keep track

2023/24

THE CUSTOMER MAGAZINE OF THE RHOMBERG SERSA RAIL GROUP

Highlights in this edition

RHOMBERG SERSA RAIL GROUP

STRONG TOGETHER!

To keep your project on track, on time, without delays, and above all, on budget, we at Rhomberg Sersa Rail Group have always relied on synergies and pooled expertise. This was also one of the main reasons why our enterprises Sersa Group and Rhomberg Bahntechnik joined together to form the Rhomberg Sersa Rail Group eleven years ago. Thanks to this positioning as a full-service provider for everything related to tracks, we have since been able to handle practically every client order from a single source. Whether machine expertise, technologies, or innovative products and services, we have combined the best under one roof for your optimal result. That roof is the Rhomberg Sersa Rail Group.

It is therefore only consistent that we offer our entire portfolio of companies - from track construction, track renewal, track maintenance, and renovation of railway tunnels, to railway power supply, communication technology, consulting, planning, design and logistics services, right up to the operation and maintenance of track construction machines of our own fleet and those of our customers - under one name in the future, making it even easier for you to entrust your project to experienced and competent hands. This means that over the next two years all 17 companies within our family of companies will transition to 'One Brand', Rhomberg Sersa Rail Group.

One name, one appearance, 100% performance.
Yours,

Koni Schnyder
President Owner Board

Hubert Rhomberg
Member Owner Board

EVERYTHING UNDER ONE ROOF

The past year has been very special for us at Rhomberg Sersa Rail Group. In 2022, we celebrated our ten-year anniversary since the merger of Rhomberg Rail and Sersa Group. Over these ten years, we have grown together and evolved into one of the leading international railway technology companies, and today we can proudly say: We are Rhomberg Sersa Rail Group. We will continue on this path consistently in the future – under one roof, under one name, and with ever deepening expertise in the rail industry.

True to this motto, the current issue of our customer magazine "keep track" presents a selection of our successful projects, where the synergies within our group were optimally utilised to achieve the best results for you, our customers. This includes the Koralmtunnel in Austria (p. 12), the construction of a track over the Canada-Pacific Rail Line in Canada (p. 11), the Munich public transportation system (p. 08), and the maintenance of track construction machinery across national borders (p. 10).

Furthermore, this year, you can expect numerous updates from our company, insights into the use of state-of-the-art technologies in our projects, reports on our comprehensive fleet of machinery and innovative products, as well as a variety of other exciting projects around the globe that we jointly realise for our customers.

We hope you enjoy reading it!

Garry Thür
CTO

Thomas Bachhofner
CEO

Thomas Mayer
CFO

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Quelle: BKA/Dragan Tatic

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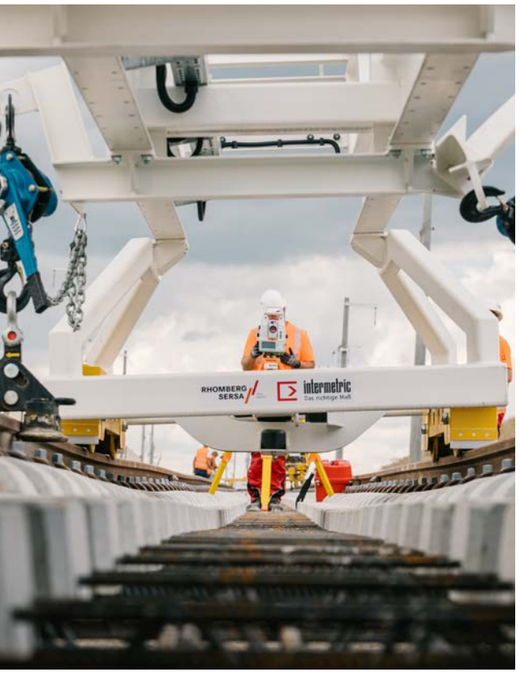

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ONLINE MAGAZINE

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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MORE THAN THE SUM OF ITS PARTS

ARISTOTLE KNEW THAT THE COLLABORATION OF SEVERAL ELEMENTS - BE IT LIVING BEINGS, SUBSTANCES, OR EVEN COMPANIES - HAS THE POTENTIAL TO CREATE SOMETHING NEW, BIGGER, BETTER. IN HIS WORDS: "THE WHOLE IS GREATER THAN THE SUM OF ITS PARTS."

Proof of this was provided a little over ten years ago by the Sersa Group from Switzerland and Rhomberg Bahntechnik from Austria. These two specialists in top-quality railway infrastructure came together to form a collective. While each was already an absolute expert in its field, the two companies combined as Rhomberg Sersa Rail Group and managed to create a level of quality, efficiency, and economy that is unmatched.

Primarily, the companies involved initially benefited from the collaboration, such as increased productivity, reduction of business risks, or knowledge transfer. However, the staff responsible at the RSRG have consistently passed these advantages directly on to their customers, in the form of innovative products and working methods, more efficient resource use, higher quality, and clear cost savings.

Now comes the next logical step: the RSRG is also growing together as a brand and is consistently presenting itself under the shared name "Rhomberg Sersa Rail Group" (RSRG). This creates even more clarity for its customers. The future principle is: Whether a main railway line needs new high-speed routes, public transport wants to professionally train and further educate its train drivers, an industrial railway needs to renovate its track, or operators, holders, or owners of railway construction rails want to update their fleet - a single call, one email is enough! Even major projects that require large planning expertise, coordination of complex workflows, and project steps are in the right hands with the RSRG as a "one-stop shop".

In short: what's inside is now clearly labelled on the outside: competence, quality, safety, economy. Welcome to the Rhomberg Sersa Rail Group!

TRAM LINE 25

EMPLOYEES FROM THREE LOCATIONS OF RSRG CAME TOGETHER FOR THE TRAM LINE 25 PROJECT IN MUNICH.

A significant step towards reliable public transportation and accessibility.

On August 1, 2022, the Tram Line 25 project commenced in Munich. Stadtwerke München (SWM) planned an extensive renovation and redesign of Tram 25. In collaboration with the consortium partner, Rädlinger Company, RSRG replaced approximately 4,400 metres of ballast track. The project, divided into two construction zones, involved not only the renewal of the track structure but also the redesign and extension of three stops and three crossings, with 230 meters (2GL) of grooved track as a solid trackbed. For the first time in the field of public transport, part of the welding work was carried out using the flash butt welding process. The concrete sleepers were installed using a gantry crane for relocation. "Harnessing synergies" was the motto for this project, and with the support of RSRG branches in Dresden, St. Veit, and Essen (which, for the first time in Munich, installed the platform lighting), the construction site was established. The work progressed rapidly, allowing the project to be completed by the end of 2022. The stress-relief milling and installation of the grass track were carried out in August 2023.

The renewal has contributed to improving the reliability and efficiency of public transportation on Tram Line 25 and to restoring connectivity to Grünwald. The construction measures also included improving the accessibility to the new stops, which has helped increase access for passengers with special needs.

"The successful execution and collaboration are evidence of the dedication and expertise of our team."

Philipp Nachbaur
Managing Director, Project Business

COOPERATION IN IRELAND

FOR THE MAINTENANCE OF MULTIPLE MACHINES, THE EXPERTS FROM JUMBOTEC IN GERMANY SUPPORT THEIR IRISH RSRG COLLEAGUES.

Maintenance of Track Construction Machines for Iarnród Éireann / Irish Rail.

Tim Wellschmidt
Head of Maintenance & Trade
Department, German Market

SAFETY IN THE USE OF TRACK CONSTRUCTION MACHINES BEGINS WITH PROPER AND REGULAR MAINTENANCE OF THE MACHINE FLEET. CUSTOMER IARNRÓD ÉIREANN / IRISH RAIL RELIES ON JUMBOTEC, WHICH, TOGETHER WITH RSRG IN IRELAND, WON THE TENDER FOR AN ADDITIONAL REFURBISHMENT CONTRACT.

The machines of customer Iarnród Éireann / Irish Rail (IÉ) are operated and maintained by Rhomberg Sersa in Ireland. In addition to operating its own fleet of track construction machines, JumboTec GmbH is an expert in maintenance, servicing, and repair work on rail vehicles, particularly track construction machines. It was therefore natural for the two RSRG companies to participate jointly in this tender.

Immediately after winning the tender, the implementation planning started in close coordination. Complex planning is necessary, from logistics to the timely delivery of various components. The five machines are expected to spend six months each at JumboTec for extensive maintenance and servicing work. Even hard-to-procure components must be on-site in a timely manner to avoid disrupting the subsequent planning. This requires regular communication, networking, and close collaboration between IÉ and the RSRG companies.

The first machine from Ireland was transferred to Spremberg in the summer. Over the next few years, three more machines and numerous machine components of the IÉ RM90 ballast cleaning machine will be brought to Germany for extensive maintenance measures.

This intensive project not only demonstrates the strengths of collaboration within the RSRG but also serves as proof of the diverse competencies within our own company.

+ CANADA

FOR THIS PROJECT, SLAB TRACK SPECIALISTS FROM ENGLAND TRAVELLED TO CANADA TO SUPPORT THEIR COLLEAGUES IN TORONTO.

Trial and No Errors in Toronto, Canada.

Chris Herrett
Bid Manager
Rail Infrastructure, UK Market

WHEN YOU NEED 1.2KM OF SPECIALIST CONCRETE SLAB TRACK INSTALLED ON YOUR NEW ELEVATED GUIDEWAY, WHO ARE YOU GOING TO CALL? THE RHOMBERG SERSA RAIL GROUP, OF COURSE.

The Barrie Line is one of seven train lines that form the GO transit system in the Greater Toronto Area of Ontario, Canada. Until recently, the frequency of commuter trains on the Barrie Line was limited by freight train traffic over the Davenport Diamond, a rail junction between the North-South Barrie Line and the East-West Canada Pacific Rail Line.

In 2019, Metrolinx (Project Owner) awarded Graham Commuter Rail Solutions (GCRS) the contract to design and build the Davenport Diamond Rail Grade Separation Project. This included the construction of a guideway that would carry the Barrie Line over the road-level Canada-Pacific Rail Line. GCRS and their partner REMCAN reached out to the Rhomberg Sersa Rail Group for help building more than 1.2km of slab track on the Davenport Diamond Guideway.

Supporting this project with an international set-up involving RSNA, RBT and RSUK, a team of slab track specialists from RSUK were sent to Canada in September 2022. They installed a 10m trial section of slab track in a non-rail environment to test: a) the concrete mix design b) track system set-up c) ability of installation teams to follow the concreting process d) voiding under baseplates. The trial was a success and laid strong foundations for the core works.

The Team began construction of slab track on the Davenport Diamond Guideway in October 2022 and completed works at the end of March 2023. Delivery of the construction works was challenging, but despite the snow the team made the project a success. Thanks to the efforts of the whole project organisation the Davenport Diamond Guideway successfully went into service on April 3, 2023.

KORALM TUNNEL

AHEAD

Source: © ÖBB/isochrom

SPECIALISTS FROM FOUR RSRG COMPANIES HAVE SUCCESSFULLY COLLABORATED ON THE KORALMTUNNEL.

The ÖBB project already reveals the advantages of RSRG's "single-brand strategy".

BY FOCUSING ON THE BRAND NAME "RHOMBERG SERSA RAIL GROUP", THE AUSTRIAN-SWISS RAILWAY TECHNOLOGY GROUP WANTS TO SHOW ITS CUSTOMERS AT FIRST GLANCE WHAT THEY CAN RELY ON WHEN AWARDING CONTRACTS TO THE CONSORTIUM. YOU CAN ALREADY CLEARLY SEE WHAT THAT IS IN THE CASE OF THE KORALMTUNNEL:

From setting up the approach routes to commissioning, the entire project is in the hands of the full-service provider from Bregenz and Zurich, as well as its ARGE partner. The partner companies currently operate under the names Universale Bau, Rhomberg Fahrleitungsbau (both part of the Bahnbau Wels Group), RK safetec or Rhomberg Bahntechnik. However, very shortly, it will simply be the Rhomberg Sersa Rail Group. They are responsible for the construction of the fixed track and the required ballast tracks, the overhead line construction, the electrical equipment as well as all aspects of safety, logistics and digitalisation. This includes all accompanying tasks such as site set-up, road and building construction, premium raw construction and concrete works. "We are pleased that we can continue to directly pass on the advantages we have achieved internally, such as product innovations, quality improvements, as well as time and cost savings, to our clients", explains Thomas Bachhofner, CEO of the Rhomberg Sersa Rail Group. The former Rhomberg Bahntechnik, for example, impresses with a self-developed logistics app and the use of LEAN management for coordination and process optimisation. It also utilises BIM for planning and coordination. The BBW Group supports the client with its competencies in overhead line construction, open track, as well as bridges and - of course - tunnels. From RK safetec comes the ZOKA system for access security, positioning, communication and alerts, as well as various control and monitoring techniques for barriers or switches. All from one reliable partner.

Find photos of the project in our online magazine:

"We are pleased that we can continue to directly pass on the advantages we have achieved internally, such as product innovations, quality improvements, as well as time and cost savings, to our clients."

Thomas Bachhofner
CEO

01

FROM THE COMPANY

BREM BAHNTECHNIK AG JOINS THE GROUP

Negotiations for "Securing and Cable Systems" expert company sealed with a handshake.

Thomas Brem
Head of SAZ and S&K, Swiss Market

José Ruiz
Managing Director, Swiss Market

Brem Rail Technology AG
Founder: Thomas Brem
Headquarters: Villmergen
Specialties: Securing and Cable Systems
Merger with RSRG: 2022

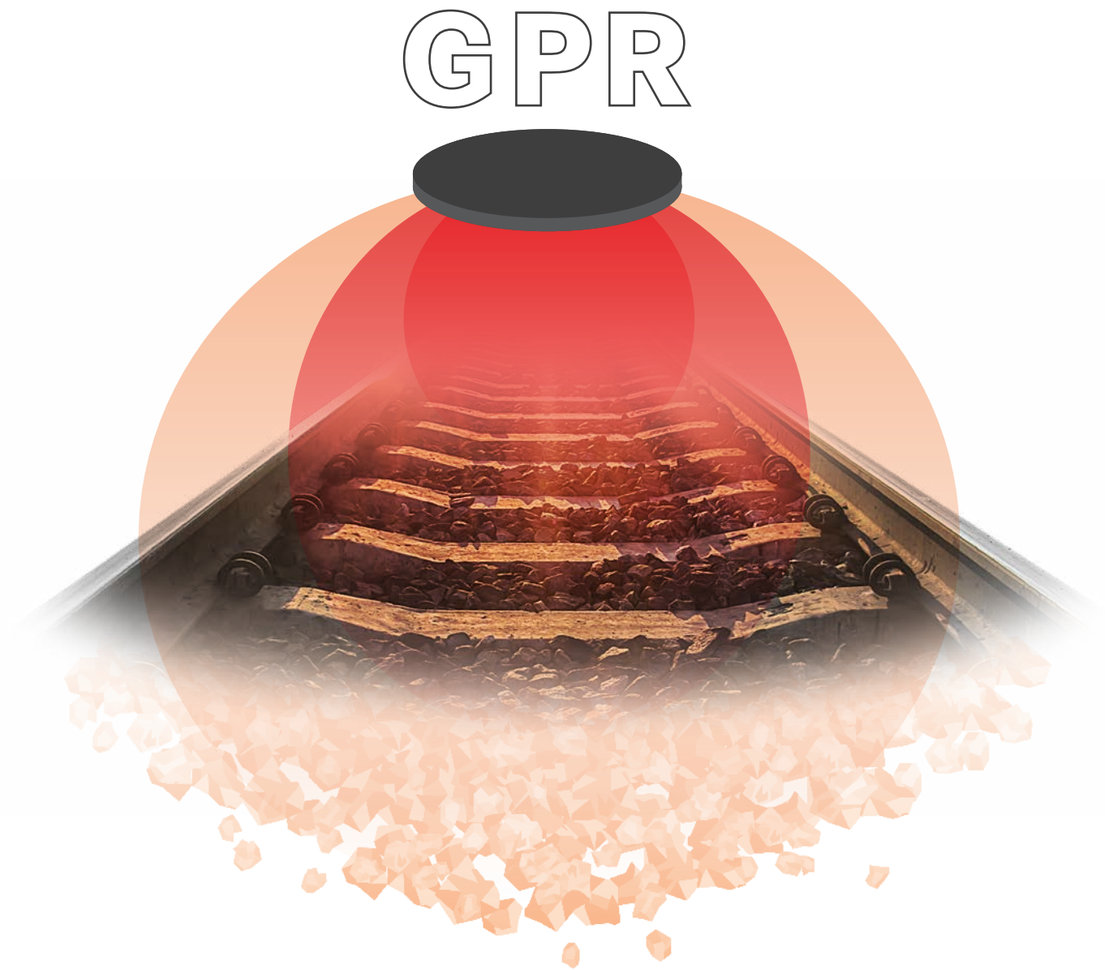
For more information, please visit our online magazine.

CHE THE RHOMBERG SERSA RAIL GROUP HAS PROVEN STRENGTH IN THE CONSTRUCTION AND RENOVATION OF TRACK SYSTEMS. NOW IT HAS ADDED TO IT'S EXPERTISE IN ELECTRICAL SYSTEMS. THE SPECIALISED AREAS OF SECURING AND CABLE SYSTEMS ARE PRIMARILY SOUGHT AFTER IN GU (GENERAL CONTRACTOR) AND TU (TECHNICAL CONTRACTOR) PROJECTS. RSRG CAN NOW DELIVER BOTH GU AND TU SEAMLESSLY.

The RSRG in Switzerland and Brem Bahntechnik AG merged at the end of 2022. As a result, the "Securing and Cable Systems" (Signaling and Power Cables) sector is significantly strengthened, both in terms of expertise and skilled staff. Customers benefit from a strong team of specialists, ensuring efficient workflows and the highest quality throughout Switzerland. Brem Bahntechnik AG (BB) has continuously grown until the end of 2021. It has extensive knowledge in the area of "Electrical Systems", while the Swiss RSRG contributes with its fleet of bi-directional and special vehicles. RSRG also has specialised railcars used for cable laying in challenging conditions. These can also transport up to 20 tonnes of cable spools. Thomas Brem, BB founder and owner, has been nominated as division head of the new merged entity and his focus is on stability and continuity. Together with Thales Switzerland, BB has previously implemented large SBB (Swiss Federal Railways) projects. These include axle counter installation in the Rynächt perimeter, main and branch cable laying for the renovation of Hydrostar switches inside and outside the Gotthard Base Tunnel, as well as axle counter installation in the Faido and Sedrun multifunctional stations, and signal relocations. BB also supported Siemens AG throughout Switzerland with staff leasing for SA (Safety Assembly) installations. As projects are increasingly awarded as GU or TU projects, BB sought a partner in order to be able to deliver both. The negotiations between BB and Rhomberg Sersa were concluded with a handshake at InnoTrans 2022. The official purchase contract was signed at the end of 2022, and since January 2023, the entire BB workforce became part of RSRG. The expanded "Securing and Cable Systems" division guarantees high-quality services and continues to strive to meet individual customer needs.

GPR TRIALLED TO BOOST MAINTENANCE PRODUCTIVITY

New use found for GPR to identify obstructions under ballast.



Edel Kennedy
Marketing & Communications Manager,
Irish Market

GPR:	Benefits:
"GROUND PENETRATING RADAR"	■ **DEFECT DETECTION** ■ **DISTURBANCE REDUCTION** ■ **OBSTACLE DETECTION**
Scan depth: **2.5 METRES**	

IRL RHOMBERG SERSA IRELAND HAS TEAMED UP WITH ITS CLIENT TO TRIAL THE USE OF RADAR AND ASSESS WHETHER IT BOOSTS PRODUCTIVITY ON KEY MAINTENANCE SHIFTS.

RSIE operates and maintains On Track Machines (OTMs) on behalf of its client, Iarnród Éireann / Irish Rail (IÉ), and a joint taskforce has already increased productivity on the ballast cleaner by almost 40%.

The joint Continuous Improvement Group (CIG) has now identified additional areas where efficiencies can be delivered, including the reduction of downtime due to unanticipated obstructions under the track during key ballast cleaning shifts.

Four consecutive ballast cleaning shifts are typically carried out across a weekend in order to minimise disruption to the rail network. While the CIG has already increased productivity due to a change in the maintenance productivity method, it was noted that unexpected obstructions buried in the ballast or other issues such as heavy ballast fouling, was leading to significant delays during some shifts. This meant that the full scheduled works were not carried out so a more efficient and cost-effective track bed management strategy was needed.

Ground Penetrating Radar (GPR) is typically used for examining ballast fouling and subgrade condition, scanning 2.5metres below the surface, to understand how the ballast is performing and to catch track geometry defects before they impact train operations.

But the CIG determined that it could potentially be used to scan for obstructions and engaged a third-party provider to conduct tests.

The same technology is used as when examining the subgrade, but a different antenna with higher frequencies is used to find objects at a shallower depth.

The higher frequency delivers a definite image of the ballast and highlights where obstructions are as well as how contaminated the ballast is.

Earlier this year a test site on the IÉ network was identified and Rhomberg Sersa Ireland, the third-party provider and IÉ staff conducted the test scan.

Afterwards, the results were analysed and a report produced. On the test site a number of obstructions were observed, and a team was then sent to the site to find and remove these obstructions. This proved that the GPR correctly identified buried objects which could pose a risk to productivity.

Tests will be carried out at a number of sites in order to refine the process and assessments will be carried out to determine if the GPR delivers a measurable decrease in downtime.

This method is significantly more environmentally friendly than the current working method as it will reduce the amount of machinery idling during the working weekend, as well as ensure targeted excavation rather than sampling ballast beds every 50m. This will have the very positive knock-on effect of being much safer for the teams on the ground.

This targeted, speedy and safer work method ultimately allows for data driven decision making and a higher performing preventative maintenance plan.

This in turn leads to better maintenance outcomes and therefore smoother and quicker passenger journeys on the IÉ network.

1

FEDERAL CHANCELLOR NEHAMMER VISITS COPENHAGEN

/

Austria's Head of Government seeks information about innovations and sustainable mobility solutions in the local economy.

Gernot Gassner
General Manager,
Project business

DNK Together with their Portuguese joint venture partner Efacec, the Rhomberg Sersa Rail Group was responsible until September 2023 for the entire railway technical equipment of the new Metro line M4 in Denmark's capital as part of the major CRSH4 project. Federal Chancellor Karl Nehammer used his Scandinavian tour in April 2023 to personally see the Austrian commitment on-site

Quelle: BKA/Dragan Tatic

and to learn about technological innovations and sustainable mobility solutions in the local economy. Garry Thür, CTO of RSRG, received Nehammer and his delegation along with other executives of the group and representatives of the customer Metroselskabet & Hovedstadens Letbane (MS). "We were pleased that Mr. Nehammer took an hour and a half to visit our challenging project in Copenhagen," Thür reports. Thür was particularly pleased, "that Mr. Nehammer has great interest in how sustainable mobility solutions are implemented by Rhomberg Sersa, both in an international and Austrian context."

2

AWARD-WINNING INNOVATION

/

CARS Innovation Award 2022 for Rhomberg Sersa North America.

Michael Match
Managing Director,
North American Market

CAN There was cause for celebration at the end of 2022 for Rhomberg Sersa North America: The Canadian Association of Railway Suppliers (CARS) named RSNA as one of the winners of the 2022 Innovation Awards. The award recognises members who have developed advanced or innovative technologies to meet the demands of the railway industry. RSNA was honoured because it was the first company to introduce rail milling technology to the Canadian (and North American) railway infrastructure market, setting new standards for railway technology and extending the lifespan of railway infrastructures. "We are proud to be the first company to introduce this innovative rail milling technology not only in Canada, but across the entire North American market," said Michael Match, CEO of Rhomberg Sersa North America.

WELL-CONNECTED INTO THE FUTURE

The Rhomberg Sersa Rail Group and the Universities.

Torsten Bode
Head of Group Products and Innovations

YOUNG PROFESSIONALS ARE IN DEMAND INCLUDING AT THE RHOMBERG SERSA RAIL GROUP. TO INSPIRE STUDENTS FROM RELEVANT FIELDS OF STUDY TO CONSIDER OUR COMPANY, THE RSRG THEREFORE FOCUSES ON A STRONG NETWORKING WITH UNIVERSITIES.

It's one of the challenges for companies today: attracting skilled professionals, and of course, retaining them. Moreover, a corporate group like the Rhomberg Sersa Rail Group needs experts from a wide variety of different areas to remain the "Partner of Choice" for its customers in the future. Graduates from fields of study relevant to RSRG, such as construction, geodesy, railway technology, but also mechatronics, computer science and business administration, play a crucial role. Therefore, it is wise to connect directly with universities, lecturers, and especially students. The RSRG is fortunately equipped with plenty of interesting topics and projects and above all, open, committed and inspiring employees. Therefore, the various enterprises of the group have repeatedly succeeded in piquing the interest of the bright and open students in a professional future at the RSRG. The most recent example is the "Products & Innovations" department, which has very successfully networked with relevant universities such as TU Darmstadt, TU Graz, UIBK Innsbruck, TU Munich and FH Vorarlberg. Visits to the headquarters in Bregenz with a tour of the show track in Dornbirn, excursions to the Koralmtunnel or the AFIL were highlights for the students and the RSRG employees. Lectures and talks at teaching events as well as long-term teaching assignments offer a stage for the diverse benefits of working in the railway infrastructure sector and especially at the Rhomberg Sersa Rail Group. These visits and talks showed what it is like to work at the cutting edge in a dynamic, optimistic and innovative family business. Accordingly, the company is pleased when these students often become job candidates who want to start their professional journey with and at the RSRG. Of course, the group is also connected with universities and their experts for other reasons: innovative topics are researched there, new developments are tested in test institutes, and the institutions are also involved in (inter-)national research funding projects. For RSRG as a technology provider and innovative construction company, this is reason enough to further expand and maintain networking with these partners in the future.

THE CLIMATE — — STRATEGY *OF RSRG*

How Rhomberg Sersa Rail Group is pooling its resources to pursue a unified strategy.

Katharina Willam
Junior Advisor Environmental and Resource Management

Fig. 1: Greenhouse gas balances of all RSRG markets, proportionally by balance category (Note: Accounting year and scope of data collection differ between markets)

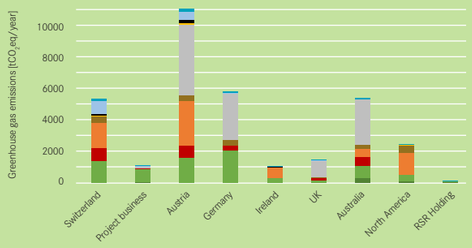
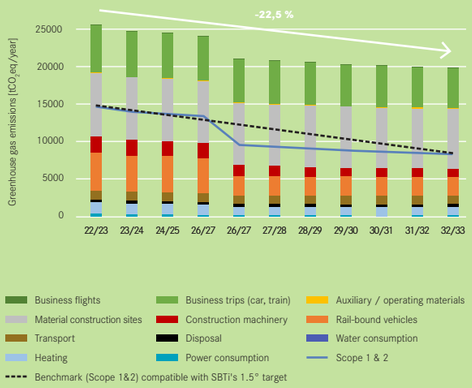


Fig. 2: Consolidated reduction path of the markets surveyed so far until 2032/33



RSRG IS CURRENTLY IMPLEMENTING A COMPREHENSIVE STRATEGY TO SIGNIFICANTLY REDUCE ITS GREENHOUSE GAS EMISSIONS[1] OVER TIME. THROUGH THIS, THE GROUP IS PREPARING FOR THE FUTURE – AND FOR THE REQUIREMENTS AND EXPECTATIONS OF ITS CUSTOMERS

The journey and the first results

The journey started with the Swiss market serving as a pilot, from which valuable insights were gained. These findings were incrementally expanded upon during a series of workshops with all markets and partner company Neosys AG. Thanks to the experience and expertise of all parties involved, a joint approach for greenhouse gas accounting was established. The system boundaries are specially tailored to the business areas of RSRG and structured according to the GHG[2] Protocol.

In parallel to this workshop series, an initial greenhouse gas balance was established for all markets of the company (Fig. 1). Based on the insights gained, the approach to data collection and greenhouse gas accounting was progressively defined and improved across the group.

Path to Reduction and Mitigation Measures

As a result, work has begun on identifying reduction measures. Scope 1 covers the direct greenhouse gas emissions within the company (Fig. 3). As direct influence can be most effectively exerted here within the company, a particularly strong focus has been placed on reducing Scope 1 emissions.

Figure 2 illustrates the aggregated reduction path over 10 years for the markets evaluated so far. With the measures planned so far, emissions can be reduced by an average of 22.5% by 2032/33. The question of whether the planned measures align with the 1.5-degree Celsius target of the Paris Climate Agreement can be answered using a method from SBTi[3] (see Fig. 2, black dashed line). The result shows that RSRG is on the right track. Some of the reduction measures implemented as part of this strategy are presented in the online magazine. One measure with significant impact has been implemented at RSRG Ireland, see page 35.

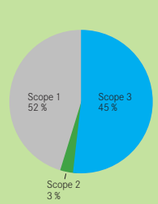
Integration into the RSRG Systems and Next Steps

The goal is to achieve a measurement and reduction of greenhouse gas emissions in all RSRG companies from now on through an annual continuum. The financial year 2022/23 will serve as the RSRG-wide base year for the monitoring and reporting of emission reductions.

Since at a certain point the remaining emissions must be offset, a compensation policy is being developed in parallel, and options for this are being checked.

In the coming years, the RSRG reduction path will become even more ambitious. Investment in new technologies and innovation, as well as increased awareness of climate and resource protection in the company, are decisive criteria for this.

RSRG greenhouse gas emissions by Scope



RSRG greenhouse gas emissions by energy carrier

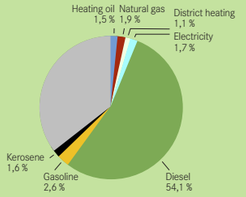


Fig. 3: The left pie chart illustrates the RSRG's greenhouse gas emissions proportionally by Scopes. The right pie chart is divided by energy carriers[4].

1 Greenhouse gas emissions, also referred to as greenhouse gas emissions, are expressed as CO_2 equivalents (CO_2 eq).
2 The Greenhouse Gas (GHG) Protocol is the world's most widely used standard for the accounting and reporting of greenhouse gas emissions.
3 The Science Based Targets Initiative (SBTi) enables companies to set net-zero targets based on the latest climate science findings, thereby contributing to the achievement of the goals of the Paris Climate Agreement.
4 Scope 1 includes the company's direct emissions (e.g., combustion of fuels). Scope 2 includes emissions from the generation of energy purchased and used by RSRG (in the form of electricity or heat). Scope 3 includes other indirect emissions resulting from RSRG's activities within the upstream or downstream value chain (i.e., at suppliers or customers).

02

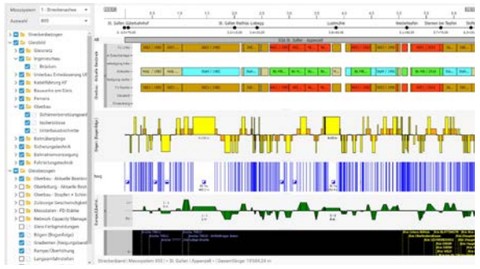
DIGITALISATION

RAIL ASSET HUB FOR INFRASTRUCTURE MANAGEMENT

ARGE FahrwegDiagnose is being enhanced with Rosenthaler + Partner AG and the INFRALIFE© software.

Fabian Angehrn
Head of Diagnostics,
Swiss Market

Matthias Heimhalt
Product Manager,
Swiss Market



Rail Asset Hub
Provider: ARGE FahrwegDiagnose
Functions: digitised maintenance planning, mobile defect recording, measurement data analysis, and clearance gauge inspections
Product Partners: IRISSYS, infra3D, INFRALIFE
Further information: www.fahrwegdiagnose.ch

CHE WITH THE INTEGRATION OF THE INFRALIFE© ASSET MANAGEMENT SOFTWARE, THE RAIL ASSET HUB BECOMES A COMPREHENSIVE SOLUTION FOR MANAGING RAILWAY INFRASTRUCTURES.

"Where is infrastructure data stored sustainably and intelligently?", "What kind of data management prepares me best for future requirements?" or "How can I efficiently operate predictive maintenance?" - these are questions that concern many railway managers. Unfortunately, there is no all-encompassing information system for the targeted management of complex railway infrastructures. Therefore, the mastery of the interfaces between different electronic data systems is all the more important. It requires uniform designations (ID) and a clear local allocation for fixed facilities. With the Rail Asset Hub, ARGE FahrwegDiagnose now offers railway companies an all-in-one solution that can be assembled according to the modular principle as per requirements. Functionalities such as digitised maintenance planning, mobile defect recording, measurement data analysis, and clearance gauge inspections, are covered.

The benefits for infrastructure companies include:

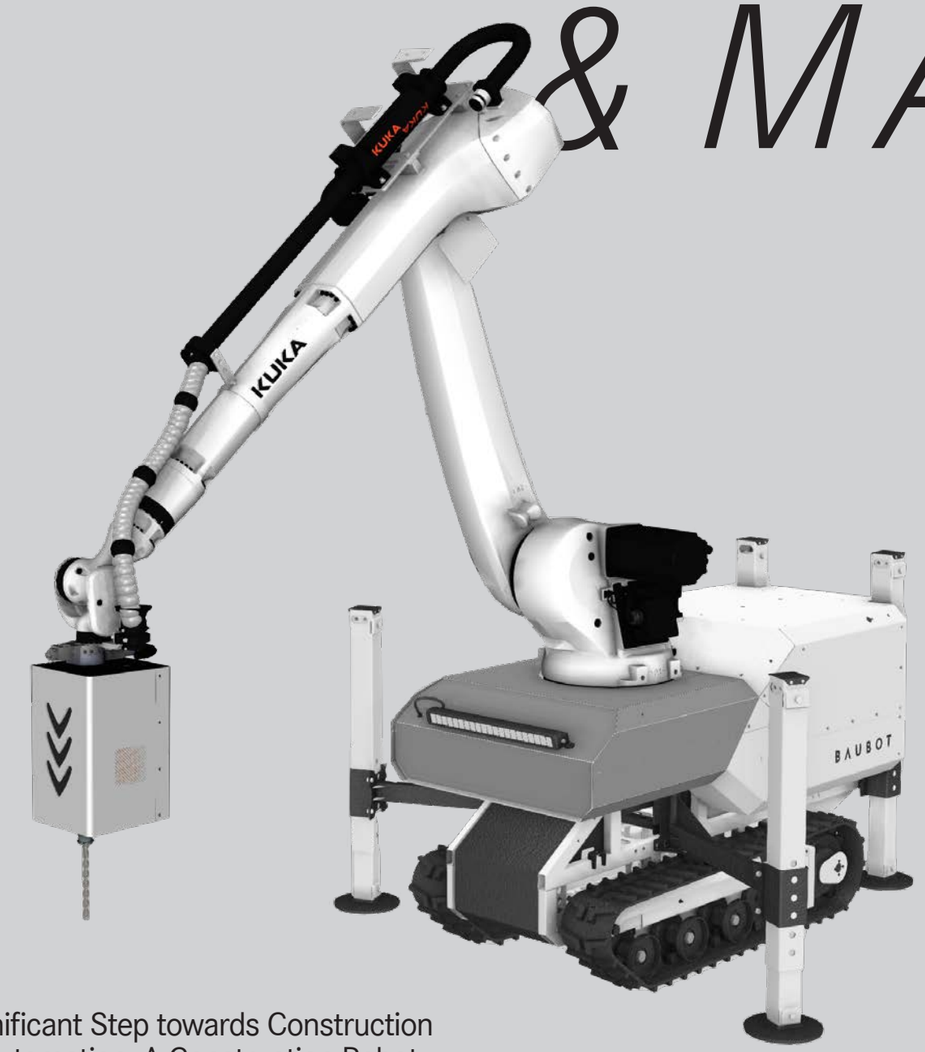
- Increased understanding of infrastructure data using maps and images
- Railways benefit from joint and coordinated further development
- Online access to customer-side data systems
- Open to any type of (measurement) data (regardless of the measurement service provider)
- Linking of all modules (analysis system IRISSYS©, infra3D, asset management system INFRALIFE©, FahrwegDiagnose Dashboard)
- Compatible with customer-specific third-party systems (GIS, ERP, etc.)

Furthermore, ARGE FahrwegDiagnose supports companies in the structured setup, management, and evaluation of data for sustainable and future-oriented data management throughout the entire life cycle.

RELIEF FOR *MAN & MACHINE*

Niklas Steurer
Project Manager Robotics & Automation Technology, Project Business

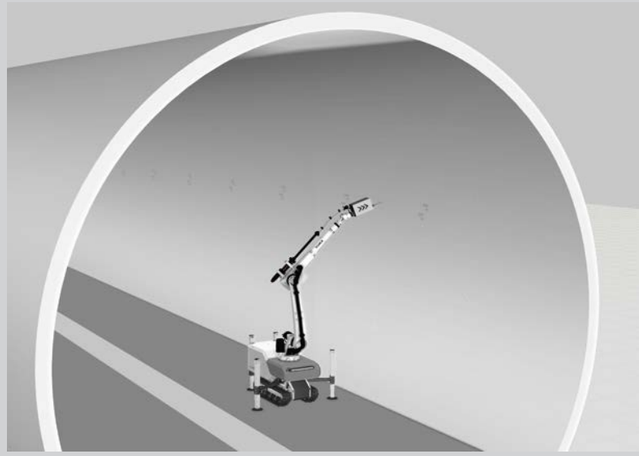
Lisa-Maria Riedel
Team Leader Reality Capture, Project Business



A Significant Step towards Construction Site Automation: A Construction Robot and Its Benefits.

AUT THE DIGITALISATION AND AUTOMATION TREND DOES NOT STOP AT THE CONSTRUCTION INDUSTRY. THEREFORE, IT IS EXTREMELY IMPORTANT TO BREAK NEW GROUND AND DRIVE INNOVATIONS IN VARIOUS AREAS. THAT IS WHY RSRG HAS AN R&D DEPARTMENT, WHICH ADDRESSES AND SOLVES THE DIVERSE PROBLEMS OF CONSTRUCTION SITES.

One of these innovations deals with a process which has experienced almost no automation - drilling holes in major infrastructural projects, including tunnels. Depending on the project, several hundreds of thousands of drillings quickly accumulate, exposing massive potential for cost savings. The traditional method with a hand-held drill is very labour and time intensive, often distributed over many different workplaces. The entire process from surveying the drill holes, marking them, the actual drilling, as well as quality control and documentation is currently barely automated. There exist only a few aids, for example, drilling templates, which are very inflexible in their use. The solution is a crawler-mobile robot that can combine and automate sub-processes of measuring, marking, drilling, cleaning, and documenting. To develop this robot for the market, RSRG has entered a strategic partnership with the young Viennese company "Baubot GmbH". This mobile robot system will solve many of these problems in the future and generate enormous added value. It is currently demonstrating its capabilities on the Koralmtunnel project. For this infrastructure project of the Austrian Federal Railways (ÖBB), approximately 66 kilometers of handrail are also being installed in the two tunnel tubes. This ensures safe passage for passengers in an emergency and contains emergency lighting, including signage.



Characteristics that distinguish an automated drilling process inlcude:

- The consistent accuracy is greatly increased by the tacho-meter-controlled robot system, which can be used flexibly around the clock.
- Automatic documentation of all deployment parameters such as drilling depth, drilling pattern, substrate conditions, and extraction parameters ensures complete traceability and thus seamless quality documentation.
- The complete drilling parameters are defined in advance using a 3D scan of the tunnel, and blockage and downtime are used efficiently. The simulation and control software allows the entire workflow to be tested in advance. Various areas where drilling is not allowed can be detected and taken into account. However, it is also possible to directly influence the various parameters on the construction site.
- By increasing the degree of automation and reducing the workforce, many interfaces that lead to errors are eliminated. This reduces the costs for individual drilling operations.

With the implementation of this system, which will subsequently be adapted for other tasks, RSRG is taking a major step towards construction site automation. In addition to increasing quality and better utilisation of the available construction time, this system counteracts the increasingly severe problem of skilled worker shortages.

DIGITAL TRANSFORMATION

Our Employees Make
the Difference.

1 SELF-SURVEYING

SUCCESS STORY: AS PART OF RSRG'S DIGITILISATION PROCESS, CONSTRUCTION PERSONNEL HAVE DEVELOPED THE SKILLS TO CARRY OUT SURVEYING TASKS WITHOUT THE NEED FOR AN EXTERNAL SURVEYOR.

Track construction projects cannot be planned down to the last detail, and therefore require a high level of interaction between the various parties involved. A significant advantage for the smooth operation of a construction site is the reduced, or even eliminated, need for coordination with an external surveying office. A construction manager must coordinate numerous trades every day and therefore react flexibly to changes such as delivery difficulties or the availability of construction sections. Therefore, to be able to carry out measurements independently and immediately is of enormous benefit to all parties involved.

A prerequisite for self-surveying is the availability of verified basic data. This data is prepared by the "Reality Capture Team" of the "Digital Rail Services" department before the start of construction. Once this quality check has been carried out, the data is made available online. Afterwards, the construction site personnel can independently carry out axle-related measurements and stake-outs. The processes have been optimised to such an extent that any support and also the data transfer works online. Quality controls are also carried out independently and continuously in all phases of construction. Even the highly accurate fine adjustment of the rails is carried out by the construction site personnel.

The ability to carry out such measurements independently not only has the direct effect of being independent from external services, but also has indirect effects on understanding the necessary conditions for precision. This seamlessly integrates the associated processes into the entire construction process. Self-surveying thus radically increases efficiency.

Lisa-Maria Riedel
Team Leader Reality Capture,
Project Business

AUS **THE WORLD OF RAIL CONSTRUCTION AND MAINTENANCE HAS ALWAYS BEEN AN INDUSTRY THAT DEMANDS EFFICIENCY, PRECISION, AND SAFETY. FOR DECADES, THE RAIL INDUSTRY HAS UNDERGONE RAPID CHANGE, WITH TECHNOLOGICAL ADVANCEMENTS PAVING THE WAY FOR A MORE EFFICIENT AND RELIABLE RAIL NETWORK. IN RECENT YEARS, THE INDUSTRY HAS SEEN AN UNPRECEDENTED SHIFT TOWARDS DIGITALISATION.**

Rhomberg Sersa Australia has just launched a new Digital Rail Services Team. One of the primary goals of the new team is to work closely with Rhomberg Sersa Australia's operating divisions to identify pain points in their operations and find ways to overcome them. By doing so, processes can be improved and Rhomberg Sersa Australia can ensure that their operations run as smoothly as possible.

Currently digital rail services are focused on the below initiatives;

- Iphone lidar for project documentation and stockpile volumes
- Track measuring systems including trolleys and drones
- Site positioning systems for progress tracking and quality assurance
- Data sharing to keep stakeholders up to date with projects etc using cloud technology

In conclusion, Rhomberg Rail Australia's digital rail services team has already been instrumental in driving innovation and efficiency within the company's operations. By embracing technology and leveraging the expertise of the team, Rhomberg Sersa Australia has been able to find new solutions to traditional challenges and improve the safety and reliability of the rail network.

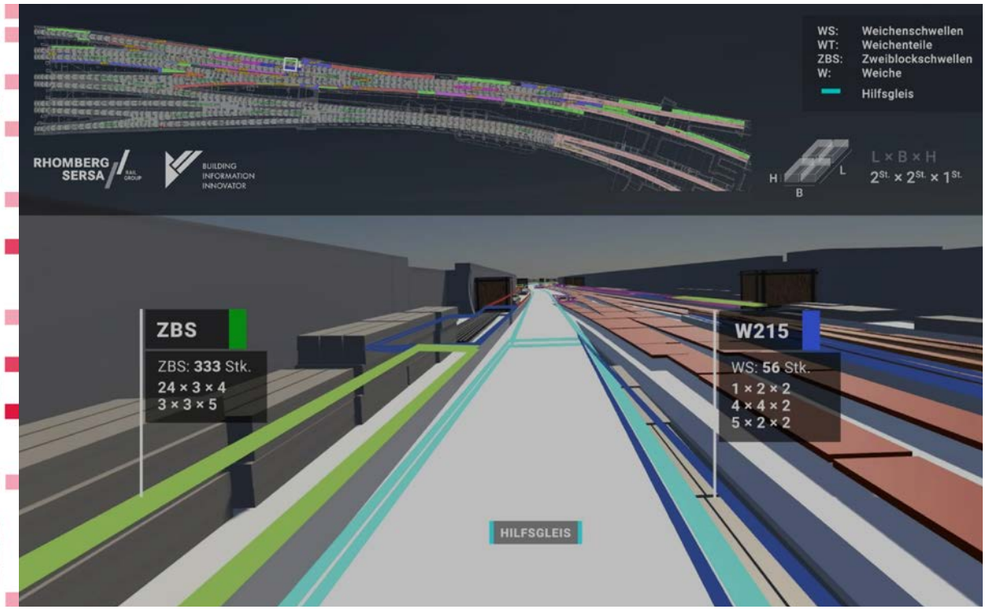
Amber Bellamy
Marketing and Communications
Manager, Australian Market

2 NEW TEAM

DIGITAL *SUPPORT* FOR THE CONSTRUCTION SITE

New planning software simplifies logistics and process execution for large rail construction projects.

Patrick Kathan
Construction and Logistics Process Planner, Project Business



DEU **A PICTURE SAYS MORE THAN A THOUSAND WORDS. AND LOGISTICS AND PROCESSES OF LARGE RAIL CONSTRUCTION PROJECTS CAN BE PLANNED MORE EFFICIENTLY AND ECONOMICALLY THROUGH VISUALISATIONS. THIS IS THE PRINCIPLE USED BY THE NEW SOFTWARE PRODUCT DPROB, DEVELOPED JOINTLY BY RSRG AND ITS COOPERATION PARTNER BII GMBH:**

Based on standard CAD planning, this tool allows a "digital twin" of the construction project to be generated. Experts simulate all construction processes and workflows including possible variants or alternatives, before the first excavator has even arrived on the actual construction site. The fastest, most cost-effective, and environmentally friendly version is then implemented in consultation with the client. And the often decisive question in large projects about sufficient storage can be answered quickly and reliably thanks to realistic visualisations.

dProB even allows planning to be adjusted at any time during the construction phase. All plans and possible re-planning, as well as all actually implemented planning steps, are fully archived and analysed. These learnings help to plan and calculate subsequent projects even more precisely. Thus, RSRG can offer its customers the best service and support the entire project even more efficiently and successfully.

So far, the most extensive use of the RSRG development has been in the "Stuttgart 21" century project. There, RSRG is constructing almost 42 kilometers of fixed track (FT) in several working groups directly at the new underground main station and between the airport and the Neckar crossing. The innovative tool provided great support, especially in determining storage space and planning the logistics for the materials needed in the two switch halls, each equipped with 24 switches.

You can find videos on this topic in our online magazine.

"The model-based work preparation helped us validate planning and prepare for implementation. The animations ensured that even outsiders could quickly understand the planned procedure. In short: dProB is a worthwhile investment in proactive planning, which has not been possible to date in this way before."

Dennis Wilke
1st Construction Manager,
ARGE S21 Fixed Track Valley Crossing

03

MACHINES

LATEST GENERATION OF DUAL-MODE EXCAVATORS

The Rhomberg Sersa Rail Group relies on modern equipment to ensure efficiency for its customers.

Steffen Hauck
Head of Mechanical Engineering Department, German Market

AUT DEU **A TARGETED INVESTMENT POLICY IS ALSO ESSENTIAL IN COMMERCIAL TRACK CONSTRUCTION TO ENSURE THE BEST QUALITY FOR CUSTOMERS.**

The BBW Group invested in five additional modern dual-mode excavators this year, equipped with the SW 33 Likufix hydraulic quick-change system. This system enables a quick and safe change of hydraulic attachments from the driver's cabin. On one hand this enhances safety and on the other hand, it ensures greater efficiency in the work process.

In Germany, the RSRG is going one step further to advance digitalisation in excavator use. Two new excavators, equipped with 3D machine controls, will be ready for use on customer projects from autumn 2023.

The digital terrain models necessary for working with the 3D machine control are created by the in-house BIM department and can be transferred to the machine from any location. Via remote access, the construction progress is visible in real-time. This allows the sequence of subsequent work to be adjusted. As a result, RSRG can guarantee its customers a service optimised in both quality and quantity. Moreover, the 3D machine control contributes to workplace safety.

To align the heights and incline of a subgrade, for instance, the track construction workers do not need to enter the danger zone of the machine; this can be comfortably and safely performed by the machine operator via the displays in their cabin. Modern attachments such as sleeper exchange and sleeper laying devices, as well as a range of special attachments, complete the package with which the RSRG can efficiently complete customer projects.

LARGE-SCALE TRACK CONSTRUCTION MACHINERY FROM AROUND THE GLOBE

Rhomberg Sersa Rail Group offers its machine technology across three continents.

Barbara Zeilinger
Head of Management Support, Marketing & Communication, Austrian Market

THE RHOMBERG SERSA RAIL GROUP (RSRG) HAS A LARGE RAIL TECHNOLOGY SERVICE OFFERING, WHICH IT OFFERS TO CUSTOMERS IN EIGHT MARKETS. ITS ABILITY TO PROVIDE LARGE-SCALE TRACK CONSTRUCTION MACHINERY TO ITS CUSTOMERS IS UNBEATABLE.

The core of RSRG's mechanised track construction capability is based in in Austria, Switzerland, and Germany. The company combines its modern track construction machinery with decades of experience in its operation. True to its environmental commitments, RSRG has invested in environmentally-friendly hybrid technology. Its track machinery offers services that include: tamping, ballast cleaning, track conversion, subsoil remediation, grinding and milling.

RSRG does not only provide large-scale track construction machinery in the heart of Europe, but has rolled out this service offering to the Nordic countries, Ireland, the UK, Australia and North America.

In Ireland, the machines of Iarnród Éireann/Irish Rail are operated and maintained by RSRG, which provides a service offering that includes tamping, ballast cleaning, track inspection and heavy lifting.

In the UK, RSRG has achieved significant productivity increases in track and turnout renewal projects by providing specialised ballast management machines MFS+ and UMH reloading machines.

Outside of Europe, RSRG has been successful with large machinery technology in Australia and North America.

RSRG has been operating in Australia since 2005 and delivers a top quality service to its customers with its high-performance tamping machines.

In Canada, RSRG is the market leader for ballast cleaning and it is now also successfully offering the same service in the USA. RSRG was the first company to offer the Canadian market milling technology, in partnership with the Austrian company Linsinger/Linmag. The approach taken by RSRG to its markets in North America won the company the "Innovation Award 2022", conferred by CARS (Canada Association of Railway Suppliers).

On a Global basis, RSRG operates 230 rail-bound vehicles employed in track and overhead line construction. Customer focus drives RSRG to invest in innovative technology that enables high quality solutions.

Linsinger Rail Milling Train SF02T-FS LB
Rhomberg Sersa North America is proud to operate the Linsinger rail milling train, which is the first rail milling machine in North America that can identify cracks in the rail surface. The machine is equipped with the latest profile measuring technology for cross-longitudinal profile and eddy current determination.

Plasser & Theurer 09-8x4 4S Dynamic E³
This machine tamps ballast stone on tracks and switches, powered by environmentally friendly hybrid technology. Whenever available, electricity is drawn from overhead lines and braking energy is also recovered by the machine's batteries. It is also equipped with specially configured tamping units (eight individual tamping units with four tamping picks each).

Plasser & Theurer MFS+
The MFS+ is a material conveyor and silo unit and is used for the continuous conveying, storage and subsequent transport of excavation material.

MACHINE INTELLIGENCE

Remote monitoring of machines and increased machine performance

Amber Bellamy
Marketing and Communications Manager, Australian Market

AUS THE RHOMBERG RESURFACING TEAM HAVE BEEN WORKING HARD IN THE BACKGROUND TO DEVELOP A FLEXIBLE FUTURE PROOF MONITORING ARCHITECTURE THAT CAN BE APPLIED ACROSS THE ENTIRE MACHINE FLEET.

IPCs, or industrial personal computers, are becoming more and more popular in a wide variety of industries, and the rail industry is no exception. Recently, Rhomberg Sersa Australia's (RSA) resurfacing team decided to invest in IPCs for their machines, and the results have been impressive.

New IPC (Industrial PC) units have been installed on Rhomberg Sersa Australia's resurfacing fleet increasing processing power and allowing remote monitoring of machines and increased machine performance.

When this innovative project kicked off the team's goal from the outset was to design a solution that was future proof and not just a solution that was designed to fit the current defined requirements. To achieve this the team had to use components and design principles that are commonplace in the automation industry and hence well supported.

Commonly used and widely available automation components were used throughout system to ensure high serviceability, high availability and long service life.

By using a centralised controller with a powerful communication bus the integration of almost any sensor or device that exists in the automation and data acquisition space complies. Data and control signals can be collected and sent at the fastest currently available cycle times in the digital world.

The data is collected and disseminated to MyNet allowing our maintenance team to monitor machine output and essentially address issues in productivity before major breakdowns or machine failures occur. This innovation will reduce cost and time previously spent on the repairs in a reactive state. Furthermore, the system allows real time monitoring and notification of machine and track dynamics via the onboard HMI's or any internet connected device including the Shift Supervisor's mobile phone.

The team had been using older equipment that lacked monitoring functionality, which made it difficult to keep track of how much material was being used, how much time was being spent on each section of track, and other important metrics. This lack of visibility made it challenging to optimise their processes and improve efficiency.

Ultimately any innovative solutions applied to our machines enhancing proactive maintenance is great news for both our business and our clients!

ON TRACK MACHINES RUN ON VEGETABLE OIL

Hyrdrotreated Vegetable Oil (HVO) is introduced on the Irish network to reduce the carbon footprint of the OTM fleet

Edel Kennedy
Marketing and Communications Manager, Irish Market

IRL A LIGHTHOUSE PROJECT BY RHOMBERG SERSA IRELAND WILL RESULT IN THE PHASING OUT OF GREEN DIESEL ON THE OTM FLEET AND ITS REPLACEMENT WITH HYDROTREATED VEGETABLE OIL (HVO).

The project will reduce the overall CO_2 emissions on the Irish Rail / Iarnród Éireann (IÉ) OTM fleet, helping to achieve the environmental objectives of both RSRG and IÉ.

The engineering change, led by Derek Clare, began with an assessment of fuel use in 2022 across the fleet. The fuel data showed that three OTMs – the ballast cleaner and two specific tampers – consumed 45% of the total fuel used by the machine fleet. The three machines also operate the same engine type, therefore allowing for more rapid testing.

The HVO can be mixed in the same tank as the traditional green diesel with no adverse effects. Earlier this year an initial trial was carried out on the ballast cleaner, 781, which saw the introduction of the biofuel totaling just 25% of the tank's capacity. The amount was increased in managed stages so that it could be monitored and controlled by the maintenance department. This was also to ensure no damage was caused to the engine.

At the time of writing, the data had proven that the trials on 781 had been successful. RSIE has started trials on OTM 751 and it is planned to then commence trials on OTM 744.

One of the cleanest fuels on the market, HVO is 100% waste vegetable oil that is put through a much more complex refining process, producing a superior, cleaner fuel that is 100% interchangeable with conventional diesel.

HVO fuel is typically more expensive than petrodiesel or fossil diesel alternatives due to limited availability and limited distribution networks. However, any difference in costings is far outweighed by the enormous reduction in carbon emissions.

The fuel changes on the 3 machines will lead to a reduction of CO_2 emissions of approximately 150tonnes annually.

04

PRODUCTS

FAMILIAR YET NEW

Innovation allows for documentation and predictability even during first time construction.

Hannes Mathis
Project Manager R&D,
Project Business

↳ **RhoMAT**
Type: Tachymeter-controlled track lifting and alignment machine
Functions: Combined lifting and alignment of the track grid
Product partner: intermetric GmbH
Further information: www.rhomberg-sersa.com/en/services/rhomat-semi-automated-track-alignment-system

You can find the product video and additional images in our online magazine.

DEU MACHINE-ASSISTED TRACK ALIGNMENT: WHAT IS GENERALLY ACCEPTED AS THE STANDARD IN GRAVEL TRACK CONSTRUCTION IS NOW ALSO USED BY THE RHOMBERG SERSA RAIL GROUP IN THE CONSTRUCTION OF FIXED TRACK BEDS.

In collaboration with their partner intermetric GmbH from Stuttgart, the Rhomberg Sersa Rail Group developed a tachymeter-controlled track lifting and alignment machine called RhoMAT. The goal is to combine several processes that previously ran consecutively while simultaneously increasing the achievable accuracy of the end product.

To this end, the pre-bonded track grid is roughly positioned in terms of location and height using a longitudinal frame about 14 metres long. Thanks to the lifting of the track grid and the subsequent alignment being combined, this effectively reduces any rail tension and not only facilitates but also significantly accelerates the subsequent tachymeter-controlled alignment process.

The result: The work on the construction site is reduced by a full day. In addition, the actual alignment process is fully automated, freeing up important capacities in material resources and human labour for other tasks. The accuracy of the roughly aligned track grid is achieved at all times and is visible in the documentation. Predictability of the work performance for the subsequent fine adjustment process is therefore possible for the first time.

The prototype, which has been in use from the start in the "ARGE S21 Fixed Track Bed Fildern" project, showed that the goal was achieved: The project time was shortened and was coupled with a 15% increase in performance while halving the typical number of crew members. The significantly simplified and now more predictable allocation of surveying resources, in turn, reduces the risk of construction delays.

CUSTOMERS AT THE FOREFRONT

RSRG offers a fitting solution for each of their customers' challenges.

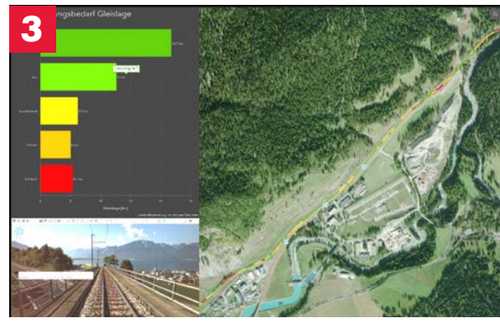
Torsten Bode
Head of Group Products and Innovations

THE RHOMBERG SERSA RAIL GROUP HAS BEEN SUPPORTING ITS CUSTOMERS FOR DECADES IN PROVIDING SAFE, SUSTAINABLE, AND ATTRACTIVE RAILWAY OPERATIONS. THE COMPANY CAN DRAW ON EXTENSIVE EXPERIENCE FROM INTERNATIONAL DEPLOYMENT OF CUTTING-EDGE TRACK CONSTRUCTION AND MAINTENANCE MACHINES, AS WELL AS RELIABLE EXECUTION OF RAILWAY PROJECTS. THE FOCUSED EXCHANGE WITH CUSTOMERS REGARDING THEIR INDIVIDUAL CHALLENGES AND THE CONCRETE CONTRIBUTION OF SPECIFIC PRODUCTS IS ALSO IMPORTANT. INDEED, INNOVATIVE PRODUCTS, CONSISTENTLY ORIENTED TOWARDS THE BENEFIT FOR THE RAILWAY SYSTEM, ARE CRUCIAL. AND IT IS PRECISELY THESE THAT RHOMBERG SERSA RAIL GROUP HAS.

The decentralised structure of the Rhomberg Sersa Rail Group is a significant advantage for the customers. The rail technology specialist establishes the distribution of its own products in close proximity to its customers or the problems which are to be solved. At the same time, the RSRG strengthens teams within the group that have outstanding product knowledge to ensure the substructure crucial for customer success and benefit-oriented further development.

In close cooperation with all parties involved, the company currently primarily focuses on the market launch of already tested solutions for

- modern track construction using the innovative, superimposed IVES slab track with fast installation, long lifespan, and simplest maintainability.
- efficient maintenance of existing wooden sleeper tracks using the SLS - Second-Life-System for effectively extending the lifespan by five to ten years.
- digitalisation, inspection, and diagnostics of railway infrastructure using the newly developed Rail Asset Hub, which correlates measurement and condition data in an integrated dashboard and enables intelligent decisions regarding the maintenance and operation of the infrastructure.



You can learn more about our products on our website.

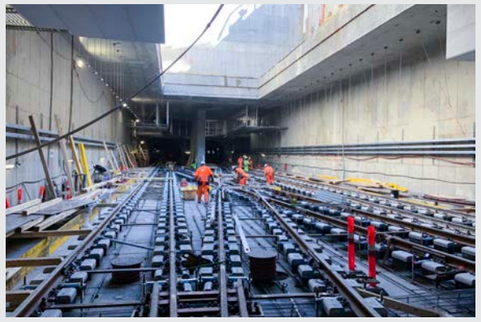
RIGHT ON TRACK

Alignment Systems from
RSRG Stand the Test of Time.

Marko Sejnjanovic
Project Engineer,
Project Business

Tariq Al-Thuwainy
Project Manager R&D,
Project Business

Hannes Mathis
Project Management R&D,
Project Business



FOR OVER TWO DECADES, THE PROPRIETARY ALIGNMENT SYSTEMS OF THE RHOMBERG SERSA RAIL GROUP HAVE PROVEN THEIR WORTH. THEY ARE DEPLOYED IN MORE THAN 15 COUNTRIES, FACILITATING THE EXECUTION OF COUNTLESS CONSTRUCTION PROJECTS. PROJECTS VARY, RANGING FROM THE INSTALLATION OF VARIOUS FIXED TRACK BED TYPES WITH DIRECT FASTENINGS OR SUPPORT BLOCK POINT, TO THE INSTALLATION OF A VARIETY OF TYPES WITH SLEEPER-LIKE COMPONENTS, WHICH ARE INSTALLED USING THE "TOP-DOWN" PRINCIPLE.

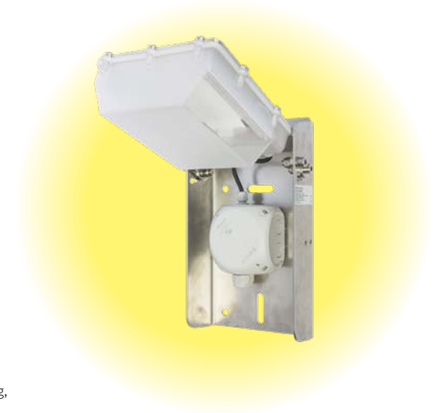
Through consistent and systematic further development, the various systems meet the most complex requirements during installation and establish an excellent and tension-free track position through a series of simple steps. The modular design allows for easy adaptation to the respective project requirements or track parameters. The robust execution contributes to a reliable setup of the track and, furthermore, to the preservation of resources. The systems can be driven on with light rail vehicles, thereby offering significant advantages in terms of construction logistics, concrete supply, and the construction work itself. This simplifies the installation, especially in projects with limited access to the construction site or confined space conditions (eg, shift logistics, limited access possibilities, small tunnel cross-sections). Meanwhile, escape routes can be preserved by keeping peripheral paths clear.

"The independence from additional logistic paths combined with a reduction of specialised equipment results in significant time, cost, and resource savings."

Marko Sejnjanovic
Project Engineer, Project Business

COUNTERING TUNNEL VISION

New SingleLiT Single Light
Illuminates the Darkness.



Paul Hoch
Project Manager Lighting,
Project Business

WITH THE DEVELOPMENT OF THE NEW SINGLE LIGHT FOR TUNNEL SAFETY, THE RHOMBERG SERSA RAIL GROUP'S LED EMERGENCY LIGHT PRODUCT FAMILY HAS GAINED A NEW MEMBER.

The SingleLiT serves as a perfect complement to the already known RSRG handrail, handraiLIT, responsible for lighting the tunnel escape route in emergencies. It is optimally suited for safety lighting systems according to EN50172 or the TSI-SRT (Technical Specification for Interoperability).

The lighting innovation was developed based on the requirements of DB Netz AG. It strictly adheres to the sustainability principles of the RSRG which means only long-lasting materials are used. The power consumption has been optimised and is only around 4W. Moreover, the light can be easily repaired if necessary. At the end of its lifespan, it will be disposed of in an environmentally friendly manner.

The SingleLiT stands out thanks to its innovative light guidance system based on LED lenses and the corresponding light exit surfaces of the light head. The light is perfectly directed onto the escape route in the tunnel, thus ensuring illumination up to 10 metres in both directions. The light head is adjustable between 90 and 180°, thereby adapting to any tunnel wall courses or profiles.

Ⓐ **SingleLiT RDB**
is perfectly suited for use in railway tunnels and is currently in the approval process of DB AG.

Ⓑ **SingleLiT METRO**
with its multitude of electrical variants, is ideal for illuminating subway or city railway tunnels.

THE DIGITAL TRACK CONSTRUCTION MACHINE MANAGEMENT

With RAILium, customers always have their resources in view.

Sascha Ocvirk,
Product Manager
Digital Solutions

Christoph Schürz,
Product Expert
Machine Management

RAILium.
Machine Management

AS A JOINT VENTURE BETWEEN THE RHOMBERG SERSA RAIL GROUP AND BOOM SOFTWARE AG, RAILIUM COMBINES THE KNOW-HOW AND EXPERIENCE OF TWO RENOWNED EXPERTS IN THE FIELDS OF SOFTWARE DEVELOPMENT AND RAILWAY CONSTRUCTION.

Faster, safer, simpler: With RAILium, RSRG and its partner have created an "all-in-one" solution for optimal track construction machine management. The integrated software solution networks all relevant task fields such as deployment and transport planning, resource, availability, maintenance interval or proof management. The clear goal is to optimise the use of resources, provide maximum machine availability, reduce maintenance costs and create a comprehensive communication platform for information and knowledge exchange among employees.

With RAILium, users always have the status of each individual vehicle (or group of vehicles) in view. This not only facilitates resource and deployment planning, but also reduces maintenance costs and prevents unplanned failures. Continuous monitoring of all resources and deployments is possible at any time in the RAILium hub. This way, employees can remotely access their assigned tasks and conveniently retrieve all necessary data and documents.

Due to its modular structure, RAILium is available for use by customers in the shortest possible time. At the same time, the software can be adapted to the operational processes and individual needs of companies.

Underlying all this, is the long-standing competence and experience of the two joint venture partners, Rhomberg Sersa Rail Group and Boom Software AG, in the fields of railway construction and software development. The partners are always at the forefront of the collaboration: tailor-made, benefit-oriented and reliable solutions for the customers.

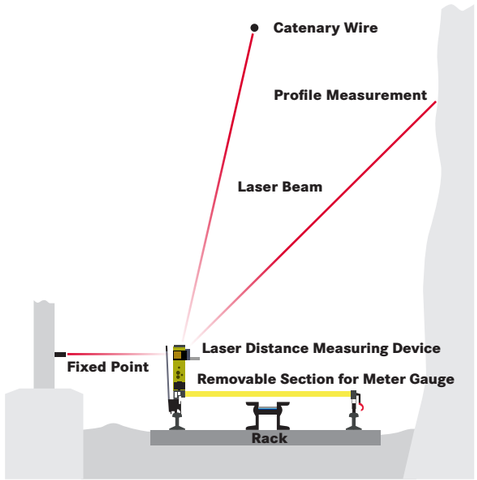
"The close collabo-ra-tion between Rhomberg Sersa Rail Group and Boom Software AG combines longstanding railway construction competence and expertise in software development. Our goal: We want to offer customers tailor-made, benefit-oriented and reliable solutions."

Torsten Bode
Head of Group Products and Innovations

FIXED POINT MEASURING DEVICE MEPHISTO 2

Measuring tripod for profile, height, and distance measurements with the DISTO distance measurer by Leica.

Ueli Bühler
Head of Measuring Systems Department, Swiss Market



Mephisto 2
Type: Fixed point measuring device
Function: Measuring of height, distance, and super-elevation at the selected
Introduction: 2019

CHE **SINCE 2019, THE NEW GENERATION OF THE MEPHISTO FIXED POINT MEASURING DEVICE HAS BEEN PRODUCED AND SOLD WORLDWIDE THROUGH OUR LONG-STANDING DISTRIBUTION PARTNER GEISMAR.**

The further development of the MEPHISTO 1, which has been used worldwide since 1997, is based on the innovative chassis of its predecessor. This makes the device adaptable with different pipe lengths for any track gauge, and usable globally. Thanks to the replaceable lithium-ion battery, the operating time is decoupled from the battery capacity, and the entire device does not need to be brought to the socket for charging. For a comfortable measurement campaign, target data in different formats can be loaded onto the device. This can be done via a USB stick, USB data cable, or WiFi.

The MEPHISTO 2 fixed point measuring device is characterised by its simple operation and high flexibility. Weighing around 13 kilograms, it can be immediately removed from the danger zone by one person without any additional manipulation. Once the device is assembled and placed on the rail, it can be moved from measurement point to measurement point with a simple extendable rod.

With MEPHISTO 2, the overhead line, platform edge or entries into the clearance profile at defined points can also be measured. The Rhomberg Sersa Rail Group manufactures the device in Hinwil/Switzerland. There, all devices used in Switzerland are also revised and recalibrated annually.

Since the development of MEPHISTO 1, the devices have been distributed worldwide exclusively through the reliable sales partner Geismar. Geismar also carries out the annual service of the devices used worldwide at the Breisach/Germany location.

05

ON SITE

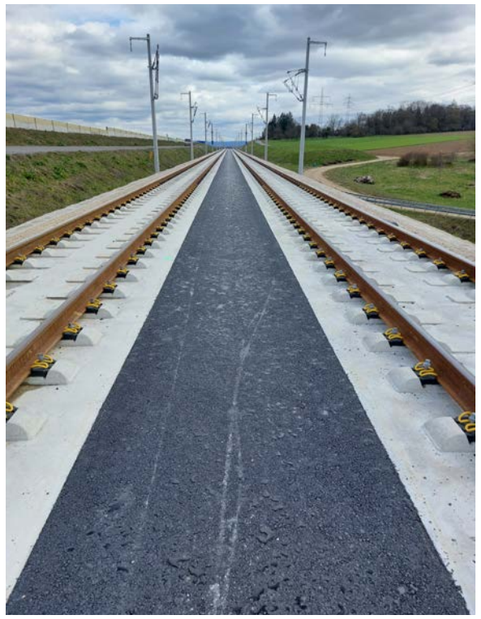
AROUND THE GLOBE

Current RSRG projects across the world.

PROGRESS ON THE FILDERN PLAIN

Installation of the First Switches Successfully Completed.

Philipp Nachbaur
Managing Director,
Project Business



ARGE S21 Fixed Track Fildern (AFIL)
Partners: Rhomberg Sersa Rail Group, Ed. Züblin AG, DB Bahnbau Gruppe
Contract: 35 Track-Kilometres of Fixed Track (FF)
Construction Section: Stuttgart Airport – Neckar
Further Information: www.bahnprojekt-stuttgart-ulm.de

DEU **THE WORK ON THE ARGE S21 FIXED TRACK FILDERN (AFIL) IS PROGRESSING RAPIDLY. IN APRIL, THE INSTALLATION OF THE FIRST SWITCHES TOOK PLACE. THE 85-METRE-LONG AND 60-TONNE SWITCHES WERE CONVEYED VIA SPECIALIST TRANSPORT TO THE NEW CONSTRUCTION ROUTE NEAR WENDLINGEN.**

Construction of the fixed track progressed rapidly since it began about a year ago, allowing the installation of the first four switches to go ahead as planned in April of this year. Thanks to the sophisticated logistics, meticulously planned by the AFIL team, the installation and subsequent concreting went exactly according to plan.

To advance the construction progress, in recent months work was carried out simultaneously at several points on the track between Wendlingen and Stuttgart Airport. The numerous bridges and railway overpasses had to be prepared for the installation of the fixed track. For this, bulkhead panels were concreted, and STOG compensating plates were installed. The earthworks constructed several metres of cable duct as well as the "HGT" – a hydraulically bonded bearing layer – as a base for the later installation of the fixed track in the Rheda 2000 system. Currently, the specially developed concrete finisher is back in use.

ICE, ICE, BABY!

RSRG hands Over New Wendlingen-Ulm Line.

With the Deutsche Bahn timetable change on December 11, 2022, the new Wendlingen-Ulm line has been put into operation. The final touches were provided by colleagues from Rhomberg Rail Technology, who equipped and prepared the project with fixed track. The project was delivered on time and within budget.

New Wendlingen-Ulm line
- Fixed track on nearly 119 kilometres
- Of that, over 60 kilometres in 11 tunnels
- 23 sets of points (switches)
- Erection of 50-Hz, telecommunications, and railway power facilities
- Laying of over 2,500 kilometres of cable
- Mechanical equipment including ventilation systems, technical rooms, and signage
- 78 kilometres of illuminated handrail handraiLIT
- The contract volume amounts to approximately € 243 million
- Up to 140 employees working simultaneously on the construction site
- Top speed of trains on the new line: 250 km/h
- Time saving between Stuttgart and Ulm: 15 minutes

"With the installation of the fixed track and the railway technical equipment, we are responsible for the final work steps before commissioning a route. When we're gone, the train runs."

Philipp Nachbaur
Managing Director,
Project Business

1

TOGETHER WE ARE STRONGER!

/

In the Copenhagen project, RSRG shows how international forces can be optimally bundled.

Magdalena Kranawetter
Site Manager,
Project Business

DNK **THE KNOW-HOW AND EXPERTISE OF THE RSRG GROUP HAS BEEN APPLIED IN THE COPENHAGEN PROJECT. IN THIS WAY, THE PROJECT CAN BE SUCCESSFULLY COMPLETED.**

In autumn 2021, the starting gun was fired for the expansion of the M4 line in Copenhagen by the ARGE Rhomberg-Efacec consortium. The new line, which extends over a length of 4.6 kilometres, will encompass five stations and two parallel, single-track tunnels upon completion. The consortium is responsible for the installation of the fixed track, the power rail, and the railway technology equipment. The contract is worth a total of €45 million.

To make use of the expertise and know-how of the entire RSRG Group, not only were the resources of Rhomberg Railway Technology Austria used, but the project was also implemented with the help of colleagues from the UK, Austria, and the project business.

Thus, the entire project can be carried out on schedule and to the complete satisfaction of the client, Metrsoselskabet AS.

2

SECURE START

/

Control and Safety Technology Team of Bahnbau Wels in Action on the Kamptal Railway.

David Edlinger
Head of Control and Safety Technology, Austrian Market

AUT **AS PART OF THE INTERLOCKING AND EKSA MODERNISATION OF THE LOWER AUSTRIAN KAMPTAL RAILWAY BY SCHEIDT & BACHMANN ÖSTERREICH GMBH - SIGNALLING SYSTEMS, BAHNBAU WELS (BBW) SECURED THE CONTRACT FOR THE SAFETY TECHNOLOGY INSTALLATION WORK. THIS MARKS THE FIRST COLLABORATION WITH THE LINZ-BASED SPECIALIST FOR RAILWAY SIGNALING TECHNOLOGY.**

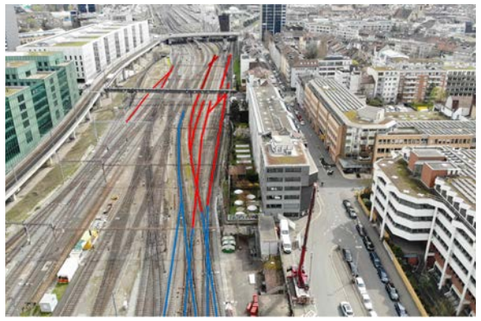
The construction area extends along the ÖBB route from Sigmundsherberg to Hadersdorf am Kamp. Over a total distance of 43 kilometres, BBW will be conducting installation activities for the renewal of the safety technology outdoor facilities, including work on signals, the train control system, track clearing devices, and cable end assembly. This is the first joint cooperation project for secondary railway technology with Scheidt & Bachmann Österreich. The planned completion date is December of this year.

PERFORMANCE ENHANCEMENT BASEL SBB JUNCTION

First stage of bridging measures in the public facilities at Basel railway station, Lot 1.

Ramazan Sönmez
Project Manager,
Project Business

Dominik Brügger
Head of Construction Central,
Swiss Market



↳ **ARGE Performance Enhancement-1**
Partners: Frutiger AG, Ziegler AG, and Rhomberg Sersa Rail Group
Construction Section: Münchenstein, Basel SBB, and St. Johann (7 phases)
Construction Phase: December 2022 - End of 2025

CHE **AS PART OF THE RAILWAY INFRASTRUCTURE DEVELOPMENT PROGRAMME (STEP), THE EXPANSION OF THE BASEL JUNCTION HAS BEGUN. THIS WILL LEAD TO GREATER TRAFFIC AT BASEL SBB STATION. THEREFORE, AN ADDITIONAL PLATFORM AND AN EXPANSION OF THE SOUTHERN TRACK FACILITY ARE BEING IMPLEMENTED TO ABSORB THE ADDITIONAL BURDEN.**

A joint venture with Frutiger AG, Ziegler AG, and Rhomberg Sersa Rail Group was formed to optimally meet customer needs. The project comprises seven phases from mid-December 2022 to the end of 2025 and extends over Münchenstein, Basel SBB, and St. Johann. The main works are located at Basel railway station. About ten trades are involved in the project, requiring increased coordination in execution.

The main works in Lot 1 include:

- Demolition of existing buildings, remodeling of platforms and platform roofs
- Track and switch construction along with substructure renewal
- All cable dismantling, cable pulling, and cable protection works within the project perimeter
- Bored pile wall and massive retaining wall
- Artistic structures such as the support of the pedestrian overpass
- Foundations (with micropiles)
- Logistics services for own and third-party services.

Several buildings and around 1000 m of track were dismantled in April 2023. The bored pile works along Meret-Oppenheim-Strasse were completed after nearly six months of work from January to June 2023. Also, the first foundations for the platforms, including logistics services for Lot 2, are complete. Currently, the finishing works on platform 07/08 are taking place while the new platform facility track 19/20 is already under construction. In parallel, the cable and deep track construction works are in full swing throughout the entire project perimeter. The first major track and switch reconstruction in the L-group with 5 switches, approximately 400 m of track, multiple crossings, manholes, and cable ducting begins on 09/01/2023 and will be completed by 09/25/2023. The next reconstruction will take place at the beginning of October 2023.

INTER-VIEW

THE PROJECT SPEED IS TREMENDOUS

Why Deutsche Bahn is adopting the innovative "Rail Partnership Model" for the first time at the new Cottbus plant.

Quelle: © Deutsche Bahn AG / Oliver Lang

Franziska Hennig
Commercial Team Lead Major Projects, DB Vehicle Maintenance GmbH

Mario Henneberger
Senior Logistics and Factory Planner, LOGSOL GmbH

Henning Benker
Site Manager, Wayss & Freytag Engineering Construction AG

Christoph Scheidl
Head of the Competence Center for Railway Affairs, FCP Fritsch, Chiari & Partner ZT GmbH

DEU A UNIQUE PROJECT IS CURRENTLY TAKING SHAPE IN COTTBUS. FOR THE FIRST TIME, DEUTSCHE BAHN, AS THE CLIENT, IS APPLYING A COMPLETELY NEW ALLIANCE MODEL IN ONE OF ITS MAJOR INFRASTRUCTURE PROJECTS, WITH THE RHOMBERG SERSA RAIL GROUP AS THE PREMIERE PARTNER. THE NEW MODEL BRINGS TOGETHER THE ESSENTIAL PROJECT PARTNERS IN THE PLANNING PHASE RATHER THAN LATER, IN THE CONSTRUCTION PHASE. "KEEP TRACK" WANTED TO FIND OUT EXACTLY WHAT THIS ENTAILS, HOW IT WORKS, AND WHETHER IT IS INDEED SUCCESSFUL. FOR THIS PURPOSE, REPRESENTATIVES OF THE CLIENT AND THE ALLIANCE PARTNERS WERE INTERVIEWED.

MS. HENNIG, WHY DID DB CHOOSE THE INNOVATIVE PARTNERSHIP MODEL FOR THE NWC?

Hennig The 'New Cottbus Works' is very large project and has a truly ambitious timeline. To manage this successfully, we wanted and needed to take new paths. And it's a great advantage to have all executing companies, and especially the expertise of the participants, on board right from the planning phase. This way, we achieve the goals and even manage to deliver higher quality, better adherence to schedules and cost certainty. The classic issues of overruns and unplanned cost developments at the end of a project are things of the past.

DO THE ALLIANCE PARTNERS SEE IT THAT WAY AS WELL?

Henneberger With this project form, it is possible to push forward projects of this magnitude much faster than with conventional contract models. The construction progress alone speaks for itself. The speed in the project is enormous. That's a great success for all involved.

Benker Especially in the co-operation on the construction site, the positive effect of the model is noticeable. The alliance idea is already working very well. Everyone works as smoothly and collaboratively as possible to achieve project success together.

Scheidl From a planner's point of view, the great advantage lies in the continuous processing of the design, approval and execution planning. Normally, the different phases of performance are planned sequentially and sometimes by different offices, now it all comes from one source, flows into each other and thus brings immense time advantages. Just as an example: For the smaller of the two maintenance halls, the construction planners first came together in February 2022 and started construction just four months later. The design and approval planning for the larger hall and the outdoor facilities also started in February 2022, and construction is scheduled to start in January 2024. That says a lot.

WHAT HAS GONE PARTICULARLY WELL SO FAR? WHERE IS THERE STILL POTENTIAL?

Hennig The strength of the model has been particularly evident in crises and the difficult global political situation of the recent past. Despite the developments being completely unpredictable, we did not run into delivery or material shortages. This has certainly only been achieved because all partners have aligned their respective strengths and possibilities towards the common goal.

Henneberger We see potential for improvement, as in any large company, in communication and efficiency. With this number of project participants – we are eight alliance partners alone - the organisation and coordination of all those involved is an incredibly large challenge.

Hennig Here we see ourselves as clients also having a responsibility. We have learned that we must allow more time to get to know each other and to ensure clear responsibilities, structures and processes. One must consider that this is a pilot project in which all participants are in a learning process. But the results so far clearly show that we are on the right track together.

New Cottbus Works

The project "New Cottbus Works" includes the construction of two maintenance halls for electric multiple units for the heavy maintenance level of high-speed traffic. In addition, the conversion of the current compact hall for the revision of hybrid locomotives is planned. The new factory in Cottbus will become the largest maintenance factory in the DB's overall structure. Approximately 1,200 jobs will be created, including about 100 apprenticeships. All are high-quality industrial jobs.

Partnership model

For the first time, Deutsche Bahn, as the client, is using the "Rail Partnership Model" in one of its major infrastructure projects. The idea behind this concept is to implement the extensive and complex major projects quickly, as well as ensuring the project is of high quality, cost-effective and on schedule. This is achieved by bringing together the essential project partners in the planning phase. Through early involvement, all companies can focus their full performance and innovation capabilities on the optimisation, rapid implementation and efficient operation of the construction project.

IMPROVING TOGETHER

Innovative Contract Model for the new Cottbus plant sparks interest.

Torsten Schmidt
Site Manager,
German Market

DEU THE MAJOR PROJECT IS A HOT TOPIC IN SAXONY AND BRANDENBURG. THE "RAIL PARTNERSHIP MODEL" USED THERE FOR THE FIRST TIME (SEE PAGE 50) IS ALSO SPARKING INTEREST AMONGST OTHER COMPANIES, SUCH AS DRESDNER VERKEHRSBETRIEBE AG (DVB).

In November of last year, Rhomberg Sersa Germany (RSD) organised a workshop with Dresdner Verkehrsbetriebe AG (DVB), one of the company's most important customers. The aim was to find out how RSD can use its expertise to best support its customer develop. Concrete topics were identified, particularly around "digital solutions".

However the focus was mainly on the presentation of the innovative partnership model at the ICE plant in Cottbus. The cooperative contract sees companies work together from the planning stage. This, and the opportunities to transition to further digitalisation aroused the interest of DVB. During an excursion to the construction site, the workshop participants were able to see the works firsthand.

About the new Cottbus plant

The Rhomberg Sersa Rail Group has been on board this major project from the very beginning. In just a few short months the railway technology company has successfully connected the track to the first new hall to be built. With its competencies as a full-service provider for all services related to the track, RSRG can fully support the holistic approach of this innovative contract model. Trusting collaboration between the client and the participating companies ensures that the continuous optimisation of the project is the focus from planning to realisation.

SYMBOL OF THE BASQUE COUNTRY

RSRG refurbishes "La Rhune" railway line in the French region of Pyrénées-Atlantiques.

Stefano Rossi
Managing Director, Southern Region, Swiss Market

Project Petit Train de la Rhune
Location: Département Pyrénées-Atlantiques, France
Assignment: Renovation of the cogwheel railway
Construction Section: La Rhune railway line (4.25 kilometres)
Construction Phase: September 5, 2022 to May 30, 2023

You can find more information in our online magazine.

CHE THE RAILWAY LINE KNOWN AS "PETIT TRAIN DE LA RHUNE" RUNS FROM COLL DE SAINT IGNACE AT AN ALTITUDE OF 164 METRES ABOVE SEA LEVEL. IT RUNS OVER A MAXIMUM GRADIENT OF 25% TO THE SUMMIT OF LA RHUNE AT 905 METRES ABOVE SEA LEVEL.

The track renewal experts for cog railways at RSRG have successfully completed many projects: In the Southern Alps, the refurbishment of almost ten kilometres of the railway line on Monte Generos; the 5.1 kilometres of Chamonix-Montenvers railway line in the Mont Blanc massif; the 12 kilometre Tramway du Mont Blanc; and a section of the Puy de Dôme volcano in the French Massif Central measuring 5.3 kilometres. Added to these successful jobs was a project which ran from September 5, 2022, to May 30, 2023, which saw the refurbishment of the La Rhune railway line (4.25 kilometres) in the French department of Pyrénées-Atlantiques.

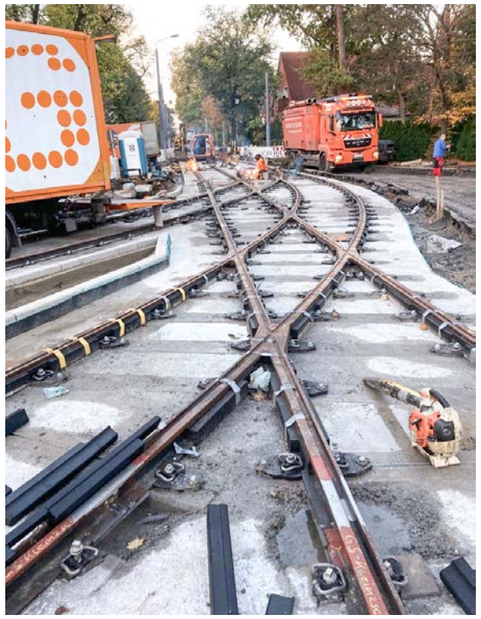
La Rhune, with its extremely challenging climatic conditions, is not only a picturesque place, but also a nature reserve. The climate had a significant impact on the organisation of the construction site, especially with regard to the restrictive regulations for operations. The protection of flora and fauna had to be guaranteed at every stage of operations. Furthermore, all other environmental protection aspects had to be considered. The unstable and changing climate with constant strong winds, frequent rain showers, and snow and ice storms, dictated the course of the work. Project manager Stefano Rossi and site manager Ilidio Boucinha de Amorim benefited from their deep experiences with comparable construction sites, particularly those at Monte Generoso in Ticino, where the work had to be carried out under similar operating conditions and natural circumstances. Thus, the renovation was perfectly executed to the satisfaction of the customers, while fully complying with all safety and environmental regulations, as well as the quality regulations and conditions.

Since June 3, 2023, the facility is back in operation and delights both thousands of tourists who climb the summit daily and the EPSA employees who drive along the route every day.

URBAN CONSTRUCTION

Flood Damage Remediation in the Dresden Transport Corporation AG Network.

Shadi Lalo
Construction Manager, German Market



Flood Damage Remediation
Location: Dresden, Germany
Client: Dresden Transport Corporation AG (DVB)
Contract: Renewal of tram bodies (1.9 km), bridge renewal, road surfacing and sidewalks, overhead line facilities, underground lines and utilities, tree planting works

DEU TWO CONTRACTS - MANY SYNERGIES: THE TRAMWAY FACILITIES OF DVB AG AND THE ROAD FACILITIES OF THE CITY OF DRESDEN, BUILT ON BERTHOLD-HAUPT-STRASSE IN THE 1990S, WERE SEVERELY DAMAGED BY THE FLOOD IN 2013. THE DAMAGE REMEDIATION WAS ASSIGNED TO RHOMBERG SERSA GERMANY GMBH (RSD) AND A PARTNER.

The repair services included the comprehensive renewal of the tram bodies over a distance of 1.9 kilometres of single track, including the renewal of a bridge, road surfacing and sidewalks, overhead line facilities, all underground lines and utilities, as well as tree planting works.

The tram bodies, originally built as a Getzner frame track system, were restored in the Fixed Track System "Rheda City – DVB AG type". The challenge was the just-in-time delivery of all building materials to be supplied by RSD and the precise and professional completion of all preliminary work for the concrete work. Due to the cramped construction fields and the loss of logistics tracks, constant communication with all companies and trades involved in the construction was necessary. The construction project was completed in November of the previous year.

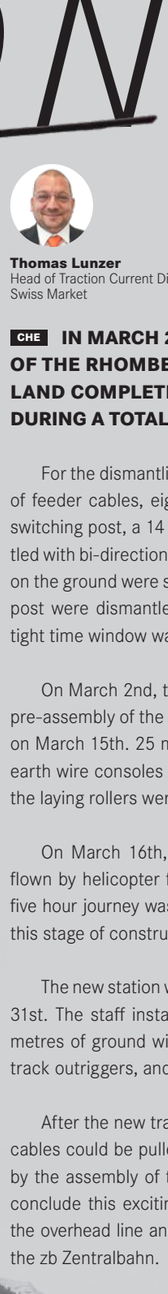
In March of 2022, the same consortium was awarded a project by DVB AG for the comprehensive renewal of the Kleinzschachwitz loop track, including barrier-free stops for buses and trains.

This construction site is not far from the Berthold-Haupt-Straße project, which brings clear advantages in terms of construction handling. The renewal of about 360 metres of single track, two single switches and one single crossing is also restored in the Fixed Track System "Rheda City – DVB AG type" on LMFS mats. This section was also completed in November of 2022.

RENO-VATION FROM THE AIR

Oberried, located in the Swiss canton of St. Gallen, is on the Chur – Rorschach line.

For more information, please visit our online magazine.



Thomas Lunzer
Head of Traction Current Division,
Swiss Market

CHE IN MARCH 2023, THE TRACTION CURRENT DIVISION OF THE RHOMBERG SERSA RAIL GROUP IN SWITZERLAND COMPLETELY RENOVATED OBERRIED STATION DURING A TOTAL CLOSURE OF THE LINE.

For the dismantling of two kilometres of catenary, three kilometres of feeder cables, eight spans, and around 30 masts, as well as one switching post, a 14 hour window was planned. All lines were dismantled with bi-directional vehicles of the Manitou type, and cables already on the ground were shredded. Then, steel structures and the switching post were dismantled with excavators and bi-directional trucks. The tight time window was adhered to precisely.

On March 2nd, the new overhead line material was delivered. The pre-assembly of the masts and the new switching post was completed on March 15th. 25 masts with outriggers, feeder cable consoles, and earth wire consoles were completely pre-assembled. Simultaneously, the laying rollers were assembled with pilot cables.

On March 16th, all overhead line masts and eight signals were flown by helicopter from the installation site to the foundations. This five hour journey was the most efficient route and working method for this stage of construction.

The new station was built in just 11 days, from March 20th to March 31st. The staff installed three kilometres of feeder cables, two kilometres of ground wire, two kilometres of overhead line, seven multi-track outriggers, and a new switching post with five switches.

After the new track was cleared on March 24th, all the supporting cables could be pulled, and the catenaries hoisted. This was followed by the assembly of the laying rollers for the overhead wire trains. To conclude this exciting project, a control ride was carried out before the overhead line and track could be cleared to the full satisfaction of the zb Zentralbahn.

WESTBAHN - 4-TRACK EXPANSION LINZ-WELS

Relocation of tracks on the HL2 route and integration tracks in the Wels marshalling yard.

Wolfgang Stroißmüller
Managing Director,
Austrian Market

Project Westbahn
Location: Linz-Wels, Austria
Assignment: Laying of 12 km of tracks and 30 switches
Client: ÖBB

AUT FOLLOWING THE SITE CLEARANCE CARRIED OUT LAST YEAR, BAHNBAU WELS, WHICH IS HANDLING THIS CONSTRUCTION PROJECT IN PARTNERSHIP WITH A CONSORTIUM PARTNER, CONTINUES THE TRACK CONSTRUCTION WORK THIS YEAR ON THE MARCHTRENK-WELS SECTION.

The challenging track work started in February with the installation of three high-speed auxiliary bridges and the positional displacement of existing switches in the Marchtrenk station. A tight schedule and the fact that the construction work took place on an extremely busy section of the Westbahn route, demanded a lot from the involved teams. The close coordination with the customer ÖBB, coupled with high machine usage and the use of specialised personnel, enabled the company to successfully complete this section of work.

Since the summer months, the new track sections for the HL2 high-performance route are being built, with almost 12 kilometres of tracks involved. Additionally, 30 switches are being relocated in the current construction phase as part of the integration of the Wels marshalling yard. The centrepiece of the new route is the first newly constructed bridge over the highway. Traffic is planned to be directed over this as early as next spring.

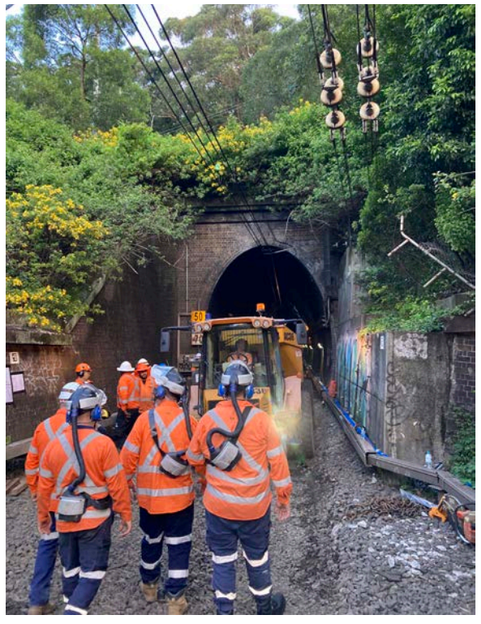
Due to the very high train density and the track facilities limited by the reconstruction work, detailed planning and extensive cooperative is key to success. Particularly noteworthy is the constructive coordination of the individual detailed construction phases of all involved trades in collaboration with the project team of the client ÖBB.

For the Linz-Marchtrenk section, there are also positive signals for the potential start of construction work, as the last missing permissions have now been confirmed by the Federal Administrative Court.

COALCLIFF TUNNEL

An innovative solution
for a heritage icon.

Amber Bellamy
Marketing and Communications
Manager, Australian Market



Project Coalcliff Tunnel
Location: Sydney, Australia
Client: Sydney Trains
Contract: Slab Track in the tunnel

AUS THE COALCLIFF TUNNEL, BUILT IN 1888, IS OF LOCAL HISTORICAL SIGNIFICANCE AS ONE OF THE FIRST TUNNELS BUILT FOR STEAM TRAINS ON THE ILLAWARRA LINE, SYDNEY, NSW AUSTRALIA.

The tunnel also has technical significance as the second longest tunnel on the Illawarra line and for its ability to demonstrate late 19th century railway tunnel building technology. The tunnel is representative of the late 19th century tunnels built south of Waterfall to connect the Illawarra line through to Sydney from Scarborough.

The single-track oviform brick tunnel is 1000 metres in length (60.337-61.337 Km) and due to the difficulty in building a second tunnel it remains a single line with both connecting lines being duplicated in 1915. In 1986, the line was electrified as far as Wollongong necessitating the installation of new electrical infrastructure within the tunnel.

From a maintenance perspective, the Coalcliff Tunnel has been a long-standing challenge for Sydney Trains. To address the issue, they approached Rhomberg Sersa Australia (RSA) to provide the IVES system, which was identified as the most suitable by an independent design report. RSA took up the challenge and has been working with Sydney Trains to turn this project into reality ever since.

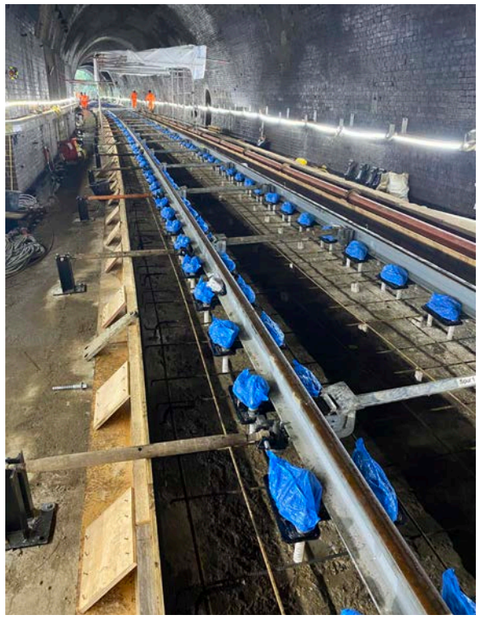
To commence the long-term solution, RSA were requested to trial the IVES system in the first 50 kilometres of the tunnel during Easter 2023 possession, allowing its performance to be monitored. The project involved removing the first 50 metres of track, removing all the ballast, and lowering the tunnel using a cold milling machine. Furthermore the team performed vigorous tunnel cleaning and dewatering over the extended weekend. Then Asphalt was placed in two layers, constructed a central drainage channel, laid the IVES block for 15 metres, and reinstated the transitions using ballasted track.

In conclusion, the Coalcliff Tunnel is a significant historical and technical landmark. The use of modern track slab solution such as IVES will ensure the track performance, making it a safer and more reliable transport link for generations to come.

MOUNTFIELD TUNNEL SLAB REFURBISHMENT

Providing flexible design and build
solutions to keep the Tunbridge
Wells to Hastings line open.

Chris Herrett
Bid Manager,
UK Market



Project Mountfield Tunnel
Location: Mountfield, England
Client: Network Rail
Contract: Maintenance tasks (topographical surveys, drainage and soil investigations, condition analysis, identification of renewal options, emergency repairs, installation of fixed track beds, track renewal)

GBR RHOMBERG SERSA UK (RSUK) WAS AWARDED THE SOUTHERN SLAB REFURBISHMENT PROJECT BY NETWORK RAIL IN 2020. MOUNTFIELD TUNNEL WAS ONE OF THREE TUNNELS IN THE SOUTH EAST OF ENGLAND NEEDING URGENT WORKS TO MAINTAIN THE SAFETY AND RELIABILITY OF ITS RAIL INFRASTRUCTURE.

Network Rail contracted Rhomberg Sersa UK in 2020 to deliver GRIP 2-4 (Feasibility, Option Selection and Option Development) on life expired slab track in Mountfield Tunnel. They were mobilising to site after delays caused by the COVID pandemic, when the client informed that a section of concrete slab in the tunnel had failed. Failure of the concrete slab had caused a geometric twist fault, which led Network Rail to impose an Emergency Speed Restriction (ESR). They needed to remove the ESR as soon as possible to reduce impact on passenger services and asked if we could immediately mobilise to Mountfield and deliver emergency works: We stabilised the section of failed concrete slab by pumping high strength grout underneath it.

Following the emergency repairs, Rhomberg Sersa UK carried out the GRIP 2-4 works. Network Rail chose an IVES on roller compacted concrete pavement option to replace 30m of concrete slab at the tunnel portal. Two weeks before the works were due to begin, additional asset information revealed that the existing concrete slab was acting as a structural prop to the tunnel. Network Rail asked Rhomberg Sersa UK to create a new design and methodology that would avoid damage to the Tunnel. Their solution was an insitu cast slab, which Network Rail accepted and Rhomberg Sersa UK delivered during a nine-day blockade in October 2022.

The final stage of the Mountfield Tunnel Project was a collaborative effort between RSUK, Network Rail and supporting subcontractors to replace 500m of track and the remaining 250m of concrete slab. These works took place during a nine-day blockade from 7 April to handback on 16 April 2023.

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