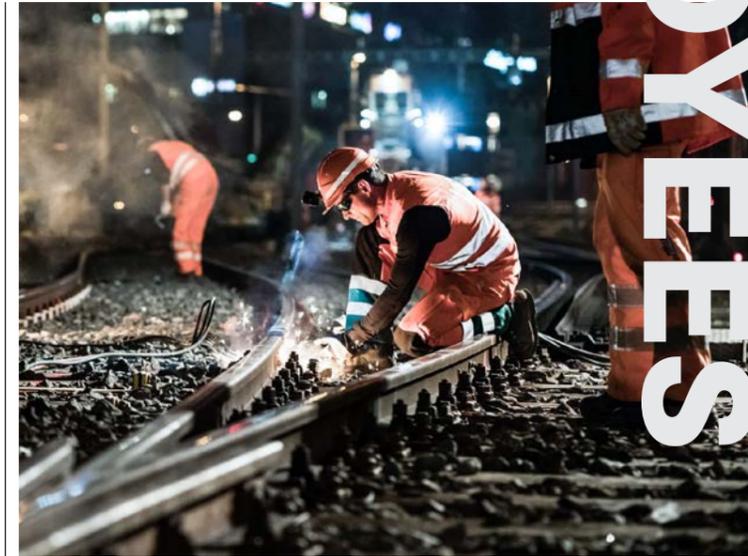


LUCIO DI BIASE
Division Manager Welding,
Sersa Technik AG

THE SPECIALIST TRAINING COURSE FOLLOWED THE APPROVAL OF ALUMINOTHERMIC WELDING WITH A WIDE WELDING GAP (GOLDSCHMIDT ELEKTRO-THERMIT SOW-5 L75) FOR THE ENTIRE NETWORK OF THE SWISS FEDERAL RAILWAYS (SBB) BY THE FEDERAL OFFICE OF TRANSPORT (BAV).

The method is reliable, robust and ideally suited for joining vignole rails in all types of operating tracks, at all speeds, with heavy-load traffic and, due to the short execution time, with high traffic density. The use of wide-gap aluminothermic welding not only optimises the construction process in the long term, but also offers customers other significant advantages:

- Replacement of defective aluminothermic welds with standard gap and flash-butt welds (without UT defects).
- Use when changing switch components (no need to weld over an existing weld or change the connecting rail).
- Use for tight welds.
- Using the new weld with a wide welding gap means that the following criteria must be met:
 - Rail profile EN 46E1, 54E2 and 60E1/E2 (no welds with profile change).



- Rail steel grade R260, R350HT and R350LHT (R370CrHT only for Sow-5 L75).
- Distance to nearest AT welding 4 metres.
- Distance to nearest EA welding 1.5 metres.
- Distance to insulation joint at least 4 metres.
- When replacing welds, it must be possible to completely remove the old weld bead for the welding gap.
- Distance of rail feet (inside-inside) in switches at least 120 mm.

The new aluminothermic welding process with wide welding gap (SoW-5 L75) impresses customers and specialists alike.

The Swiss market (Rhomberg Bahntechnik) successfully used the SkV-Elite L25 welding process in the Hardhof project of the Zurich City Transport Authority to the satisfaction of all parties involved.

As part of the SoW-5 re-examinations, further employees of the welding division of Goldschmidt Elektro-Thermit are trained in both welding procedures (SoW-5 L75 and SkV-Elite L25).

02

DIGITALISATION



MORE THAN BIM

Digitalisation along the project life cycle



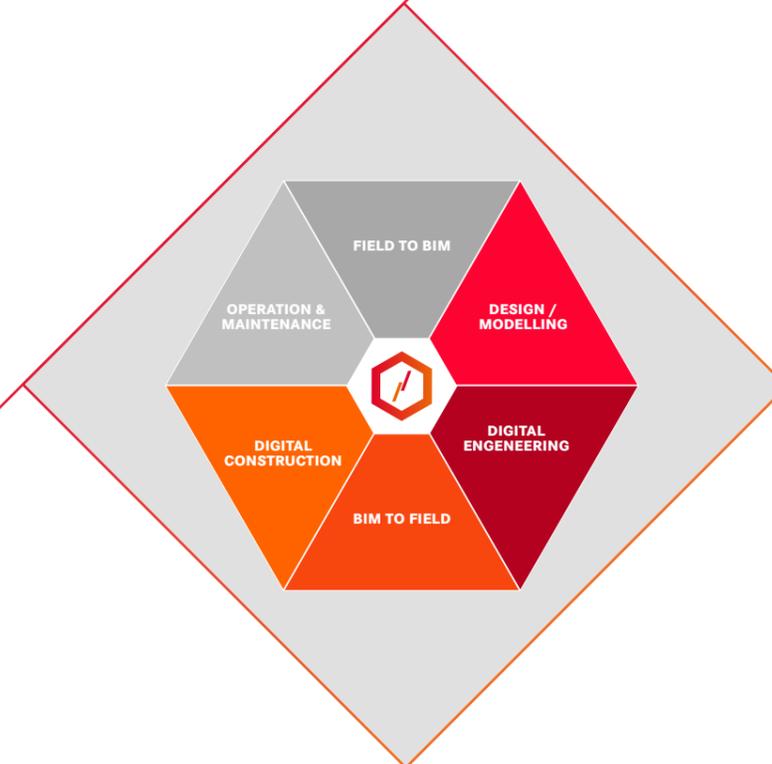
RALF SOMMER, Project Manager BIM Implementation (left)
MARCEL NOLTE, Leader Digital Rail Services (middle)
HELGE GRAFINGER, Project Manager R&D Reality Capture Projects (right)

IN ADDITION TO BIM, RSRG USES VARIOUS NEW TECHNOLOGIES TO OFFER CUSTOMERS THE BEST POSSIBLE SOLUTIONS AT EVERY STAGE OF THE PROJECT.

To ensure that the railway can perform quickly, reliably and safely, it needs perfectly coordinated systems: durable engineering structures, heavy-duty tracks, systems technology for energy supply, communication, train protection and trains that are designed to transport freight on the one hand but can also transport people at high speed on the other. The tasks and specialist disciplines in planning, construction and maintenance are diverse and require the coordination of countless interfaces.

To meet this requirement, Rhomberg Sersa has been using BIM and GIS as a "data container for geo and construction information" for several years.

For a "high performance" project, however, it is not enough to just use BIM in the planning phase. The model provides support in all phases of construction and increasingly in maintenance as well. Collecting this data in turn helps to optimise future planning. Therefore, it is important to think in project cycles and not merely in phases. RSRG does this and relies on "BIM/GIS along the life cycle".



FIELD TO BIM

As a construction company, RSRG is involved throughout the entire construction cycle in planning the construction process, controlling the constructed sections, creating the basis for their invoicing and handing over not only the final construction, but also a digital model to the customer, in order to enable efficient operation and maintenance. For all these tasks, the Reality Capture Team provides tools and services for digitisation - drones, laser scanners as well as software - which convert the point clouds into 3D models that are even accurate to within millimetres of their position on the ground.

In a further process, these point clouds are broken down into individual abstract objects that represent the various components. On the one hand, these objects can be assigned additional information - type, year of construction and other details - and on the other hand, they can be compared with their planned geometric relationships (models) in order to identify significant deviations.

MODELLING/DESIGN

The point cloud is only one of several sources to create a 3D BIM model. From a technological point of view, it is the means of choice for turning a snapshot from reality into a virtual model, where it serves the next process step with the information it contains. This can be an inventory at the beginning of the project planning work, a snapshot of the construction status or a final documentation of the work completed.

The 3D BIM model is the visible location of the data model of a project, equipped with individual objects as geometric representatives of reality. RSRG adds data and attributes to these objects throughout the entire project phase, which are relevant for the subsequent processes or for customers at the end of the project for data transfer.

Through programming and parametrics, RSRG can already automate many sub-steps of the modelling. So-called quality gates are then used to check the model at neuralgic process points for its conformity and technical content.

DIGITAL ENGINEERING

Particularly in short closure periods, planning the optimal construction sequence and construction method as well as the required resources is of critical importance for the success of the project.

The RSRG therefore relies on model-based process planning and simulation of construction processes in the "virtual sandbox". In future, the construction projects will be structured into their individual parts in the model (System Breakdown Structure - SBS) and linked in the software with the possible construction methods and their necessary work steps (Work Breakdown Structure - WBS). The individual work steps (sequences) contain information regarding the necessary resources (equipment and personnel). The duration of the individual work steps can be calculated using simulations based on the performance data of the equipment or using the effort values from experience. 4D visualisation means that everyone can quickly understand the construction task and the planning. A discussion about optimisation potentials very quickly arises among experienced professionals. In addition to visual optimisation, the RSRG can run simulations based on a data model that can be optimised for different KPIs such as time, costs, CO2 consumption, resource requirements etc.

More than BIM

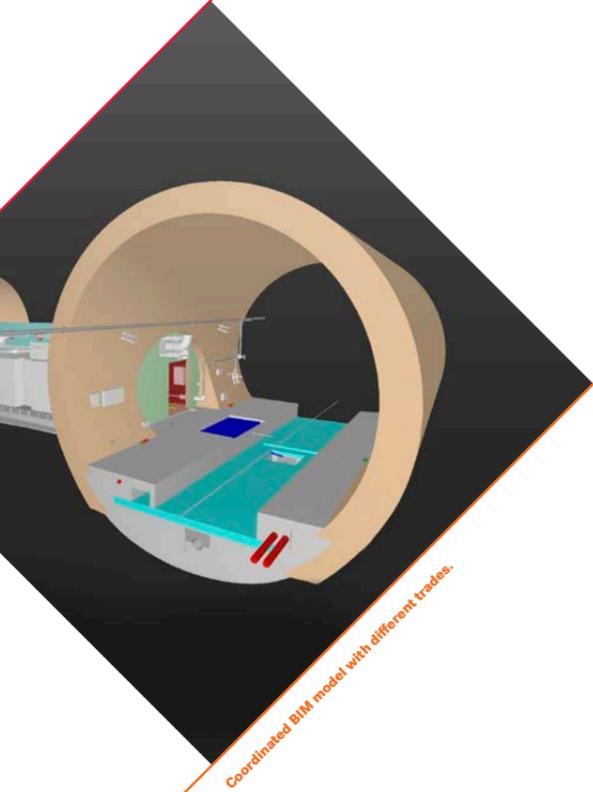
More than BIM

More than BIM

More than BIM

MACHINE CONTROL SYSTEM

As soon as the construction or design project has been finalised and agreed, all the relevant data for the setting-out work and the 3D machine control system are generated from the BIM model. Thanks to the work previously done in the modelling, the data is generated fully automatically, made available by the RSRG data platform for the respective project and can be used there directly by the respective equipment. The later comparison of the current data with the projected target data is also made available to the customer automatically and serves as part of the construction documentation.



Coordinated BIM model with different trades.

DIGITAL CONSTRUCTION

As part of the project implementation, many administrative tasks in construction site management arise in addition to the actual construction activity. For this, the RSRG relies on construction site management platforms that cover as many functions as possible – from digital construction logbooks and reporting to time recording, plan and model management, photo management, task management, schedule integration, structured documentation of construction progress and quality planning and management. Horizontal and vertical process integration on the platform closes system gaps and links teams, processes and information across organisational boundaries. The digital, systematic recording of construction site data provides customers with a good overview of the progress of the construction site. The analysis of the data improves future project preparation and implementation.



Road-rail excavator equipped with 3D machine control.

ROBOTICS

In addition to equipping classic construction equipment with machine control to support the equipment operator, the RSRG also pilots autonomous robots.

The first field of application is the drilling of holes for the installation of electrical equipment in tunnels. Several holes per metre have to be drilled in high-strength, reinforced tubbings. Marking and drilling are currently done manually. However, due to the position of the holes (ground and elm), as well as the vibration of the percussion drill, the work is ergonomically stressful for the employees. Therefore, in the future, robots will be able to take over this task.



Pilot: Autonomous drilling with the help of a robot.

MAINTENANCE MANAGEMENT

The BIM model, which is continuously updated throughout all project phases, represents the construction delivered in the form of an as-built model at the end of the project. This contains all building history data as well as the documentation for quality assurance on a project-by-project basis. The final survey documentation is also the basis of the geometric BIM as-built model. This means that, at the end of the project, the customer will receive a well-documented digital representation of what has actually been built.

You can find more information in our online magazine.



More than BIM

More than BIM

BIM IN OPERATION – WHAT WE LEARNED FROM OUR EXPERIENCE

SBB Weichenlos ('switch lot'): ever greater role of the New Cooperation Models.

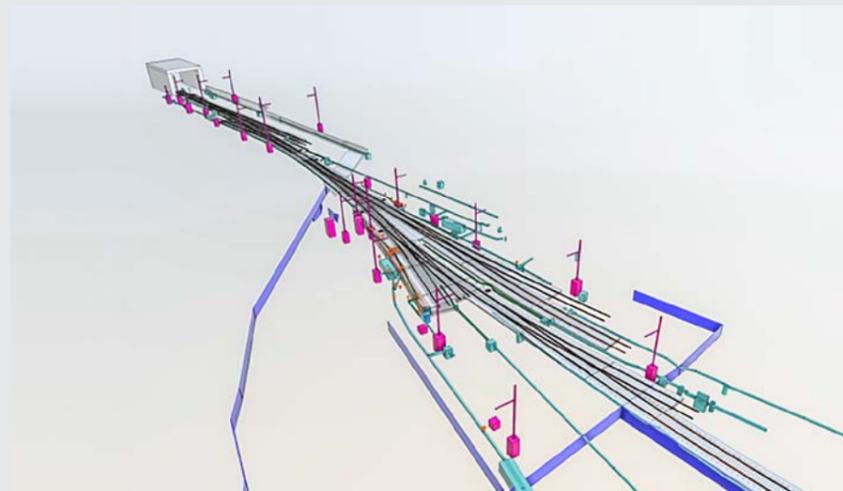
CHE



MARCEL NOLTE
Head of Digital Rail Services

SBB'S TRACK RENEWAL WORK IS INCREASINGLY BEING CONTRACTED OUT IN MULTI-YEAR FRAMEWORK AGREEMENTS. THESE FRAMEWORK CONTRACTS ARE HANDLED AS TOTAL CONTRACTOR PROJECTS, IN WHICH THE RSRG CAN DEMONSTRATE ITS FULL COMPETENCE IN PLANNING AND CONSTRUCTION.

With the contract to plan and build a total of over 400 switches within the SBB track renewal project, Sersa was the first railway engineering company in Switzerland to enter the "New Cooperation Models" (NCMs) segment. As a total contractor, the company carried out significant development work in various BIM applications along the entire process. The experience gained so far will also be incorporated into the next NCM project. While the option to extend the Weichenlos until 2024 has been granted, the next NCM project "TU Roadway Renewals 2024–2026 + Option" is already underway. Planning here is also being carried out with BIM. Time for a mid-term review:



As a total contractor with overall responsibility, we were able to develop a high level of understanding for the overall process and successfully optimise it in terms of the integration of the individual project phases. The BIM model with its project data has become the pivotal factor in project management. The data and information in the model are constantly updated and consumed by the system involved for each step of the process.

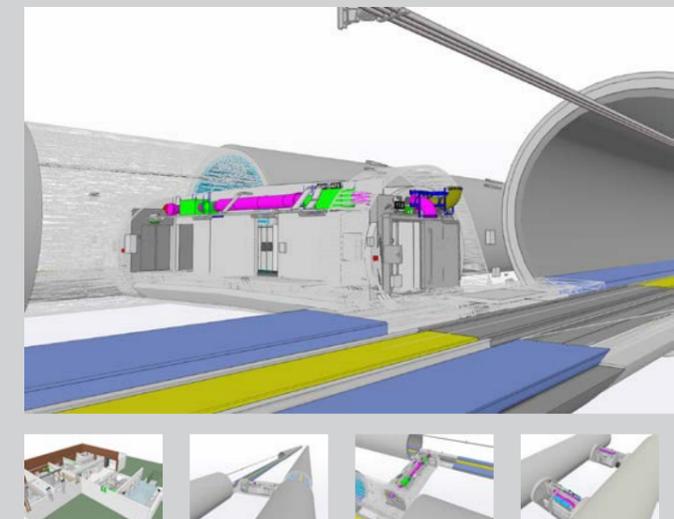
The process work in conjunction with BIM contributed significantly to a better project result for all those involved in the project. Today, those responsible know, for example, how the construction processes are being supported as early as the planning stage and which data is needed in the process for the next project phase and how it can be optimally provided. This helps to manage projects through each phase more efficiently and in a more targeted way. Customers benefit from stable processes and optimised quality. An added value for everyone.

Despite all the positive aspects, there are still major challenges in project management with BIM. The RSRG is more than happy to deal with this – for its own success and, above all, that of its customers.



Claus Salzmann
Technical Managing Director EDS 4.0

“WE ARE LOOKING FORWARD TO WORKING ON THE UPCOMING PROJECTS TOGETHER WITH THE RHOMBERG SERSA RAIL GROUP.”



AUT

DIGITAL TRANSFORMATION IN RAILWAY TECHNOLOGY

All details at a glance.



ROBERT KUMPUSCH
Managing Director
Rhomberg Bahntechnik

SINCE SPRING OF THIS YEAR, THE RHOMBERG SERA RAIL GROUP HAS BEEN A SHAREHOLDER IN EDS 4.0 GMBH, THEREBY BROADENING ITS EXPERTISE IN THE FIELD OF “DIGITAL TRANSFORMATION” OF RAILWAY SYSTEMS.

It has been known for many years that digitalisation will not stop at the railway industry. The Rhomberg Sersa Rail Group is therefore already doing everything it can to develop innovative concepts and use the latest technology. The most recent step towards the digital future: the RSRG's participation in the European Digital Services – EDS 4.0.

The Salzburg-based company specialises in the digitalisation of essential facility components, thereby supporting customers on their way towards digital transformation. Using 3D scans of existing facilities or 3D planning for new facilities, EDS makes the structure and all components, including the control system, visible at a glance – and immediately stores these 3D plans in a structured database that contains all the important information required for the operation and

maintenance of the facility. Ideally, all information is collected in a logical way during the construction phase, and the construction documentation is created concurrently.

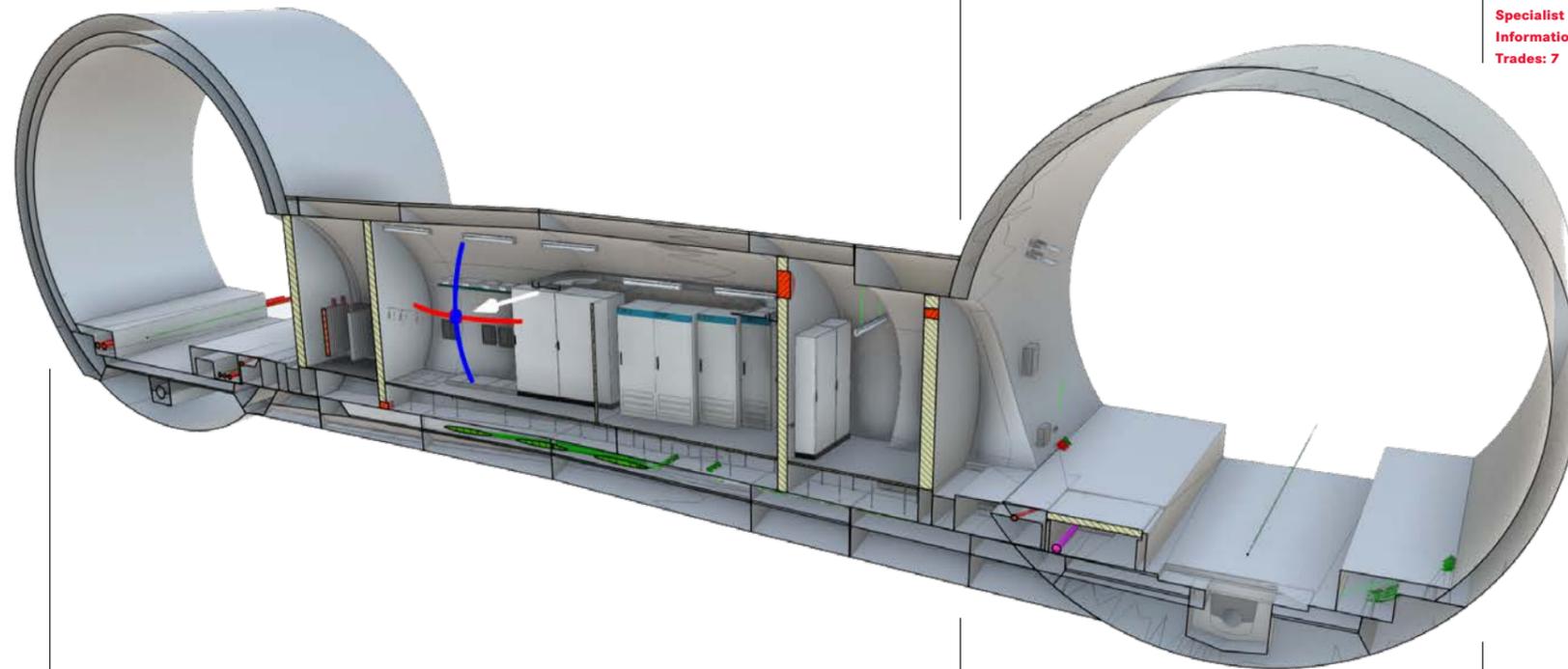
If a slider breaks, for example, the model immediately shows which supplier it comes from, what its properties are or where it can be reordered. The model also thinks ahead and alerts the user when a service is due in the near future. Another advantage: Using the 3D model, employees in charge of maintaining the facility can be trained virtually via so-called walk-in clips or move virtually through the model themselves.

By participating in EDS 4.0, the RSRG is increasing its competence in the field of digitalisation of railway systems and in digital transformation of electrotechnical processing – thereby providing customers with even more comprehensive services throughout the entire life cycle of their facilities.

AUT

KORALMTUNNEL MEETS BIM

The RSRG relies on modern technology and digital operations for the large-scale Austrian Federal Railways (ÖBB) project in south-eastern Austria.



ABOUT THE PROJECT

Project type: Railway construction equipment
Scope: 2 railway tunnels, approx. 35 km
Customer: ÖBB-Infrastruktur AG
Contractor: ARGE KAT GU2 Rhomberg – PORR
Performance period: 07/2021 – 10/2025
Order value: approx. 110 million euros
Specialist models [LOG]: approx. 2,100 units.
Information Content & Records [LOI]: < 100 000 units
Trades: 7



RALF SOMMER
Project Manager BIM Implementation

ALONG WITH ITS JOINT VENTURE PARTNER PORR, RSRG IS RESPONSIBLE FOR THE RAILWAY ENGINEERING AND EQUIPMENT OF THE KORALMTUNNEL, ONE OF THE LARGEST TUNNEL CONSTRUCTION PROJECTS IN AUSTRIA. THIS COMPLEXITY LED TO THE NEED TO BUNDLE EXPERTISE. TO ACHIEVE THIS, THE JOINT VENTURE PARTNERS USE INNOVATIVE AND FORWARD-LOOKING WORKING METHODS OF DIGITALISATION.

More specifically, PORR and the RSRG subsidiary Rhomberg Bahntechnik are using LEAN management and BIM. Together with the expertise of the partners and their decades of experience in operations, this creates holistic added value for their customer ÖBB Infrastruktur AG.

The use of BIM and LEAN management methods is indispensable in the cycle of project milestones, deadlines and construction realisation in order to ensure a transparent and structured procedure. Above all, both instruments score highly by simplifying the complex logistical construction processes as well as the ability to plan the execution processes at an early stage. The focus is on bringing together all stakeholders, the interfaces resulting from operational activities and the flow of communication.

To achieve this, modelling, planning and execution are brought together in an iterative process right from the start. Simulations can be cited as an example to ensure that the seven trades from the railway engineering equipment that are to be executed together do not collide. Agile project manage-

ment is needed to evaluate the results generated and to develop appropriate measures for implementation, which in turn are evaluated at regular intervals in LEAN meetings with the project team.

Using LEAN approaches, a project team of up to 25 people is working on the Koralm tunnel, supported by digital tools, on modelling, technical and overall coordination. In addition, the service portfolio also includes internal resource planning through to project controlling. As a common basis, a value concept was created that is based on the principles and values of the team – for example, reliability and transparency, combined with a common pioneering spirit.

The model-based working method, coupled with agile project management and the value con-

cept, leads to an improvement in the quality of planning as well as to an optimisation of the logistical construction processes, right from the start. We have already observed the first successes of this method of working: Based on the pre-defined prioritised sample cross-cuts, subject-specific facts were discussed and integrated and completed simultaneously in the three-dimensional space. Further down the line, the information generated and processed in the preparation phase of the model should also be accessible in the utilisation phase or in operation. The data is made available in a simplified and structured way. Furthermore, comprehensible data to assess the condition should be compiled and a basis for a superordinate reporting system should be created, which is handed over in the form of an as-built model.

03

MACHINES



MACHINE POWER

In operation worldwide.



You can find more information in our online magazine.



TRV #701

TRV #701

IRL

- owned by Iarnród Éireann Irish Rail, operated and maintained by RSIE
- Geismar Track Recording Vehicle
- will carry out inspection of the Iarnród Éireann/ Irish Rail (IÉ) network for potential defects
- designed to measure and inspect the track, rails conditions
- remote diagnostic and data recorder system



You can find more information in our online magazine.

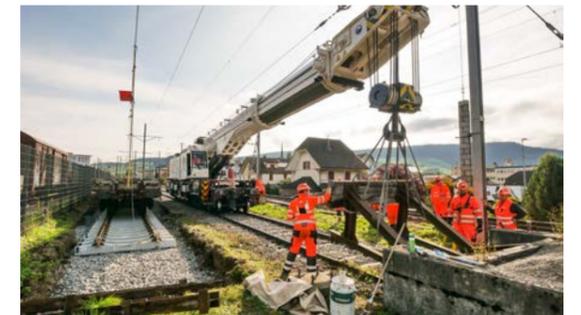


GEISMAR #724 #725

GEISMAR INSPECTION CARS #724 #725

IRL

- owned by Iarnród Éireann Irish Rail, operated and maintained by RSIE
- Self-propelled
- used for Iarnród Éireann/Irish Rail's (IÉ's) Perway Inspection Team to ride along the track under load and carry out a quarterly visual inspection
- advanced technology including sophisticated IT systems which allow for the track geometry measurements, as well as delivering leading ultrasonic capabilities



KRC 1200-2

KRC 1200-2

CHE

- value-added crane for standard gauge
- length of the crane composition: 47 metres
- rigged in 15 minutes
- profile-free work possible
- remote maintenance system



You can find more information in our online magazine.



KIROW KRC 500 CRANE #900

- owned by Iarnród Éireann Irish Rail, operated and maintained by RSIE
- high-capacity rail mounted crane for Iarnród Éireann/Irish Rail (IÉ)
- crane is able to operate on one track of a double line whilst train operations continue on the adjacent track
- can lift and carry longitudinally up to 30 tonnes of rail panels for relaying purposes on the line it is driving on



RM76 CAPRICORN

- 35.5 m over buffer
- weight: 124 t
- 839 kW engine power
- 8 powered axles
- speed: 60 km/h
- typical working performance of 200 m/h
- ballast cleaning: sieve with 3 decks
- 2.6 m minimum excavation width
- 4.2 metres maximum excavation width



CLIMATE-FRIENDLY

Rhomberg Sersa Rail Group invests in sustainably operated rail vehicles.

THE ACQUISITION OF THE TWO TRACK-LAYING MACHINES WITH E³ TECHNOLOGY AROUND THREE YEARS AGO LAID THE FOUNDATION STONE FOR THE RHOMBERG SERSA RAIL GROUP'S SUSTAINABLY OPERATED MACHINERY. LOCOMOTIVES WITH ENVIRONMENTALLY FRIENDLY DRIVES WILL NOW FOLLOW.

By the end of the year, five Alstom Prima H4 (Aem 940) locomotives in Switzerland and one Siemens Vectron Dual Mode in Germany and Austria will strengthen our fleet for freight transport and construction site logistics operations. The new locomotives all have a bimodal drive, meaning they are powered in an environmentally friendly way electrically by wire contact and, where there is none, by a modern diesel engine. In this way, the RSRG is not only supporting its own ambitious CO₂ reduction targets, but also its customers in helping them to achieve their own sustainability goals and enabling innovative and reliable rail transport concepts.

You can find more information in our online magazine.



FOCUS ON CLIMATE AND OCCUPATIONAL SAFETY

Carbon neutral, quiet and powerful work on construction sites, especially in tunnels.

AS A LONG-STANDING SWISS ROBEL REPRESENTATIVE, SERSA SWITZERLAND HAS BEEN DISTRIBUTING A NUMBER OF ROBEL INNOVATIONS SINCE THIS SUMMER, WHICH OPTIMISE CLIMATE AND OCCUPATIONAL SAFETY ON TRACK CONSTRUCTION SITES.

The proven, reliable Robel machines – the Battery Powered Drilling Machine 10.20, the Battery Powered Impact Wrench 30.20 and the Battery Powered Vertical Tamper 62.20L – which are powered by an identical 700-Wh battery and now also by a 400-Wh battery, can be found on many construction sites.

The ROBEL E³ brand now combines powerful battery technology with reliable mechanics. The Battery Powered Universal Power Wrench 30.82HKS E³ with a powerful 2300 Wh battery, the Battery Powered Rail Cutter 13.90 E³ and the Battery Powered Welding Joint Grinding Machine 13.45 MD E³ are new on the market.

You can find more information in our online magazine.



ITC-1

- excavating machine track and switch conversion
- year of manufacture: 2017
- weight: 40.9 t
- 14 km/h top speed
- average excavation capacity of approx. 100 m³/h



You can find more information in our online magazine.



ALSTOM PRIMA H4

- electric drive via wire contact; caterpillar diesel engine
- 3000 litre tank
- 18.75 m over buffer
- 120 km/h top speed
- power: 2000 kW electric via wire contact; approx. 900 kW diesel engine
- weight: 84 t (90 t with ballast)
- 80 m curve radius



WORLD FIRST MODIFICATION OF BALLAST CLEANER

The engineering change was carried out by Rhomberg Sersa Ireland (RSIE) as part of a joint taskforce with their client Irish Rail



EDEL KENNEDY
Marketing and Communications Manager

A TASKFORCE DELIVERED AN ENGINEERING CHANGE TO AN RM 90 BALLAST CLEANER TO MOVE THE TYPICAL OUTDOOR POSITION FOR AN OPERATOR, TO AN INDOOR POSITION. THIS WAS THE FIRST TIME THIS CHANGE HAD BEEN CARRIED OUT ON A BALLAST CLEANER.

The in-house change was part of a major project involving RSIE and their client, Iarnród Éireann / Irish Rail (IÉ), which focused on the ballast cleaner in order to identify, prioritise and deliver on improvements. The biggest engineering change carried out as part of the project was to relocate the operator from the outdoor C2 position to the driver's cab during ballast cleaning operations.

This modification was assessed to have a low monetary cost to implement but it increased the efficiency of the OTM while also increasing the cutting time between required breaks. It also reduced safety risks to operating staff. The operator would normally be expected to control the C2 station while walking alongside the OTM. This position left the operator continuously exposed to a dusty environment and adverse weather conditions for extended periods.

While the feedback from the wider rail community was that the change would not be possible, the RSIE engineering team believed that it was, pending being able to overcome one of the biggest challenges - the space restrictions within the cab. The window could not be obstructed while there also had to be sufficient space for a seat, an operating panel, as well as several monitors. The solution was a simple one - a swivel seat. This meant that while the seat was typically used as a guard seat, during operations it swivelled to become the operator's seat.

Outside, four cameras were installed with live footage fed to four monitors inside. The C2 operator's role is to redistribute good ballast and the live monitors allowed the operator to do this from the comfort of inside the cab. However, the control panel can be easily moved so that it is still available to be used outdoors for setting up, packing away and ramping in and out purposes.

A number of risk assessments were carried out and the team ensured there was full compliance with all safety and regulatory requirements. Ultimately the OEM design was not changed but enhanced with the original feature of operation unaffected and still available outdoors if required.



COMPREHENSIVE RETROFIT FOR THE B24C

The B24C metre gauge tamping machine again is state of the art.



MATTHIAS MANHART
Area Manager, Rhomberg Sersa Technology

THE SUSTAINABLE RETROFIT ENABLED US TO SAVE A CONSIDERABLE AMOUNT OF CO₂ WHEN COMPARED TO BUILDING A NEW MACHINE.

The B24C, which was built in 1991, has two tamping boxes that can be moved sideways to ensure optimum tamping of track and switches. The machine is often used on railways that can only be reached using road transport, as it is shorter and lighter than the large universal tamping machines of the B40UM type.

After a thorough examination of the machine and market clarifications, Sersa Maschineller Gleisbau AG made the decision to have the machine retrofitted by the machine manufacturer Matisa. The machine frame and the railway engineering components such as axles, bogies and traction/shock devices were in good condition and could be taken over. The clamp, the control system, the measuring technology and the entire electrical system were replaced with the latest generation. The hydraulics were adjusted and the cabins were given a refresh. A replacement diesel engine had already been overhauled and used before the retrofit. The guidance computer was replaced by SMG with a current version of "PALAS light" and the absolute guidance of the tamping machine was achieved with the aid of a tachymeter.

The machine went back into operation successfully in June 2021 after just under six months and was first used on the Gais-Altstätten line by the Appenzeller Bahnen in the rack. The tachymeter was used to measure the precise tamping of the track before starting. The team, led by the head machine operator Thomas Zimmermann, became familiar with the improvements quickly, and the new operating concept with touchscreen and joysticks demonstrated its worth right from the start.



GREATER EFFICIENCY FOR CUSTOMERS

The BBW Group has more to offer than just maintenance.



TIM WELLSCHMIDT, Head of Maintenance & Trade, JumboTec (left)
HANS-JÜRGEN STEINBRECHER, Head of Rail Vehicle Maintenance, Bahnbau Wels (right)

JUMBOTEC AND BAHNBAU WELS OFFER THEIR CUSTOMERS MUCH MORE THAN TRACK CONSTRUCTION SERVICES WITH THEIR OWN MACHINES, THEY ALSO PROVIDE MAINTENANCE SERVICES FOR SPECIALISED VEHICLES AND FREIGHT WAGONS. IN ADDITION TO THE COMPREHENSIVE MAINTENANCE SERVICES OFFERED BY THE TWO ECM-CERTIFIED COMPANIES, THE FOCUS IN THIS SEGMENT IS SHIFTING INCREASINGLY TOWARDS MORE COMPLEX PROJECTS.

By integrating the commercial and maintenance departments, the BBW Group offers its prospective customers a flexible catalogue of maintenance and conversion services for track-laying machines. Retrofitting a used machine is a resource-saving and value-enhancing alternative to buying a new machine. The services offered range from diagnostics and consulting to the complete or partial overhaul of machine components, expansion and modernisation, engineering and documentation, right through to customised basic refurbishment.

The BBW Group can build on years of experience in the reconditioning of tamping units from all manufacturers. This approach is not only economical and sustainable, but also makes it possible to address the individual needs of customers despite the standardised, time-saving process. Furthermore, replacement units are available for all common machine types, which considerably reduces the downtime of the machines.

In addition to the corresponding skills of the service technicians, modern operating facilities and equipment are important factors when it comes to carrying out such complex projects. The state-of-the-art technology is guaranteed in all facilities through ongoing new investments.

JumboTec and Bahnbau Wels are your guarantors for offering economical solutions and minimising downtimes. As such, both companies are able to get their customers' vehicles back on the road quickly.



STILL IN GOOD SHAPE

The legendary Re 420 of Sersa Schweiz presents itself in a new, dynamic outfit.



RUDI HOZI
Head of Customer and Market Support, Sersa Schweiz

FROM 1964 TO 1985, 273 UNITS OF THE LEGENDARY AND FAMOUS ELECTRIC UNIVERSAL FREIGHT AND PASSENGER LOCOMOTIVE RE 420 AND ITS SISTER TYPE RE 421 WERE BUILT.

The first unit of this proven electric universal rail locomotive from the Sersa Group is part of the Rhomberg Sersa Rail Group's new, Europe-wide image for mainline locomotives and promotes environmentally friendly rail transport, especially in the Alpine regions. Weighing 80/84 tonnes, the Re 420 is capable of speeds of up to 140 km/h, and with an hourly output of 4,700 kilowatts; since 2019, Sersa has been using it for fast transfers of its track-laying machines and for traction of heavy goods trains, as well as assisting other rail transport companies in guiding trains. More and more companies are discovering the advantages of environmentally friendly and efficient rail freight transport. The Sersa Group supports the realisation and implementation of innovative rail freight transport with various services – from providing locomotives and carrying out traction services to the construction and maintenance of sidings. The direct transport of the track-laying machines

enables the machines to be deployed on schedule at the various construction sites, thereby guaranteeing a high level of availability on the Swiss railway network. Thanks to good maintenance and corresponding ongoing modernisations, the state of preservation of the Re 420 is still very good. These locomotives, together with the RSRG's other services, contribute to sustainable freight transport throughout Europe.

04

PRODUCTS



INNO-
VATION

DEU

LMS

LOW-MAINTENANCE SUPERSTRUCTURE

RSRG combines the advantages of a ballast track with those of a slab track.



NORMAN KRUMNOW
Head of Innovation, Authorised Signatory

RAILWAY ENGINEERS HAVE DEVELOPED TWO FUNDAMENTALLY DIFFERENT SUPERSTRUCTURE SYSTEMS FOR TYPICAL MAINLINE AND BRANCH LINE TRACK CONSTRUCTION: THE CLASSIC BALLAST TRACK, WHICH HAS BEEN THE STANDARD SOLUTION FOR THE CONSTRUCTION OF RAIL-BOUND INFRASTRUCTURE FOR AROUND 200 YEARS, AND THE SLAB TRACK, WHICH WAS DEVELOPED AROUND 40 YEARS AGO AND HAS A FUNDAMENTALLY DIFFERENT STRUCTURE TO THE SCHO DUE TO THE INCREASED DEMANDS ON THE TRACK (AXLE LOADS, TRAIN SEQUENCE, SPEED ETC.).

Compared to slab track, ballast track has the advantages that it is 50-70% cheaper to produce, produces significantly fewer CO₂ emissions and has a very simple structure. The disadvantage of the system is that it has a floating bearing (sleeper on ballast) and thus allows settlements due to the dynamic loads from the train traffic. However, these track settlements can only be permitted up to a certain extent (SR Lim). As a result, the track structure must be tamped and straightened at specified intervals to ensure operational safety.



Lower investment costs and construction time than with slab track

On the other hand, the slab track has the advantage that its very rigid structure does not allow for any settlements, which means that the track gradient always remains constant. The maintenance and upkeep of slab track is therefore very low. Tamping and straightening slab track would be impossible from a structural point of view anyway. Compared to ballast track, the disadvantages of slab track include the 100-200% higher investment costs, the long construction period and the costly repair work in the event of an accident.





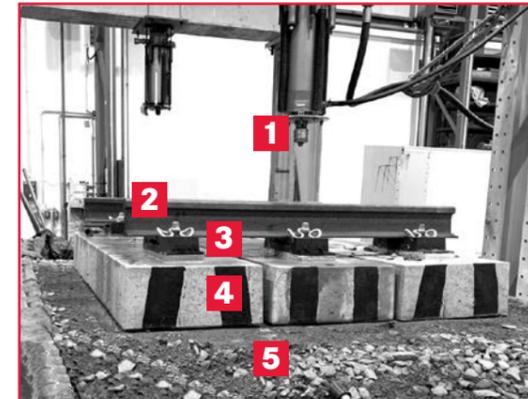
Very low maintenance and servicing

LMS BASIC IDEA AND DEVELOPMENT

There are therefore both advantages and disadvantages to both superstructure systems. The basic idea for the development of the LMS was to combine the advantages of both ballast track and slab track in a new superstructure system that uses existing construction materials and components approved by the Federal Railway Authority in order to condense the approval procedure, which is both time-consuming and costly.

The LMS structure consists of the components shown in Figure 1. This implements the requirements of the load-bearing structure of the railway body including the base layers in accordance with DB AG Guideline 836. On top of the formation protection layer, the broad gravel mixture with a grain size of 0/16 to 0/56 (KG 1 or KG 2) is then laid in three layers and compacted. The difference to the ballast track lies in the absence of the “classic” floating ballast storage. In the LMS, these tasks are fulfilled by the broad gravel mixture with a compression of 120-150 MN/m². IVES slab track components are used for the sleepers and rail fastenings. The RTS blocks are placed on the broad gravel mixture, the DFF 304 RS rail support points are aligned together with the rail on the track nominal gradient and grouted with a high-strength grout.

The advantage of the LMS is that the investment costs, construction time and construction risks are significantly lower than those of a slab track. The maintenance effort is also considerably reduced as the superstructure is not floating and the broad gravel mixture has a lower surface load due to the use of wide sleepers. The usual tamping and straightening work is no longer necessary.



1 Hydraulic test cylinder | 2 Rail 60E2
3 Rail support point DFF 304 RS | 4 IVES block
5 Broad gravel mixture 0/32 or 0/45; KG1 or KG2 (here greywacke 0/45 KG2)

OUTLOOK AND GOAL

The RSRG has applied for a patent for the new LMS superstructure system at the European Patent Office and is currently undergoing a large number of approval tests (see illustration) in cooperation with the Technical University of Dresden. Due to the promising and positive test results, the engineers responsible are aiming to apply for approval for operational testing by the Federal Railway Authority at the end of the fourth quarter of 2022.

The new LMS has the potential to gradually establish itself as a new, low-maintenance track construction system among railway infrastructure companies as a result of the expected climate changes and thereby enable more sustainable and environmentally conscious construction and operation of railway transport facilities.

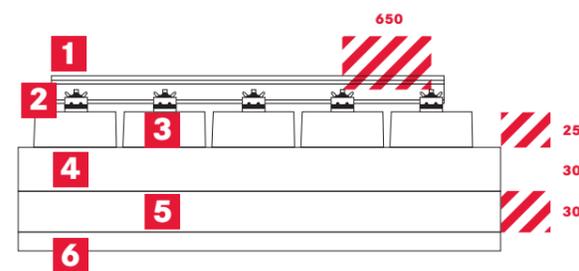


Fig. 1: Example LMS structure (longitudinal section)
1 Rail | 2 Rail fastening DFF 304 RS
3 IVES block 2400 mm x 620 mm x 250 mm (L x W x H)
4 Broad gravel mixture 0/16 - 0/45 (crushed material)
5 Formation KG 1 / KG 2 (depending on the earthwork / substructure)
6 Earthwork/substructure (load-bearing)



No settlements / constant track gradient

LMS

CUSTOMER BENEFIT IN FOCUS, THE FUTURE ON OUR MIND

An overview of RSRG's
product portfolio.



TORSTEN BODE
Head of International Product Management and Sales



AS A LEADING INTERNATIONAL RAILWAY ENGINEERING COMPANY, THE RHOMBERG SERA RAIL GROUP HAS MUCH MORE THAN SPECIALISED EXPERIENCE IN COMPLEX RAILWAY CONSTRUCTION PROJECTS, A HIGH AFFINITY FOR FINDING SOLUTIONS AND A STRONG ENTREPRENEURIAL MINDSET. IN FACT, THE DRIVEN RAILWAY TECHNOLOGY SPECIALIST HAS ALREADY BROUGHT NUMEROUS INNOVATIONS TO THE RAILWAYS. MANY OF THESE ARE NOW STANDARD FOR TRACK RENEWAL AND MAINTENANCE:

RAILWAY

IVES

The slab track system is intelligent, versatile, efficient and solid, enabling the replacement of essential components even after installation. This ensures easy maintenance and setting. In addition, the system impresses with its very fast and uncomplicated installation for project realisation in the shortest construction time windows, its simple construction site logistics and high scalability. No special machinery is required. Reliable lifting and straightening systems and process tools for efficient installation are a useful addition to this process. The system has already proven its specific advantages in a large number of projects, for example in the networks of Deutsche Bahn/DE, Network Rail/UK, Rhätische Bahn/CH or Inland Rail/AUS.

Find more information about IVES here.



SLS SECOND LIFE SYSTEM®

The patented RSRG process extends the service life and ensures that the internal track geometry of wooden sleeper tracks and turnout sleepers is restored through simple but durable reconditioning of worn-out screw holes. It is environmentally friendly, sustainable and ensures simple and safe execution of the work steps thanks to tried-and-tested; coordinated components from a single source. Since the system was introduced, many thousands of track and turnout sleepers have already been safely and sustainably rehabilitated using the SLS process.

You can find more information about SLS Second Life System® here.



V-TRAS

The clever design considerably simplifies the design of junctions between different superstructure and substructure forms and reliably prevents differential settlements in the interface area. It can be easily installed, easily maintained and is durable. In addition to multiple installations in the networks of Network Rail/UK and the Rhätischen Bahn/CH, there will also be an installation in the network of Deutsche Bahn/DE in the Stuttgart 21 project in 2022.

You can find more information about V-TRAS here.



HANDRAILIT

Intelligent technology in a compact design: The product is a modern and robust orientation and guidance system for railway tunnels designed for effective escape route illumination. Installation is intuitive, fast and efficient, plus installation performance is scalable through automation.

Find more information about HandrailIT here.



RAILIUM

Developed by the RSRG and BOOM GmbH, RAILium is a unique software solution to achieve complete transparency about rolling material, personnel and the processes of the digital railway construction world – interface-free. The tool supports resource planning, operational tasks, asset management and damage vehicle management, helping to make all processes faster and more efficient. The solution is also fully ECM compliant.

You can find more information about RAILIUM here.



CONTACT PERSON:
TORSTEN BODE
Head of International Product Management & Sales
torsten.bode@rsrg.com

NXRT RAIL SIM

Developed by Vienna-based Nekonata XR Technologies GmbH, the Train Driver Simulator revolutionises the training of train drivers and others involved in train travel through the use of unique mixed reality functionality, multi-user capabilities and a highly customisable gaming environment. The high degree of realism increases the practical relevance, improves learning success and contributes to a permanent increase in attraction to the profession of train driver.

Find more information about NXRT here.



DPROB

Visualisation and simulation of construction projects and processes in a virtual environment: Unique approach to creating a multidisciplinary dialogue right from the early stages of the project and important basis for avoiding interface problems as early as the planning stage. Enables the systematic consideration of variants of work processes on construction sites as well as their structured and sustainable optimisation and forms an innovative basis for securing and further developing knowledge.

Find more information about dProb here.



CONTACT PERSON:
RALF SOMMER
Project Manager BIM Implementation
ralf.sommer@rsrg.com

BACKGROUND: THE 'WHY'!

As a reliable and forward-thinking partner for public and private railway companies, the RSRG always focuses on customer benefits when developing new products. High economic efficiency and quality of the products are just as important as sustainability and promoting rail as the most attractive mobility solution. As well as optimising its efficient and successful range of services in the familiar areas such as mechanical and commercial track construction, equipment and energy supply, and large-scale projects, the RSRG is therefore consistently working to be able to offer our customers an interesting portfolio of innovative products that is always state of the art. To this end, an important concept is at the forefront of product development from the outset: the 'why'! What specific problems and challenges will we be able to solve for our customers with our product? Why will they put their trust in the services of the Rhomberg Sersa Rail Group?

Benefits and advantages can be completely different for different customer groups for one and the same product. As the RSRG becomes more familiar with these benefits, it can optimise not only its products, but also its entire business activities and cooperation with customers and partners.



05

ON SITE



^{AUT} **KORALMTUNNEL COMPLETE**

From supply to commissioning –
the RSRG provides everything
from a single source



**THE KORALMBAHN WITH ITS CENTREPIECE, THE KORALMTUNNEL, IS
ONE OF THE MOST IMPORTANT INFRASTRUCTURE PROJECTS IN EUROPE.**

This is also the opinion of the Austrian Federal Railways (ÖBB), which is ensuring that passengers will be able to travel faster, more comfortably and right through the mountain massif from Graz to Klagenfurt in the future. And for the Rhomberg Sersa Rail Group, this significant section of the new southern line in Austria is a prime example of what a broad-based rail technology service provider can achieve for its rail customers: Four RSRG companies are working there: Rhomberg Bahntechnik, RK safetec, Universale Bau and Rhomberg Fahrleitungsbau from the BBW Group.



ABOUT THE PROJECT
 The Koralmbahn (originally called the Koralmbahn) is currently the largest project under construction to expand the Austrian railway network. The central part of the international rail transport corridor – the Baltic-Adriatic Corridor from Gdansk (Poland) to Bologna (Italy) – enables direct travel from Graz to Klagenfurt for the first time.

“Of course, we are working closely with many competent and high-quality partners on the Koralmtunnel/Koralmbahn project. But our range of services for this prestigious project gives a very good overview of what we are capable of achieving”, says Thomas Bachhofner, CEO of the Rhomberg Sersa Rail Group, proud of his team’s achievements. Especially since the customer has been absolutely delighted with the performance so far: Rhomberg Bahntechnik has already been awarded construction sections. “We have already taken on tasks such as the delivery of the overhead line support points or the manufacture and operation of the construction temporary structures in the first phase. The second phase will directly benefit the installation of the railway equipment, i.e. all cable construction services, telecommunications, energy and safety technology, mechanical equipment and construction services such as breakthroughs and metal construction,” explains Robert Kumpusch, Managing Director of Rhomberg Bahntechnik.

As a result, Rhomberg Bahntechnik is now responsible for the construction and commissioning of the slab track in a joint venture, as well as all other construction measures through to the commissioning of the 33-kilometre-long Koralmtunnel. Thanks to its ZOKA system, RK safetec ensures secure access, localisation, communication and alarming in the construction area and thus decisively for the temporary construction infrastructure. The challenges outlined, apart from the dimensions of the project, include the handling of the remote BE area and the integration of the existing infrastructure from the shell construction.

Together with a joint venture partner, Universale is providing support with the construction of ballast and loading tracks, wash tracks, switches around the stations in Wettmannstätten



and St. Paul im Lavanttal, as well as the use of a gantry crane to lay the sleepers and concrete slabs. The future dismantling of the loading tracks is also the responsibility of the commercial track construction specialist in the Rhomberg Sersa Rail Group.

Rhomberg Fahrleitungsbau was awarded contracts by the developer for the installation of the overhead line from the Jauntal bridge up to and including the Lavanttal train station, the equipping of the approximately six-kilometre-long Granitzaltunnel with an overhead conductor rail and support for the installation of a traction current supply system for the Koralmbahn. The Klagenfurt switching stations and the Grafenstein and Lavanttal substations made notable contributions here.



“OUR RANGE OF SERVICES FOR THIS PRESTIGIOUS PROJECT GIVES A VERY GOOD OVERVIEW OF WHAT WE ARE CAPABLE OF ACHIEVING.”

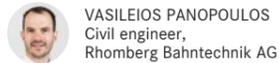
Thomas Bachhofner
 CEO, Rhomberg Sersa Rail Group





CHE RENEWAL OF THE BOMMERSTEIN TUNNEL

The RSRG takes its role as a full-service provider seriously.



VASILEIOS PANOPOULOS
Civil engineer,
Rhomberg Bahntechnik AG

SBB ARE THINKING 30 YEARS AHEAD FOR THE DOUBLE-TRACK BOMMERSTEIN TUNNEL NEAR WALENSTADT (SG). THE RSRG GETS DOWN TO WORK.

The Bommerstein Tunnel (458 m) is an important part of the Zurich–Chur railway line. The project was triggered by the need to ensure clearance for the EBV-S2 setpoints, which has to be achieved by setting tracks lower. In addition, stabilisation, environmental protection and equipment measures in the tunnel and near the portal were put out to tender. At the end of 2019, the RSRG was awarded the CHF 19 million project as the sole bidder and will ensure that it is realised according to plan and on schedule.

The comprehensive tunnel refurbishment is taking place with one track in permanent operation. 2021 saw the renewal of the lakeside track with traffic operation over the mountain track; in 2022, this is the other way round. A protective wall along the centre of the tunnel separates the construction and operating tracks.

The project is nearing completion. The work on the tunnel is now finished. The wing walls are currently being repaired. The project will be handed over to SBB at the beginning of November and the line will be fully operational again from the timetable change in 2022.

With the completion of this important transport facility, the RSRG once again proves that it provides a wide range of services in railway engineering: From tunnel refurbishment and canal construction to safety and equipment, it offers its customers a one-stop solution for the modernisation of their infrastructure.

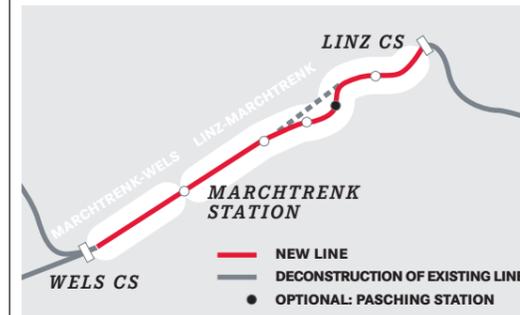
Even in the turbulent times of the last two years, the RSRG has established itself as a reliable partner and stepped in successfully when the unexpected happened. All thanks to their employees, who have the expertise and flexibility to meet ever-changing demands.

AUT WESTERN RAILWAY – FOUR-TRACK EXTENSION LINZ–WELS

Bahnau Wels together with a joint venture partner is awarded a large-scale superstructure project by ÖBB-Infrastruktur AG.



WOLFGANG STROISSMÜLLER
Managing Director,
Bittner Bahn- und Gleisbau



IN MARCH 2022, WORK STARTED ON THE SUPERSTRUCTURE FOR THE UPGRADING OF THE MARCHTRENK-WELS SECTION OF THE LINZ-WELS WESTERN RAILWAY LINE. BAHNBAU WELS IS ON BOARD.

The project is the last important section of the four-track extension of the Vienna-Wels western line. The construction phase includes the new construction of around 100 km of track and around 95 switches in the period from 2022 to 2028; this will increase the line capacity and the maximum speed of the line.

The construction site is to be cleared in 2022. By the end of the year, Bahnau Wels and its joint venture partner will have to remove around 15 km of track and some switches in the Wels-Marchtrenk section of track. In order to maintain train operations on the western line, temporary track systems and switches have to be continuously installed.

You can find more information in our online magazine.



AUT CONSTRUCTION SITE LOGISTICS SERVICE PACKAGE

First assignments successfully completed.



MUAMER ZAHIROVIC
Deputy Manager
Track-laying machine deployment, Bahnau Wels



PURCHASING THE LOCOMOTIVE LAST YEAR EXPANDED THE MECHANICAL RESOURCES OF BAHNBAU WELS IN CONSTRUCTION SITE LOGISTICS. SINCE THEN, THE VECTRON X4-DE HAS ALREADY BEEN USED SUCCESSFULLY IN LOGISTICS OPERATIONS.

Bahnau Wels has been able to demonstrate its strength in construction site logistics in several projects. In addition to using the logistics vehicles such as the VECTRON X4-DE locomotive for transporting machines and materials to and from the construction projects, they are also used for transport tasks within the project areas. In addition, Bahnau Wels provides specialists such as logistics experts, work train drivers and wagon masters to ensure that the transport tasks are carried out smoothly. All in all, Bahnau Wels is able to offer its customers a comprehensive package within the scope of project management.



INNOVATIVE WORKING PLATFORMS

Maintenance builds 102 modular work platforms for Swiss customers.

- 1 Work platform with high railings
- 2 Work platform with railing
- 3 Work platform with low railing



RAHEL REINHARDT
Project Manager Maintenance,
Sersa Group AG

AT THE BEGINNING OF 2022, MAINTENANCE MARKET IN SWITZERLAND WON AN ORDER FOR 102 NEW WORK PLATFORMS THAT WILL OFFER CUSTOMERS THE GREATEST POSSIBLE FUNCTIONALITY AND FLEXIBILITY TO IMPLEMENT FUTURE PROJECTS.

Thanks to its modular design, the work platform can be used without side walls, with high or low walls and with or without railings.

In addition, the platform is able to meet different operational requirements. The base frame can be used unconditionally, for example, up to a load of 25 kN as well as a square metre load of 6 tonnes and a temperature fluctuation of -40 °C to +60 °C. It is also possible to stack up to eleven base frames for space-saving transport or storage. The platforms are manufactured according to machine guidelines and have CE conformity. This means they have multifunctional applications and can be used with great flexibility.

AN EXCITING CHALLENGE

Rail grinding in an oxygen-reduced environment.



CHRISTIAN BOESCH
Project Manager Maintenance,
Sersa Technik AG

THE HIGH-RISK WORK WAS CARRIED OUT BY SERA TECHNIK AG ON BEHALF OF LONZA AG IN VISP, SWITZERLAND, IN ITS HIGH-BAY WAREHOUSE FOR FLAMMABLE, CORROSIVE AND HIGHLY EXPLOSIVE CHEMICAL MATERIALS.

In such high-risk areas, efficient fire protection is essential. The high-bay warehouse is operated with low oxygen levels, where the

oxygen is set at 17 vol.% to prevent sparks. Access is only granted to persons with a medical certificate (ECG). The inspection must be carried out with breathing apparatus.

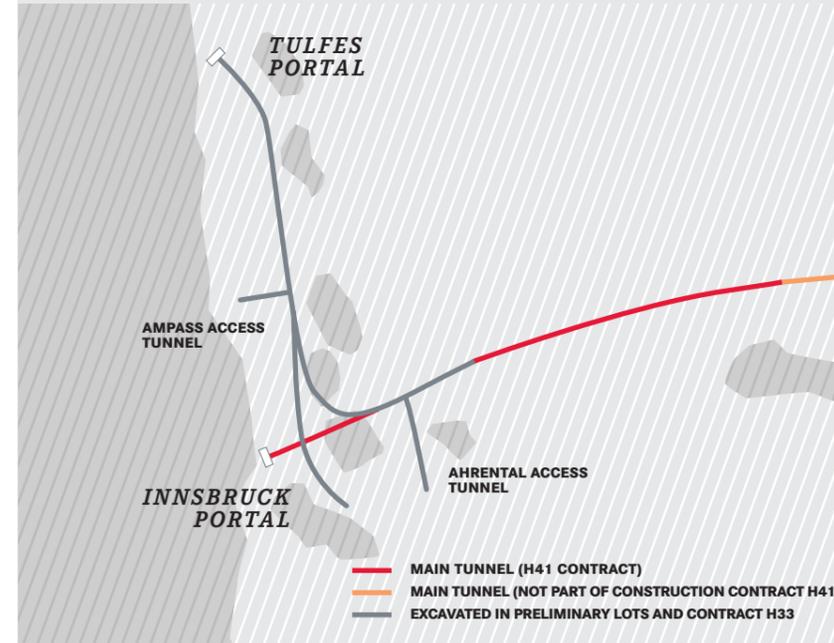
The worn rails as well as the burr formation at the head had to be processed with existing machines. The burr machining under the head was a challenge, as a machine had to be specially redesigned for this purpose. In addition, the effects of the reduced oxygen on the human body became apparent: They experienced yawning, fatigue, dizziness and headaches, which is why, according to the applicable law, only three assignments of two working hours each are allowed per day. Despite this, the work was successfully completed after three shifts: All rails were reprofiled and the control units were serviced.

CUSTOMER FOCUS

FROM THE START



STEPHAN OTTERSBACH
Managing Director,
RK safetec



years. Now, the company has just received its sixth order: In February of this year, the safety experts received a follow-up order from the H41 Sillschlucht-Pfons consortium (Implenia, webuild, CSC costruzioni) for the section on the Austrian side.

The H41 contract includes the main tubes from the Ahrental access tunnel heading north to Innsbruck and south to Pfons. Around 5.7 kilometres will be constructed using conventional methods and approximately 16.4 kilometres using a tunnel boring machine. In addition, there is the interior work on the main tubes, the Innsbruck emergency stop and the exploratory tunnel.

Since the RK safetec equipment was also used in the previous H33 project, those responsible for the new order had to take over part of the system, adapt it

More information:
Construction progress of Brenner basis tunnel
(btt-se.com)



RK safetec was founded twelve years ago with the start of the Brenner base tunnel project.

THE UNTERINNTAL ROUTE, KNOWN AS THE "BRENNER BASIS TUNNEL ACCESS ROUTE", AND THE BRENNER BASIS TUNNEL ITSELF ARE BASICALLY THE FOUNDING PROJECTS OF RK SAFETEC. AND THEY HAVE BEEN CONSTANTLY AND RELIABLY BY THE SIDE OF THE SPECIALIST FOR CONSTRUCTION SITE SAFETY IN THE RHOMBERG SERA RAIL GROUP EVER SINCE.

RK safetec's first order for the ZOKA system was placed in 2010, with four more over the next twelve



and supply the necessary components for the expansion of the main tubes. It is almost a matter of course that the well-known and proven ZOKA system was and is used again. A lot of know-how is needed for the required radio system: In addition to GSM coverage (public), a TETRA radio system for emergency services and a 70 cm analogue radio system for the fire brigade are required in the tunnel system. In addition, there is WLAN coverage and a complex fibre-optic (light waveguide) network infrastructure due to the branched pipe system.

AUS

CROSS RIVER RAIL

Brisbane's new underground rail line



RICHARD MORGAN
Managing Director,
RRA



Two rail or wheel bound remote controlled mobile gantry cranes designed to lift and place the 7.5 tonne floating slab track units to be used on the Cross River Rail project.

RHOMBERG RAIL AUSTRALIA (RRA) IS PROUD TO SUPPORT DELIVERY OF THE CROSS RIVER RAIL PROJECT, BRISBANE'S NEW UNDERGROUND RAIL LINE.

Cross River Rail will unlock the bottleneck at the core of the Southeast Queensland rail network and enable a turn-up-and-go transport system. It is a critical public transport infrastructure project which will improve quality of life, help the economy keep growing, generate thousands of jobs, and activate urban development.

RRA will construct the track slab within the Cross River Rail tunnels. A total of 11 kilometres of ballastless track slab will be built underground, adopting a combination of specialist systems including floating track slab.

RRA has worked closely with sister company RKR Engineering to design, manufacture, test and commission two specialist concrete placement units. These will pump and place the fibre-rein-

forced concrete needed for track slab formation in each tunnel. The machines have been assembled, tested and commissioned ready for delivery to the project in early April.

Work is underway on the project with the first stage of flashbutt welding works and the first of two ballastless test tracks successfully completed. Assembly and testing of the two new purpose-built remote controlled telescopic mobile FST gantry cranes has started, ready for the upcoming installation of the 7.5 tonne floating slab track blocks.

The team has worked hard amid the pandemic and recent flood events. Now tests are complete, ballastless track slab construction is planned to commence in May 2022. The entire Rhomberg team is extremely excited to be a part of this game-changing project.

CHE

MAJOR PROJECT IN WESTERN SWITZERLAND

The RSRG successfully contributes extensive expertise to the Alpiq.



JEAN-BAPTISTE BASCH
Site Manager,
Rhomberg Bahntechnik AG



BETWEEN 2017-2019, THE RSRG WAS INVOLVED IN CONSTRUCTING THE NEW CEVA (CORNAVIN, EAUX-VIVES, ANNE-MASSE) CROSS-BORDER RAILWAY LINE.

CEVA consists of a double-track tunnel (9 km) under Geneva city centre, four stations and two bridges. The joint venture works included constructing various mass-spring systems as well as slab track in tunnels and on bridges. The total contract of around CHF 80 million also included installing overhead contact wires, cables and handrails.

As the overall coordinator, the RSRG was responsible for the railway equipment from the implementation planning to the construction and commissioning, and coordinated deadlines, costs, quality, environmental concerns and occupational safety to the complete satisfaction of the customer.

In the CEVA lighthouse project, the RSRG and especially the Swiss market were able to optimally deploy their joint competences, thereby further strengthening their position in western Switzerland.

CHE

ANOTHER MILESTONE

Sersa Süd renews the Monte Generoso rack



STEFANO ROSSI
Managing Director,
Sersa Süd



THE THIRD STAGE OF THE RENOVATION OF THE CAPOLAGO – MONTE GENEROSO RACK RAILWAY IN TICINO (SWITZERLAND), PLANNED IN FOUR STAGES WITH THE OPTION OF A FIFTH, WAS SUCCESSFULLY IMPLEMENTED ON TIME FROM 15 NOVEMBER 2021 TO 25 MARCH 2022.

The works included the renewal of two switches and 700 m of track at Vetta, followed by San Nicolao station with two switches and 2040 m of track towards Capolago. The early onset of winter with snow demanded maximum flexibility and expertise in execution. The sequence of construction work had to be adapted to the weather conditions in order to keep to the planned 83 days of operation. Fortunately, the weather cooperated and favoured the work with 118 consecutive rain-free days. Thanks to a new design concept that also allows the ballasting and tamping from the top down, it was also possible to almost double the daily production.

You can find more information in our online magazine.



FIN
**TAMPING WORK
 ON FINNISH SOIL**

JumboTec awarded contract in the far north.



SEBASTIAN KLOTZ
 Construction Manager,
 GBM JumboTec



JUMBOTEC HAS OFTEN BEEN ABLE TO SECURE ATTRACTIVE TRACK CONSTRUCTION PROJECTS IN THE FAR NORTH. LAST SPRING, THE COMPANY WON A CONTRACT FOR THE HIGH-SPEED TRAM PROJECT RAIDE-JOKERI, ABOVE THE CAPITAL CITY OF HELSINKI.

JumboTec is responsible for the tamping work in a total of nine sections in this project. The Matisa B20 narrow-gauge tamping machine (1000 mm gauge) has been used to carry out the work since mid-September last year.

The excellent cooperation with the customer NRC Group / Raide-Jokeri Light Rail deserves a special mention. The first sections have already been completed and handed over with the customer's approval.

You can find more information in our online magazine.



DEU
**LINDAU-REUTIN
 STABLING FACILITY**

Bahnbau Wels once again proves its capabilities in a major DB project.



HANNES STEINER
 Construction Manager,
 Rhomberg Gleisbau



TOGETHER WITH A JOINT VENTURE PARTNER, BAHNBAU WELS WAS ABLE TO WIN THIS MAJOR PROJECT. AFTER ABOUT TWO YEARS OF CONSTRUCTION, IT WAS COMPLETED AND HANDED OVER TO THE COMPLETE SATISFACTION OF THE CUSTOMER DB NETZ AG.

The work carried out is part of the "bundle of measures at the Lindau railway junction". Bahnbau Wels was responsible for the project and construction management as well as the execution of the work. The company was able to prove the quality of its services especially when it came to the dismantling of the existing facilities and the construction of the new track and switch positions. Excellent cooperation with DB Netz AG once again proved its worth, especially as the contract also included implementation planning. The Lindau-Reutin stabling facility was completed and handed over to the customer's complete satisfaction.

You can find more information in our online magazine.



DEU
**IMPROVING
 THE QUALITY
 OF LIFE**

Rhomberg Sersa
 Germany rebuilt one of the main links in Leipzig.



MARCUS MAROTZKE, Senior Construction Manager (left)
 THOMAS DOEHLER, Construction Manager (right)



LÜTZNER STRASSE IS THE MAIN CONNECTION BETWEEN GRÜNAU, A NEW DEVELOPMENT DISTRICT TO THE WEST, AND LEIPZIG'S CITY CENTRE. 10,000 VEHICLES USE THIS ARTERIAL ROAD.

It is six kilometres long and is followed along its entire length by the Leipzig city tram tracks. Coming from the city centre, the tracks are integrated into the road due to the tight space conditions. In the residential neighbourhood Grünau, however, the tram tracks veer off and continue to run from there on their own track parallel to Lützner Strasse.

Where the track veers was the point at which the RSD construction project "Lützner Strasse" began, which was completed in a joint venture with the com-

pany Wolff und Müller. It took 79 working days to dismantle and rebuild the 1,200-metre-long double-track line up to the "Schönauer Ring" stop with a total of five railway and three pedestrian crossings. In addition, the signalling technology and the complete overhead contact wire system, including all mast foundations, were installed in the entire construction project. The joint venture also rebuilt the entire area surrounding the construction site, including all cycle paths and footpaths as well as green areas. The contract also involved all the stops along the construction line. The construction project was handed over without any defects on 11 April.



SÜSSEN CONSTRUCTION PROJECT

READ MORE ABOUT ANOTHER EXCITING RHOMBERG SERSA DEUTSCHLAND PROJECT IN OUR ONLINE MAGAZINE.



INNOVATIVE SLAB TRACK D&B IN THE UK

Rhomberg Sersa UK (RSUK) achieves new firsts for slab track on the Barking Riverside Extension project



CARL GARRUD
Managing Director,
RSUK

IN 2018, TRANSPORT FOR LONDON (TFL) COMMISSIONED NEW RAIL INFRASTRUCTURE TO PROVIDE TRANSPORT LINKS FOR A RESIDENTIAL DEVELOPMENT AT BARKING RIVERSIDE. IN THIS ARTICLE, WE REVEAL THE CRITICAL ROLE PLAYED BY RSUK IN THE DELIVERY OF THIS PROJECT.

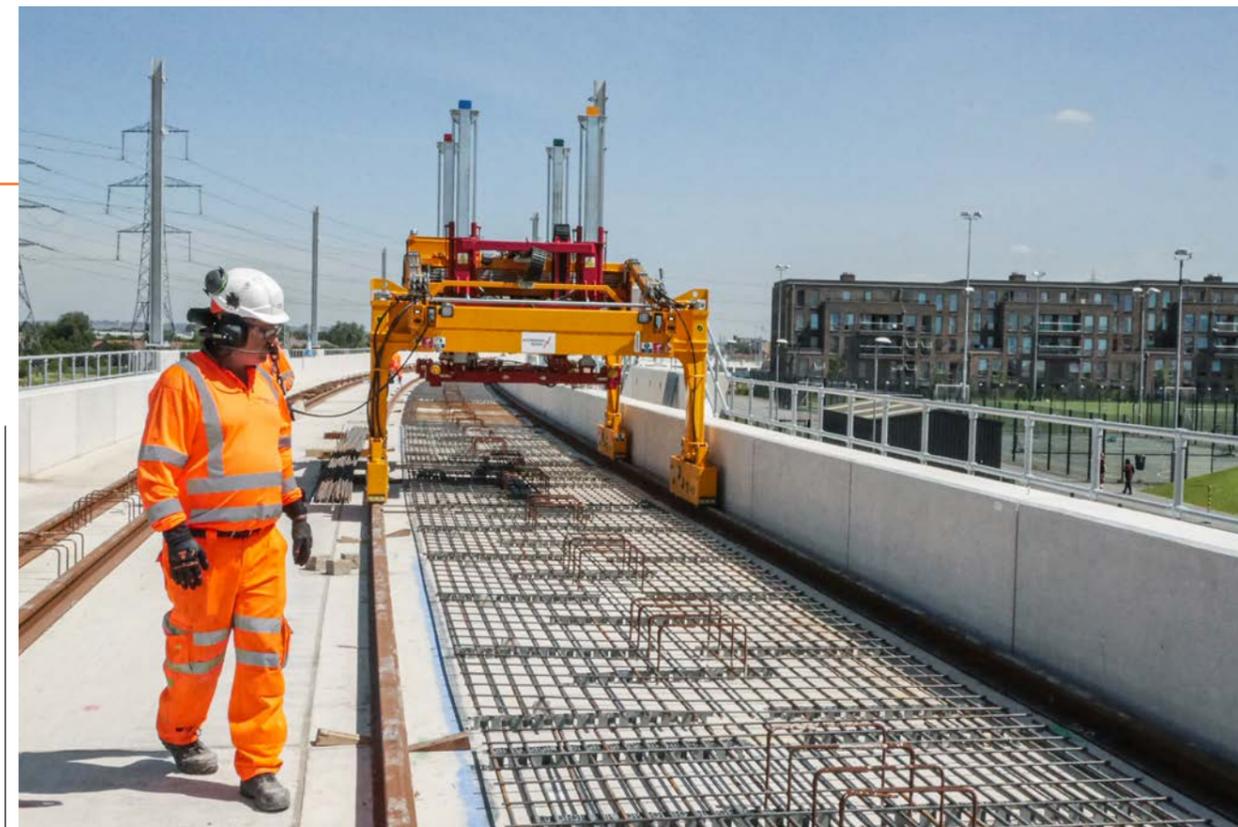
Transport for London (TfL) chose slab track to provide new railway infrastructure for their Barking Riverside Extension project. Their decision was influenced by the steep inclines and tight curves of the new viaduct that joined existing track to the Barking Riverside Terminus. TfL also wanted a track solution requiring minimal maintenance and reduced noise impact on neighbouring properties.

Rhomberg Sersa UK was preferred by the main contractor, a joint venture between Morgan Sindall

and VolkerFitzpatrick, to install a slab track solution. The client benefitted from our integrated ability to design and build the new track system, reducing cost and programme delivery time.

Strategic partnerships with the suppliers of our slab track system, fastenings and concrete benefitted our client during the design and construction phases. They collaborated with the Design Team using 4D BIM to reduce risk and create a more buildable design. They collaborated with the Construction Team to make Just-In-Time product deliveries at the point of use.

Concrete works before track system installation included an intermediate layer, which acts as a load transferring element into the main bridge structure below. Linking stirrups were fixed in the intermediate layer to couple it with the concrete used at the track fixing stage.



We laid out steel reinforcement for the Self Compacting Concrete layer that would fix and support the precast slab track units. Specially designed mobile gantries were used to position the precast STA slabs in the correct sequence. The position of the slabs was adjusted using threaded spindles, five in number for a standard slab. The tolerance of this process was targeted at +/-10mm, but the positioning activity consistently achieved +/-5mm.

Surveying played a critical role for the level of installation quality we achieved. Our surveyors were challenged to achieve 'best in class' tolerances. They surpassed themselves and consistently achieved +/-2mm horizontal and vertical absolute tolerances. This was impressively well inside the required project tolerances of: (i) horizontal of +/-6mm; (ii) vertical of +0/-15mm; (iii) cant of +/-5mm; (iv) maximum twist of 4mm; (v) gauge of +/-2mm; (vi) horizontal versine over 10m of 4mm; (vii) vertical versine over 10m of 6mm.

For the Barking Riverside project there are a total of 711 slabs, including 32 Switches & Crossings (S&C) slabs. The track alignment characteristics include a three percent vertical gradient, a horizontal curve radius of 220 metres and a track cant of 100mm. These are the highest applied values for UK installed PORR slab-track.

When the Barking Riverside Extension opens in Autumn 2022, it will be able to operate four trains an hour. These trains will run from Barking, along the renovated and modernised Tilbury line, before heading south along the new extension to Barking Riverside Station. The four-train per hour service will support 4,000 homes currently being built at Barking Riverside and directly unlock a further 6,800 homes.



COME WITH US ON A “JOURNEY THROUGH THE WORLD OF RSRG”.

AS A RAILWAY TECHNOLOGY COMPANY OPERATING WORLDWIDE, THE RHOMBERG SERSA RAIL GROUP IS REPRESENTED BY MORE THAN 2600 EMPLOYEES IN 8 COUNTRIES AND MORE THAN 100 LOCATIONS ON 3 CONTINENTS. AND WHAT UNITES THEM ALL? A PIONEERING SPIRIT FOR THE RAILWAY AND A PASSION FOR ACHIEVING THE BEST FOR OUR CUSTOMERS.

Each location has its own service portfolio and special competencies, which together make the Rhomberg Sersa Rail Group one of the leading railway technology companies in the world.

Throughout the year, we take you with us on a “journey through the world of the RSRG” via our newsletter. Each month, we will feature one of our markets, update you on lighthouse projects around the world and tell you more about our products.

Subscribe to our newsletter and join us on a “journey through the world of the RSRG”. You can also find a lot of additional information as well as additional images and video material in our online magazine at magazine.rhomberg-sersa.com.



**JOIN US ON THE JOURNEY
AND SIGN UP FOR THE
NEWSLETTER**





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