keep track

2024/25

THE CUSTOMER MAGAZINE OF THE RHOMBERG SERSA RAIL GROUP

Highlights in this edition

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RHOMBERG SERSA RAIL GROUP

ALL 4 ONE – ALL 4 YOU!

Our motto for 2024, slightly modified from its world-famous origin, was inspired by the story of the “Three Musketeers.” We chose it because, much like the fearless guardsmen in Alexandre Dumas' literary work, it perfectly embodies the philosophy of the Rhomberg Sersa Rail Group and, above all, the collaboration within the RSRG family with our customers, partners, and suppliers. Together with Athos, Porthos, and Aramis, the young d'Artagnan forms a tight-knit, powerful team dedicated to good causes, overcoming all challenges and adversities, and ultimately succeeding in their adventure.

We are very similar. As a strong corporate group and “One Brand”, at Rhomberg Sersa Rail Group we pool our resources and expertise to benefit our customers around the track – and around the globe. Modern technology supports our dedicated and motivated employees, enabling us to create future-proof, sustainable infrastructures. All for the best results, all for you!

Yours sincerely,

Koni Schnyder
President Owner Board

Hubert Rhomberg
Member Owner Board

INTERNATIONAL EXPERTISE UNDER ONE ROOF

The Rhomberg Sersa Rail Group – one company that brings together over 3,000 employees in 9 countries across 3 continents, united within one industry and under one brand. This is what defines us: we possess international expertise that we consolidate and apply to specific markets to achieve the best results for you, our customers.

We demonstrate our competence in all things rail through the most complex projects including new construction projects like the Koralm Tunnel in Austria (p. 12), the expansion of the Gäubahn in Germany (p. 8), or the renovation of tunnels in Switzerland (p. 47).

To consistently and continuously enhance our efficiency on construction sites, we focus on process optimisation, automation, and digitalisation – topics we also cover in this edition of our customer magazine. Additionally, as always, we provide you with updates from our company and insights into our diverse projects, innovative products, such as low-maintenance track systems (p. 42), and our extensive machinery fleet.

We hope you enjoy reading!

Garry Thür
CTO

Thomas Bachhofner
CEO

Thomas Mayer
CFO

INHALT

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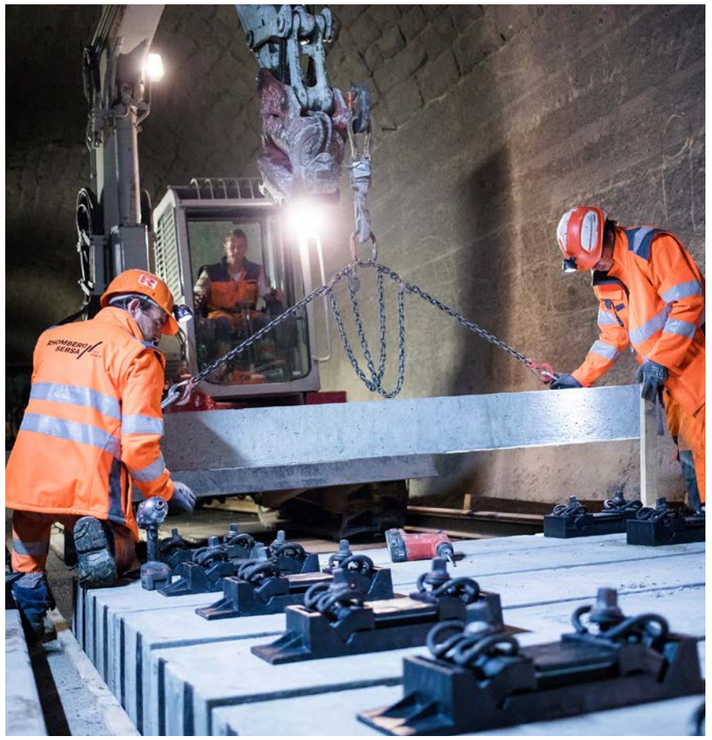

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ONLINE-MAGAZIN

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

TOGETHER, STRONGER FOR YOU

IN A GLOBALISED WORLD, STRONG PARTNERSHIPS AND NETWORKED KNOWLEDGE ARE INVALUABLE . EVEN BETTER THAN FRIENDS IN HIGH PLACES ARE KNOWLEDGEABLE FRIENDS IN FOREIGN COUNTRIES. THIS IS ESPECIALLY TRUE FOR US AT THE RHOMBERG SERSA RAIL GROUP (RSRG) WHEN WE IMPLEMENT PROJECTS FOR OUR CUSTOMERS AROUND THE WORLD – FROM IRELAND TO AUSTRALIA, FROM SWITZERLAND TO CANADA.

Although each market within the Rhomberg Sersa Rail Group operates independently in daily work, one thing is always evident: the strong cohesion across national borders that makes us one large, international family. When our experts encounter a challenge on a project – or simply feel that they could benefit from the experience built up within the group over many years – a quick phone call is all it takes to work together on the ideal solution.

This lived principle of international collaboration and knowledge sharing is a fundamental part of our corporate culture and our success. We firmly believe that together we are (even) stronger than the sum of our parts and therefore we achieve truly great things for our customers.

All 4 One – All 4 You.

SAVING TIME AND MONEY

Rhomberg Sersa Rail Group Implements Gäubahnausbau North as Part of a “Rail Partnership Model”.

Source: © Deutsche Bahn AG

NEXT MAJOR PROJECT FOR DEUTSCHE BAHN BY RSRG: TOGETHER WITH SWIETELSKY, THE RAIL TECHNOLOGY SPECIALIST IS RESPONSIBLE FOR THE SUPERSTRUCTURE AND POWER SUPPLY OF THE GÄUBAHN LINE BETWEEN STUTTGART AIRPORT AND BÖBLINGEN.

The “ARGE Bahntechnik Schwäbische Alb” consortium had already impressed the client with the new line over the Swabian Alb, which was completed on schedule in December 2022. Robert Kumpusch, Managing Director for Project Business at RSRG, stated, “We are pleased to also be the first choice for the partnership model. This is confirmation of our competencies not only in rail construction and equipment but also in collaborative partnerships with the client and all other project participants.”

Along with six other contract partners, the entire project will be handled from planning to commissioning. The DB Projektgesellschaft Stuttgart–Ulm GmbH signed the corresponding multi-party contract in November 2023. Alliance partners include Geoconsult, FCP, IC-Consulenten, Züblin, Wayss & Freytag, Strabag, Rhomberg Sersa, Swietelsky, Spitzke, and Hörmann. In the first project phase, which is to be completed by the end of 2025, planning will take place alongside target price determination and work preparation with construction-preparatory measures. According to the schedule, construction will begin in 2026 and the line will be commissioned in 2032.

The aim of this contract model is to save time and thus also costs. Processes are accelerated by having all alliance partner companies involved in the design and approval planning of the trades from the beginning, rather than participating only from the execution planning stage. There are no bilateral contracts between the client and contractors, but a multi-party contract – one contract with all contractors.

Scope of RSRG's Contract

In the area of superstructure, the “ARGE VP5 Gäubahn” consortium is responsible for the construction of the fixed track in the double-track, approximately eleven-kilometer-long Pfaffensteig Tunnel as well as the ballasted superstructure on the open line and the Mönchsbrunnen junction. Additionally, six switches are included. For the power supply, the contract includes the planning and installation of 50-Hz systems in the tunnel and on the open line, cable civil engineering, ventilation of the connecting structures, construction of transformer stations, switch heating systems, concrete switch houses, noise barriers, and platform adaptations at the Böblingen-Goldberg stop.

BUILDING MORE THAN STRUCTURES

Clients the real winner of
Combined Capabilities.

INNOVATION AND EFFICIENCY ARE PIVOTAL TO THE SUCCESS OF INFRASTRUCTURE PROJECTS UNIVERSALLY. RHOMBERG SERSA AUSTRALIA (RSA), HAS TAKEN A BOLD STEP FORWARD IN ENHANCING SERVICE OFFERINGS TO CLIENTS WITH THE ACQUISITION OF RKR ENGINEERING IN MARCH 2020. THIS STRATEGIC MOVE HAS NOT ONLY EXPANDED RSA'S CAPABILITIES BUT HAS ALSO PAVED THE WAY TO TACKLE PROJECTS THAT SHOWCASE THE POWER OF COLLABORATION AND INGENUITY.

The North Coast Overbridges Upgrades project is a perfect example of the great results that can be achieved when RSA and RKR (now referred to as RSA's design and fabrication division after formally merging with the RSRG brand) work together to overcome unique challenges. On this project, RKR delivered the design and fabrication of the new steel bridge trestles required to replace the old timber trestles whilst RSA provided rail support, including a protection officer, track certification and bridge team on site to handle technical rail scope and install the new trestles.

By leveraging the combined expertise of RSA and RKR, other projects, such as the Moss Vale to Albury Structures was completed with all in-house resources. From design and fabrication to construction and installation, this project was completed with a streamlined process that minimised delays and maximised productivity. Having both sets of skills provides us with an advantage from tender stage to delivery.

Moreover, the collaboration between RSA and RKR continues to showcase the power of teamwork and innovation. Engineers from both entities work hand in hand, sharing insights and expertise to ensure every aspect of projects, from tender stage to delivery is executed flawlessly. This collaborative approach not only results in successful project outcomes but has enabled us to provide a foundation for future endeavours that push the boundaries of what's possible in railway infrastructure.

BOUNDLESS

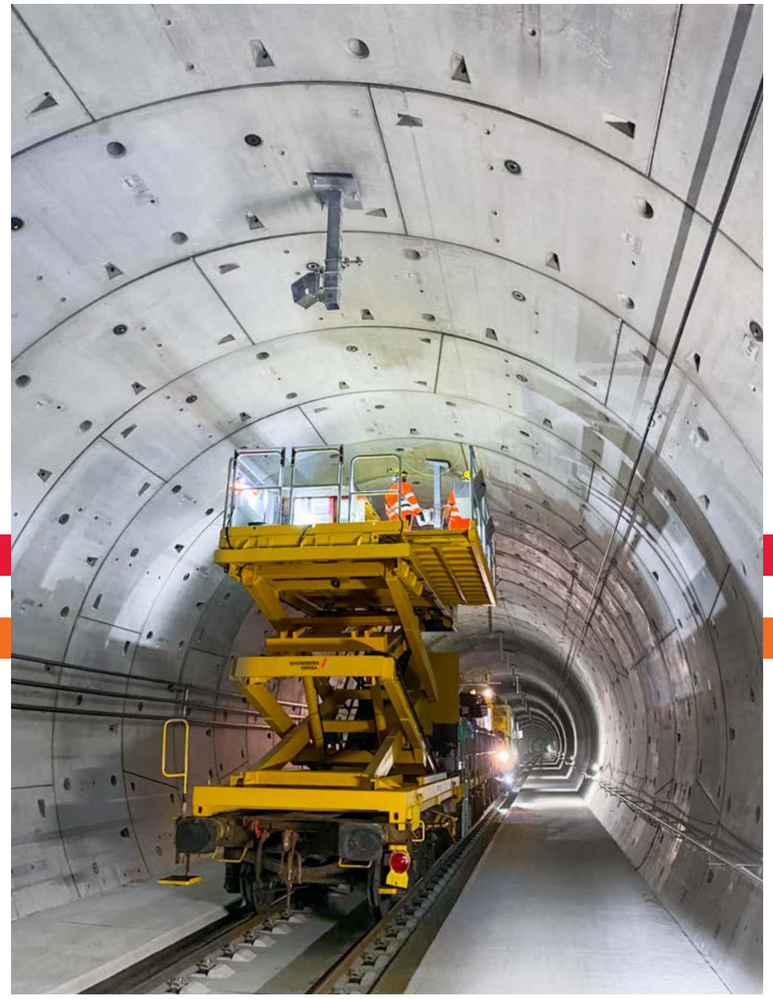
Collaboration
across borders.

IN DECEMBER 2022, RHOMBERG SERSA IRELAND WAS AWARDED THE CONTRACT FOR THE MAJOR OVERHAUL OF 5 ON TRACK MACHINES (OTMS) FOR IARNRÓD ÉIREANN - IRISH RAIL (IÉ).

As part of the tendering process, the Irish collegues detailed how it would partner with their German colleagues to utilise their skills and expertise to carry out the overhauls in its workshop in Spremberg. On winning the contract, Rhomberg Sersa in Ireland and Germany worked closely together to plan the major works before liaising with the customer, Irish Rail. The first machine to be transported to Germany was a tamper, 08-16 4x4 No. 742. By the time the machine arrived at Spremberg's workshop, project plans had been drawn up and processes created to ensure that Irish Rail could track the status of the project throughout the entire overhaul. Between August 2023 and March 2024, the tamper underwent a major overhaul which will prolong it's working life. It was then shipped back to Ireland for its first working shift at the start of April. As with all projects, there were some stumbling blocks during the process. However, whether they were technical problems or delays in spare parts, these hiccups were overcome working closely together. Working collaboratively at all times, cultural differences or language difficulties which can sometimes delay a project, were easily overcome. The second tamper to be overhauled left Ireland in April, with other machines due for an overhaul in both 2025 and 2026. The fifth machine that is part of the contract is being overhauled in Ireland.

PROGRESS THROUGH EXPERTISE

RSRG Continues to Advance in the Major Koralm Tunnel Project.



THE CHALLENGING ÖBB MEGA-PROJECT BETWEEN CARINTHIA AND STYRIA IN AUSTRIA OFFERS GREAT OPPORTUNITIES FOR DIGITALISATION TO THE FULL-SERVICE PROVIDER. THEY ARE SEIZING THESE OPPORTUNITIES – TO THE BENEFIT OF THE CLIENT AND THE ENTIRE INDUSTRY.

Since October 2021, together with its consortium partner PORR, RSRG has been responsible for the installation of the fixed track (GU1 lot) as well as the electrical and mechanical equipment (GU2 lot) in the Koralm Tunnel. The company has also taken on the railway power supply in the Lavanttal project, as well as the complete overhead line equipment and ceiling conductor rail installation in one of the two 33 km long tunnel tubes – a major contract for RSRG's overhead line construction professionals. Besides the extensive structural components, the overall project also presents significant challenges in terms of logistics and the coordination of interfaces with different trades and contractors.

On the other hand, such a large-scale project offers forward-looking and innovative companies like RSRG attractive opportunities to advance specifically in the fields of digitalisation and robotics, gaining a competitive edge and thus meeting future market demands today.

For more information, please visit our online magazine.

Example: Construction Logistics

Both the track construction and equipment installation pose particular logistical challenges. Specialists and time are in short supply, as is space on site. At peak times up to 130 employees are simultaneously pushing the work forward in a confined space. There are two 33 km long tubes in the connecting line between Carinthia and Styria. Both are single-track and therefore can only be supplied and equipped with perfect planning. To this end, there is a dedicated control centre on site for equipment management, which controls all trips in and out of the tunnel to ensure a smooth workflow. For this purpose, RSRG's innovation specialists from “Digital Rail Services” developed a train location and switch control system for the logistics handling of construction trains. Here, the construction trains are tracked outdoors using GNSS positioning (with correction methods) and inside the tunnel by the installed personnel and vehicle tracking system (based on BLE). Visualisation is carried out via the logistics and construction process planning software dprob from the partner company bii-GmbH. The tool has been enhanced to ensure that every component in goods and storage logistics is available at the right place at the right time, ensuring a continuous workflow.

In the field of robotics, RSRG is testing the use of a drilling robot (p. 24), co-developed by the company's own R&D department, which is undergoing its trial by fire in the installation of the handrail.

01

FROM THE COMPANY

EMISSION-FREE CONSTRUCTION SITE

Knowledge Exchange Among
Various RSRG Departments.

Robert Lackner
Head of SHEQ,
Project Business

IN THE CONSTANT EFFORT TO MINIMISE THE ECOLOGICAL FOOTPRINT OF THEIR CONSTRUCTION SITES, RSRG HAS RECENTLY ACHIEVED SIGNIFICANT PROGRESS. THIS IS MAINLY DUE TO THE EFFICIENT, TRUSTWORTHY COOPERATION WITHIN THE GROUP AND WITH PARTNERS AND CLIENTS.

The ultimate goal – the emission-free construction site – is coming closer with the introduction of advanced technologies and the exchange of know-how within the Rhomberg Sersa Rail Group. The collaboration between the specialists at the Bregenz railway technology hall and the SHEQ department has proven particularly fruitful. Together, the two teams have enabled the use of the MH-36, a powerful 36KWh lead-gel battery that can be equipped with additional PV modules, on the group's construction sites. This battery is invaluable, especially where there is no power connection or in noise-sensitive areas. It not only makes Rhomberg Sersa more self-sufficient but also increases the efficiency of existing generators.

However, RSRG's commitment does not stop there. The railway technology specialists have begun systematically replacing their gasoline-powered equipment with battery-powered devices to further reduce environmental impact. In collaboration with their Swiss colleagues, they have also ordered five portable battery storage units (Instagrid).

To reduce emissions from large equipment that is difficult to electrify, the team is currently testing the use of HVO biodiesel. In the testing rooms of the railway technology hall, the compatibility of the company's equipment with this environmentally friendly fuel is being examined in close coordination with suppliers.

Find more climate protection measures here:

#railtozero

WITH RSRG'S CLIMATE STRATEGY TOWARD A SUSTAINABLE FUTURE.

Katharina Willam
Advisor Environmental and Resource Management

RSRG IS CONSTANTLY STRIVING TO MINIMISE THE ECOLOGICAL FOOTPRINT OF THEIR CONSTRUCTION SITES AND HAS RECENTLY ACHIEVED SIGNIFICANT PROGRESS. THIS IS MAINLY DUE TO THE EFFICIENT AND TRUSTWORTHY COOPERATION WITHIN THE GROUP AND WITH PARTNERS AND CLIENTS.

Starting Point

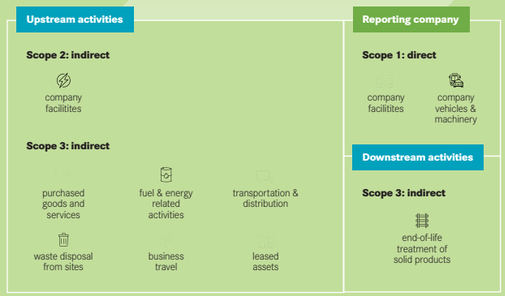
Both the Paris Agreement (2015) and the EU Green Deal (2019) pursue the overarching goal of combating the climate crisis and accelerating the transformation to a sustainable, low-carbon economy. The 2015 Climate Agreement aims to achieve this goal by keeping global warming well below 2 degrees Celsius compared to pre-industrial levels, ideally limiting it to 1.5 degrees Celsius. The EU aims to make Europe the first “climate-neutral” continent by 2050.

In line with laws, policies, and customer expectations, RSRG is making a concrete contribution. To achieve the net-zero target by 2050, an internal climate strategy has been developed within RSRG. All markets have been included in this strategy, and each market is being individually guided on this path. The climate strategy is reviewed annually in a standardised process (according to the GHG Protocol).

Results

Figure 1 clearly shows the emissions and scopes considered in RSRG's greenhouse gas inventory. Figure 2 shows the results of the greenhouse gas inventory for the fiscal year 2022/23, with emissions amounting to approximately 52,000 t CO_2eq. Figure 3 illustrates how RSRG plans to reduce CO_2 emissions by 2032/33. An overall reduction of -20% is planned. For Scope 1 and 2, a reduction of -40% is planned. To stay on track with the Paris Climate Agreement and the SBTi benchmark, a reduction of -50% would be necessary. RSRG plans to close this 10% gap with additional, ambitious measures in the coming years.

Fig. 1: Origin of the GHG Protocol → the relevant emission sources are adapted to RSRG.



#railtozero

In addition to climate protection, RSRG also focuses on other sustainability priorities. With #railtozero, a new innovative slogan and a corresponding key visual for the Rhomberg Sersa Rail Group's climate and sustainability strategy have been created. With a sustainability team, #railtozero is comprehensively and systematically implemented within RSRG.

All information on this topic is summarised and prepared in the sustainability section of our corporate group's website. Here, interested parties can learn more about the sustainability vision and discover RSRG's climate protection measures.

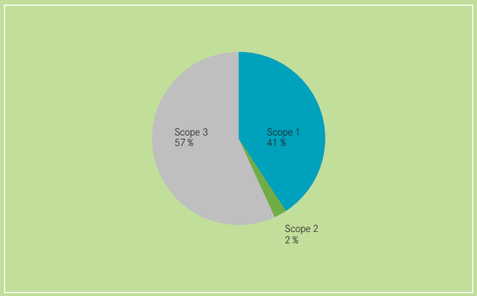
Overview of RSRG's Climate Strategy

Greenhouse Gas Inventory 2022/23: 52,000 t CO_2
(Scope 1: 41% | Scope 2: 2% | Scope 3: 57%)

Main energy source is diesel: 7.5 million litres per year
By 2022/23:
- 20% (10,400 t) CO_2 in Scopes 1, 2, 3 or
- 40% in Scopes 1 & 2, thus meeting the SBTi benchmark

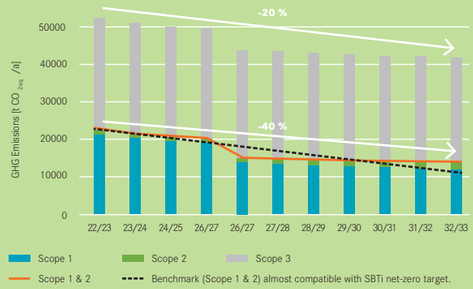
Main measures for decarbonisation: Diesel replacement 67%, electrification 13%, increasing energy efficiency, switching to green electricity products, raising awareness, and general efficiency improvements through digitalisation and automation technologies

Fig. 2: RSRG Greenhouse Gas Inventory 2022/23: 52,099 t CO_2



Info: Greenhouse gas emissions, also known as GHG emissions, are expressed as CO_2 equivalents (CO_2eq).

Fig. 3: CO_2 reduction path until 2032: -10,400 t CO_2



1 The Science Based Targets Initiative (SBTi) enables companies to set net-zero targets based on the latest climate science to help achieve the goals of the Paris Agreement.

MORE COLLABORATION, INNOVATION, AND CHANGE

Rhomberg Sersa has launched a new product development process to the benefit of our customers.

Torsten Bode
Head of Group Products and Innovations

Stefan Potocan
Head of Product Management

LIKE OUR ENTIRE ENVIRONMENT, WE AT RSRG ARE IN A CONTINUOUS DEVELOPMENT PROCESS, OPTIMISING OUR PERFORMANCE AND DRIVING INNOVATIONS FORWARD. TO FURTHER FOCUS ON CUSTOMER BENEFITS AND DEVELOPMENT EFFICIENCY, WE HAVE INTRODUCED A NEW PROCESS FOR DEVELOPING NEW PRODUCTS AND SERVICES.

As an initiator and driving force in the development of new procedures and system technologies in modern railway construction, we have already brought numerous innovations on track. Many of these are now standard in track renewal and maintenance, delivering 100% quality and cost-effectiveness.

To make our new developments as effective and beneficial as possible, we consistently align ourselves with the challenges in our customers' diverse fields of activity. Our solutions are primarily intended to solve our customers' problems.

In the development of such solutions, it is advantageous for all involved – from the innovation idea generator to the product manager – to have a transparent process that provides guidance, concerted internal and external development efforts, and keeps the focus on the planned end result.

In designing this process, we were guided by the widely used Stage-Gate process, a structured innovation management system that divides product development projects into various phases and gates. In each phase, specific goals are achieved, and the further progress of the project is decided at defined decision points (gates). The interdisciplinary Innovation Board, made up of experienced gatekeepers, evaluates the ongoing alignment with market needs: developments with high customer benefit potential are supported, while projects with decreasing benefit potential are controlled and stopped as early as possible.

This makes our projects even more transparent and resource-efficient, while also being more consistently oriented to customer problems. The result: We focus on those projects that bring significant improvements to our customers.

EUROPE'S NORTH ON TRACK

Rhomberg Sersa Nordics Enables the Mobility of the Future in Scandinavia.

Mariusz Kalinowski
Business Development Manager

Manfred Fitz
Managing Director RS Nordics

↳ **Rhomberg Sersa Nordics (RSN)**
Location: Copenhagen
Team: Mariusz Kalinowski, Chaimae El Madi Azuz, Spyros Latsenere, Lisa Heinz, Manfred Fitz (from left to right), Ciprian Cristian (not in the picture)

RHOMBERG SERSA NORDICS, ESTABLISHED IN COPENHAGEN IN 2023, SYMBOLISES THE GROUP'S COMMITMENT TO IMPROVING GLOBAL MOBILITY AND SUSTAINABLE TRANSPORT IN NORTHERN EUROPE. THIS NOT ONLY UNDERLINES THE COMMITMENT TO SUSTAINABLE GROWTH IN COLLABORATION WITH LOCAL STAKEHOLDERS, BUT ALSO DEMONSTRATES RHOMBERG SERSA'S CAPABILITIES TO DRIVE THE NORDIC TRANSPORT SECTOR FORWARD THROUGH INDUSTRY KNOWLEDGE, GLOBAL EXPERTISE AND INNOVATIVE SOLUTIONS, WITH A FOCUS ON QUALITY, EFFICIENCY AND SUSTAINABILITY.

Important to notice is our engagement with collaborative partners for major projects like the Copenhagen Metro M4 Line to Sydhavn, expected to commence in summer 2024, and DSB's innovative electric train workshops, emphasizing our precision in ballastless railway infrastructure.

Furthermore, Rhomberg Sersa is actively tendering for the Fehmarn Bælt Tunnel project, envisioning a comprehensive role in slab track construction, with a local partner managing the remaining transportation package scope. This venture aims at fortifying our contribution to the Nordic rail network's evolution.

Our presence in Copenhagen fosters close collaboration and ensures rapid progress and coordination. This local and global synergy consolidates our position as a key partner for sustainable rail solutions in the Nordics, focusing on minimising operating costs, increasing service reliability and improving the passenger experience. Through these efforts, Rhomberg Sersa Nordics plays a central role in the transition to a more efficient, environmentally friendly Danish rail network that is in line with our vision for the mobility of the future.

02

DIGITALISATION

OPTIMISED CONSTRUCTION SITE MANAGEMENT

The Q-tainer Provides Computing Power
for the “Transparent Construction Site”.

Tim Bacher
Data Engineer,
Project Business

DIGITAL RAIL SERVICES

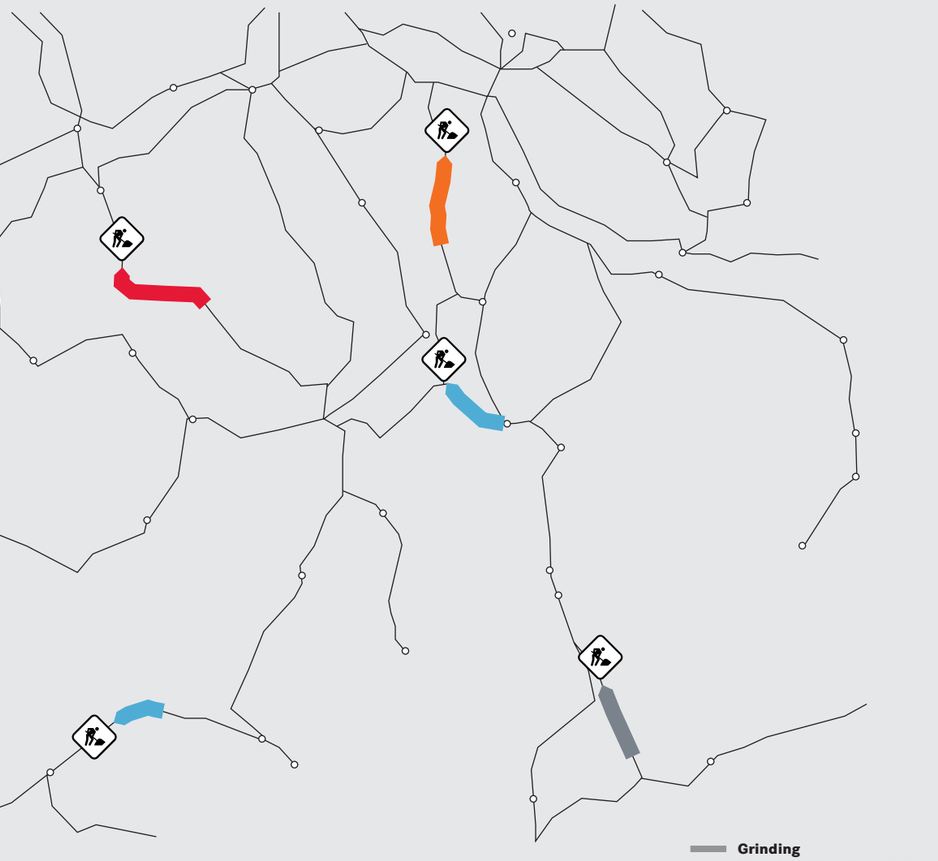
↳ **Q-tainer**
Provider: RSRG and Dätwyler IT Infra
Functions: Edge Computing Hardware, 5G Campus Network, AI/ Machine Learning Models, Construction Intelligence
More Info: www.rhomberg-sersa.com/en/services/q-tainer

AIMING TO MAKE CONSTRUCTION SITES MORE EFFICIENT, SAFER, AND MORE SUSTAINABLE, WE COMBINE MODERN TECHNOLOGIES WITH EXISTING KNOW-HOW IN THE “TRANSPARENT CONSTRUCTION SITE” PROJECT.

Using the innovative Q-tainer, data from the categories “Construction Site & Occupational Safety,” “Construction Logistics,” “Construction Operations,” “Machine Tracking,” and “Environment” are systematically collected and linked. Among other things, it automatically detects how many construction vehicles are in use and where, which routes they predominantly take, where there are collision risks with pedestrians, and whether safety regulations for helmets and safety vests are being followed. Additionally, through AI analysis, logistics bottlenecks and construction progress can be made transparent, allowing for quick countermeasures to delays. Continuously and automatically collecting and linking these data on-site helps close safety gaps, prevent personal injuries, reduce downtime, manage resources, and optimally distribute them among different trades on the construction site.

We are currently testing these new digital tools on some construction sites, focusing on various sensors and data sources. Providing these digital tools requires significant computing power, fast response times, and high data transmission bandwidth to ensure that data and derived information are available quickly and reliably. The core component of the project is the mobile data center, the Q-tainer. The Q-tainer, a platform jointly developed by RSRG and Dätwyler IT Infra, also brings a local 5G campus network to the construction site. This network wirelessly connects sensors distributed across the site. Additionally, on-site personnel can use compatible mobile devices to connect to the network for communication or digital mobile applications. This solution is available to interested customers in various configurations and packages, ranging from SaaS to traditional rental solutions.

mPOM: *MOBILE POSITIONING OF MAINTENANCE* WORK



In 2022, the SBB commissioned the ARGE SAR to develop a track-specific positioning system for track construction machines.

Matthias Manhart
Head of RST,
Swiss Market

ARGE SAR

AS PART OF THE DIGITALISATION OF MAINTENANCE WORK, SBB ISSUED A TENDER FOR A PRECISE POSITIONING SYSTEM FOR TRACK CONSTRUCTION MACHINES THAT WORKS BOTH OUTDOORS AND IN TUNNELS. IN 2023, THE ARGE SAR WAS AWARDED THE CONTRACT FOR THIS PROJECT.

Maintenance work on infrastructure, such as tamping and rail grinding, is still documented with work reports within the SBB network. Digital, track-specific positioning of this work is not possible with this method. However, this digital information is crucial for maintenance forecasting calculations, combined with the data from the measuring vehicles.

In 2018, SBB conducted tests with initial devices on track construction machines to examine the basic feasibility of such digital work logging. In 2022, SBB publicly tendered the “mPOM” (Mobile Positioning of Maintenance Work) project.

ARGE SAR, consisting of Sersa Maschineller Gleisbau AG, ANavS GmbH, and Rhomberg Bahntechnik AG, combines expertise in the operation of track construction machines with the highly precise positioning of rail vehicles. In 2023, ARGE SAR was awarded the contract by SBB to develop the mPOM system, with the goal of deploying a total of four test systems operationally by the end of 2024.

The main project requirement is the track-specific positioning of track construction machines to within ±1m in the so-called GTG network of Switzerland (track topography), both outdoors and in tunnels. The highly precise position data is determined on the track construction machines using the so-called mPOM Unit. This device from ANavS determines the GNSS position, enhances accuracy with RTK (Real-Time Kinematic), and supplements the positioning solution with an integrated IMU (Inertial Measuring Unit). Positioning in tunnels is calculated using an odometer on one of the machine's axles and the IMU.

The system's power supply comes directly from the onboard network while the machine is in operation. A modern lithium iron phosphate battery stores the energy for the period between machine deployments, ensuring the position is always known.

The data is continuously transmitted to the mPOM backend. A special algorithm improves the positioning solution, calculates the exact track position in the GTG network, and subsequently transfers the final data to SBB's SwissTamp system. Here, SBB employees can evaluate the executed work shifts along with the measuring data from the measuring vehicles.

The mPOM system will document the work of tamping machines, rail grinding, and milling machines within the SBB network. Application of the system in other networks both domestically and internationally is possible.

DIGITALISATION ON THE CONSTRUCTION SITE

Thinking in Connected Worlds.

Torsten Bode
Head of Group Products and Innovations

Hannes Mathis
Project Manager R&D, Project Business

THE MEANINGFUL APPLICATION OF MOBILE ROBOTIC SYSTEMS ON CONSTRUCTION SITES REQUIRES THE INTEGRATION OF MANY DISCIPLINES.

RSRG is a pioneer in the digitalisation of the railway construction industry, deploying innovative and interconnected technologies directly on-site, going beyond mere planning and documentation.

An example of this is the use of robots, which have long been indispensable in the manufacturing industry. But how do mobile robotic systems perform on construction sites where the environment is constantly changing? Initial significant insights have been gained from the deployment of a drilling robot on the Koralm Tunnel (AT) construction site.

Infrastructure projects typically use idealised standard cross-sections, which, in reality, often cannot be implemented precisely. This poses a challenge for the use of controlled machines, as an accurate digital capture of reality is required.

RSRG recognised early on that digitalising reality is a fundamental prerequisite for the successful use of robots on construction sites, and that connecting the various disciplines involved in a construction project plays a significant role. Therefore, processes were established to prepare the captured data qualitatively and make it available for further processes.

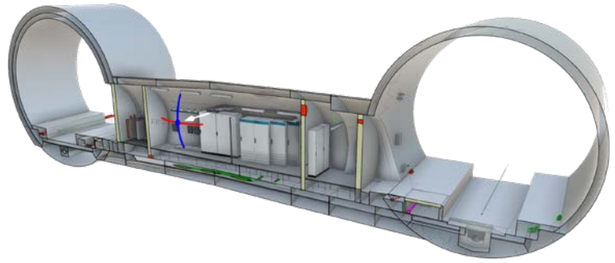
Once suitable digital models are in place, the planning specifications must then be carefully combined with the local conditions. RSRG works across team boundaries to make this process as automated and project-specific as possible. High-quality planning is crucial because it ensures that digital data is immutably translated into reality on-site, as demonstrated with the drilling robot in the Koralm Tunnel. This closes the digitalisation loop.

“High-quality data capture is essential for the meaningful use of robotics in construction.”

Hannes Mathis
Project Manager R&D

BIM MODEL AT THE KORALM TUNNEL

New Approaches for Efficient Asset Management.



Claus Salzmann
Managing Director, EDS

Ralf Sommer
Head of Digital Rail Services, Project Business

THE DEMAND FOR NEW CONSTRUCTION AND MAINTENANCE OF RAILWAY INFRASTRUCTURE IS IMMENSE. THIS NECESSITATES A RETHINKING OF HOW RELEVANT STRUCTURAL INFORMATION IS PREPARED. RSRG HAS ALREADY EMBRACED THIS NEW THINKING.

For the first time in Austria, the Koralm Tunnel (p. 12), a large and complex railway construction project, was created using BIM methodology. RSRG and its partner company EDS 4.0 were responsible for this innovative approach.

BIM: Building Geometry and Information in One Model

For the first time for such a large and complex project in Austria, BIM models were created. All information is integrated – from the structural shell to mechanical systems, HVAC, telecommunications, energy technology, and control and safety systems. The model was created with a high level of detail and digitally represents the physical infrastructure.

Linking Objects with Data and Documents

However, BIM goes far beyond visual representation. Each individual object in the model is linked with the necessary documents. Installation and maintenance plans are just a click away. Thanks to attributes like “manufacturer” and “equipment type”, which were collected during the construction phase and incorporated into the model, the asset manager can see at a glance which parts are installed.

The Digital Twin: Future-Proofing Railway Infrastructure

The BIM model is just the first step. The real “magic” happens when we create the digital twin. This involves linking the physical asset with its digital representation. This allows for real-time monitoring of conditions, identification of faults, and efficient planning of maintenance activities. Further developments are needed to reach this stage, but the first step has been taken!

DIGITAL RAIL SERVICES

DRS SERVICES

ALONG THE LIFE CYCLE

Cutting-edge digital services for enhanced quality and efficiency in the railway industry.

Lisa-Maria Riedel
Team Leader Reality Capture, Digital Rail Services Austria

David Holdener
Team Leader Reality Capture, Digital Rail Services Switzerland

Besnik Sabani
Team Leader Digital Construction, Digital Rail Services Switzerland

Patrick Kathan
Construction and Logistics Process Planner, Digital Rail Services Austria

Patrick Giller
BIM Reality Capture, Digital Rail Services Switzerland

Amanda Zwicky
Solution Architect GIS, Digital Rail Services Switzerland

Ralf Sommer
Head of Digital Rail Services Austria

Marcel Nolte
Head of Digital Rail Services Switzerland

WE APPROACH DIGITALISATION THROUGHOUT THE ENTIRE PROJECT LIFECYCLE. OUR LONG-STANDING EXPERIENCE AS A FULL-SERVICE PROVIDER ALLOWS US TO CREATE MAXIMUM BENEFIT FOR ALL PROJECT PARTICIPANTS THROUGH A UNIQUE COMBINATION.

We understand that digitalisation and Building Information Modeling (BIM) lead to better solutions in railway construction. Our goal is to maximise customer benefit while elevating the quality and efficiency of our services to a new level. By leveraging the advantages of digitalisation and focusing on the entire project lifecycle, we maximise the potential for all project stakeholders.

Our extensive experience as a full-service provider in railway construction gives us deep insights into the needs of each project phase. This allows us to have a very accurate picture of the challenges and opportunities for both ourselves and for our customers. With this unique wealth of experience, we can drive innovations that deliver significant added value for all. This is innovation in practice, for practice.

With this conviction, we began implementing digitalisation and BIM in 2018. The result is products and services that provide exciting added value for both us and our customers. What works successfully for us is also of great value to our customers.

In line with the concept of “along the lifecycle,” we present the areas of Digital Rail Services and their developments or projects below.

Learn more about Digital Rail Services here:

REALITY CAPTURE

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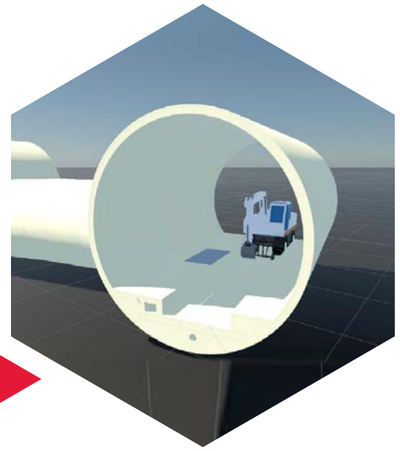
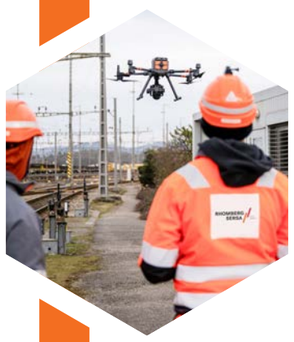
Digitising existing infrastructure as documentation and basis for comprehensive evaluations and analyses.

New or upgraded railway infrastructure rarely occurs on a greenfield site: existing facilities often need to be renewed or expanded. Therefore, information about the existing infrastructure is crucial for planning or preparing the construction site. Our Reality Capture services efficiently and accurately capture and digitise these facilities and their surroundings.

From classic point surveying to 3D measurement with drones and laser scanners to rail-bound mobile mapping, we can respond to various requirements and conditions. Additionally, the further processing and publication of the results in the form of orthophotos, point clouds, or analyses are individually tailored, enabling seamless workflows.

High-quality survey data also forms the basis for advanced products like BIM models of existing conditions or clearance analyses, which we can offer from a single source.





DIGITAL CONSTRUCTION SITE

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Increasing efficiency with digital tools.

Digital planning and construction, combined with the BIM philosophy, represent the leading-edge working methodology for today's construction projects. The tasks on a railway construction site are demanding and require a high level of specialised competence from the site personnel. With digital tools and the corresponding data from planning and/or Reality Capture, work preparation, construction execution, and measurement can be simplified. Central to this is the digital information flow, ensuring that necessary documents are accessible to all project participants at any time and place. The digital construction site also aims at continuous process optimisation, considering all market-relevant solutions. Sensor technology on construction machines, visualizations using AR or VR, and model-based surveying are just a few examples of topics the Rhomberg Sersa Rail Group consistently promotes.

BUILDING INFORMATION MODELING

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Digital from start to finish.

Just like a real structure, its digital twin also goes through a lifecycle. The project's phase determines the requirements for the model and its contents.

The existing conditions model is the starting point of any BIM project, offering optimal information quality for all project participants. Initially, an accurate recording of the current situation within the project perimeter is conducted (Reality Capture) and combined with existing data and information to form a 3D BIM model. The procurement of additional data depends heavily on its availability in the customer's systems and can range from direct database access to manual collection. Thus, we proceed carefully to incorporate only reliable data with corresponding source information into a foundational model.

Our customers trust the quality of our existing conditions models. Using the latest technological developments, we provide comprehensive information to all project participants. Digital foundations, particularly 3D existing conditions models, have become a crucial part of project planning in the railway industry.

Based on this existing conditions model, further planning, execution, or integration into an operator system can commence. During project processing, a BIM model achieves its highest "information status". Ideally, all relevant data is structured and accessible through this information model, usable by various project participants. Upon completion of construction activities, information about the actual built structure (exact position, materials used, etc.) is recorded in the model. From this point, we refer to it as the "As-Built Model," handed over to the client according to their requirements, who then transfers the data into their asset management systems.

The "Rail Asset Hub" of the ARGE Track Diagnosis offers support here: facilities and their properties are stored in INFRALIFE©. Condition data, such as track geometry or rail profile wear data, is ideally collected regularly, analysed in the IRISSYS© analysis platform, and used to develop appropriate measures. This allows the behavior of the facility to be tracked and optimised over its entire lifecycle.

All information is quickly and easily accessible via the Track Diagnosis Dashboard. To support the representation of the information, infra3D can be used to conduct a virtual site inspection directly from the workplace.

GEODATA

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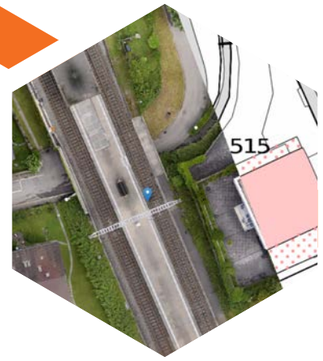
Brought to life.



Geodata is ubiquitous today, even in the everyday business of RSRG: execution plans, stakeout points, machine control, survey recordings and more, all contain and generate spatial information and are essential for our construction sites. However, they are still often used statically as paper plans or digital PDF files. With changing requirements, increasing data volumes, and growing task complexity, this reaches its limits. A static plan can only represent a limited amount of information. An interactive web-map solution, a WebGIS, can combine, overlay, and filter project-related and general geodata such as terrain, nature, or water protection zones as needed. Insights are gained from spatial context information and possibly directly recorded in WebGIS. Recently, internal and external project staff can interact with data and maps in the in-house WebGIS, efficiently handling projects together.

CONSTRUCTION PROCESS AND LOGISTICS SIMULATIONS

/

Efficient construction site thanks to 4D construction planning.

In cooperation with BII GmbH, RSRG has developed an in-house software solution for visual planning and preparation of construction projects. In a created BIM model – essentially in the "digital sandbox" – all construction and logistics processes are planned, simulated, optimised, and compared. The resources used, such as equipment and machinery, are tagged with the same cost and performance values used in our traditional costing department. The result is a complete visualisation of the entire construction process, which becomes a central information and communication point for all project participants. Additionally, with the completed construction schedule, we automatically have large amounts of data available from which we can derive and provide schedules, cost estimates, resource needs, material flows, CO_2 consumption, etc. A variant comparison could thus, for example, show the general feasibility as well as the respective impacts on costs, deadlines, and CO_2 emissions.

At the heart of this comprehensive software solution is the visual aspect, which immediately raises all project participants to a very high level of information and enables highly efficient and targeted discussions. Potential problems are identified directly and coordinated with the correct interfaces. Project understanding during safety briefings on construction sites is enhanced, and risk is minimised. Even those not directly involved in the project, such as local residents, can be informed in a simple and understandable way. The results of these simulations help to overcome the diverse challenges in projects and optimally support the project team – from work preparation to project completion.

TOTAL DIGITAL CAPTURE

360 Capture of Work Sites.

Darryl Gwilliam
Continuous Improvement und Digitisation Manager, Irish Market

IRL BOOTS ON THE GROUND IN IRELAND WILL BE REDUCED – AND ULTIMATELY ELIMINATED - THANKS TO INCREASED DIGITALISATION.

As part of the Continuous Improvement Group (CIG) - which includes Rhomberg Sersa Ireland and our client Iarnród Éireann - Irish Rail (IÉ) - work is ongoing to upgrade the current walkout surveying process to 360 walkout surveys, known as TrackView4D. Currently the data is collected as staff walk the site, but ultimately it will be collected digitally.

Walkout surveys are a crucial part of examining a site to gather data prior to a track maintenance shift and are particularly important for complex sites where conditions are challenging.

The team in Ireland – who operate and maintain the OTM fleet on behalf of Irish Rail - tested and introduced a '360 virtual tour' captured via camera. It is very similar to Google Streetview, but with the added benefit of being able to input and overlay critical site information into each image. Benefits of the new process include:

- Improved safety due to reduced time and staff on site
- A 3D virtual tour of the worksite
- A digital record including an interactive TrackView4D file for review post walkout
- Embedded details including images, voice notes, RAMS, and any other related detail
- Enhanced work preparation as files are available to all stakeholders immediately after the walkout
- Reduced environmental impact thanks to less site visits, less people on site and a digital output

The virtual site tours will have a shelf life but, in the future, recordings may be made during transit shifts. This would mean data could be recorded while the machine is being moved from one position to another, ensuring efficient use of resources, including fuel.

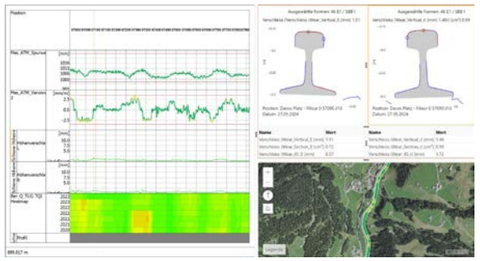
For more information, please visit our online magazine.

Learn more about the digital inspection of construction sites here:

MEASUREMENT DATA FOR RAILPLUS

Since 2023, Diagnostics Switzerland has been supporting the system leadership of RAILplus in two sub-projects.

Fabian Angehrn
Head of Diagnostics,
Swiss Market



RAILplus
Founded: 2003
Headquarters: Aarau, Schweiz
Scope: 21 partner railways, 1,450 km of track network
More information and knowledge modules: www.railplus.ch

CHE FOR THE FIRST TIME, THE METER-GAUGE MEASUREMENT VEHICLE ENABLES THE ANALYSIS AND THOROUGH EXAMINATION OF HIGH-QUALITY, COMPARABLE DATA FROM VARIOUS RAILWAYS.

RAILplus is the cooperative platform of the Swiss metre-gauge railways, involving 21 railways. The ARGE Track Diagnosis already counts 13 of them among its customers.

The system leadership of RAILplus aims to significantly improve the overall cost-effectiveness of the vehicle/track system to avoid cost increases and achieve cost reductions. This is achieved through projects such as basic scanning, rail head conditioning, wheel/rail interaction, track stiffness, vehicles, and overall cost-effectiveness. Project development is supported by experts from the industry as well as young, highly motivated junior engineers and experienced railway specialists.

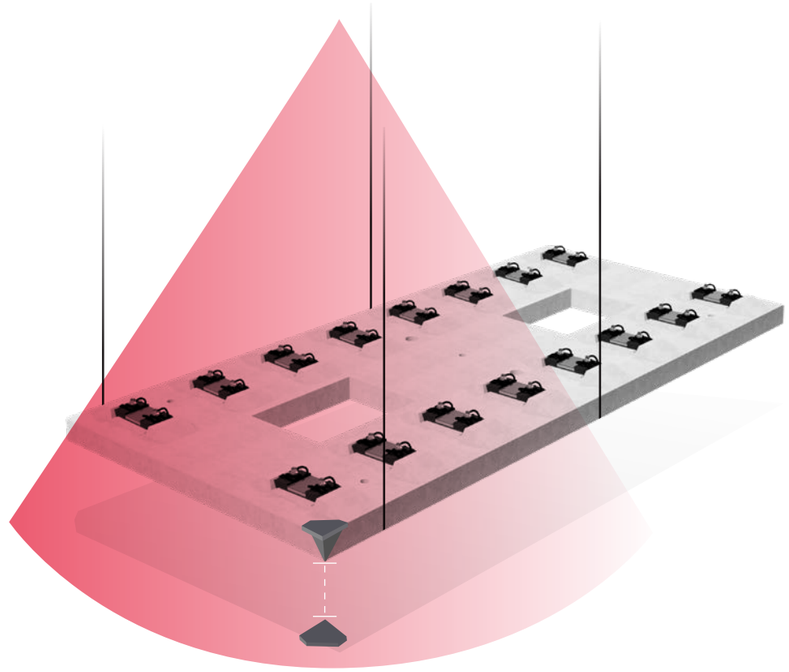
In the first sub-project with RSRG participation, the goal is to create a characteristic dataset for Swiss meter-gauge railways. This dataset can be provided in future vehicle procurements to select the appropriate boundary conditions for vehicle simulation and design.

The measurement data, which is regularly collected across the entire network by the participating railways using the meter-gauge measurement vehicle, is stored in the IRISSYS analysis platform. For the analysis, it is crucial that the quality and measurement conditions, such as axle load during measurement, are consistent and of high-quality. The project team was supported in selecting 18 track sections from various RAILplus railways. Subsequently, the data was exported and provided to PROSE AG for the generation of the characteristic dataset.

The second sub-project involves delivering rail profile data from various meter-gauge railways. The data, enriched with track geometry and alignment data, is exported from IRISSYS and linked with wheelset measurements in the specialised “Gleiskontakt” software. This allows for investigations of contact geometry.

SIMPLY BETTER

Slab Track: RSRG Develops New Method for More Precise Placement of Plate Systems.



Helge Grafinger
Segment Coordinator
Geomatic Technologies

Lisa-Maria Riedel
Team Leader Reality Capture,
Project Business

PLATES ARE POSITIONED WITH PINPOINT ACCURACY AT THE DESIGNATED SPOTS USING A GANTRY CRANE AND MEASUREMENT CAMERAS.

Rhomberg Sersa Rail Group commissioned Hefel Technik to technically implement the idea of more efficient and precise plate placement. This is based on measurement nails in the concrete base, which indicate the positions of the plates. Until now, the setup has been done manually or visually with the help of these markings.

The new method utilises measurement cameras attached to the gantry crane. Special target markers on the corners of the plates and on the markings on the ground enable the automatic calculation of deviations. These deviations are displayed on a screen, making the setup not only significantly easier but also more precise.

03

MACHINES

MACHINES WITHOUT OIL

An eco-friendly fleet of OTMs is being developed in Ireland.

Aidan Langley
HSEQ and Compliance Manager, Irish Market

IRL RHOMBERG SERSA RAIL GROUP IRELAND HAS CONVERTED THE ON TRACK MACHINE (OTM) FLEET WHICH IT OPERATES FROM A HYDROCARBON BASED OIL TO A MORE ENVIRONMENTALLY FRIENDLY ALTERNATIVE.

The conversion comes after the company took a major step last year in reducing CO_2 emissions by converting the OTMs to run on Hydrotreated Vegetable Oil (HVO). Rhomberg Sersa operates and maintains the OTM fleet on behalf of Iarnród Éireann – Irish Rail (IÉ).

In recent months the fleet of 14 operational OTMs were converted from hydrocarbon based oil to Panolin. Panolin is the brand name of a synthetic lubricant which is made from 'esters'. Esters are created through the chemical reaction of a carboxylic acid and an alcohol.

A clean product, Panolin has a number of major benefits:

- It has a life cycle of up to seven years meaning less consumption
- As it needs to be replaced less often, there is less labour required on the OTMs
- It is biodegradable therefore reducing environmental impact should there be a spill

The virtuous cycle continues as less oil changes means there is less manual handling and simpler logistics.

Although Panolin is more expensive than fossil based engine oil, overall there is a net gain, particularly from an environmental side.

The transition to Panolin is part of an ongoing programme in across RSRG to reduce hydrocarbon use and therefore cut out greenhouse gas emissions. The previous year the fleet in Ireland was converted from diesel to HVO. Irish Rail has calculated that the conversion of the OTMs to HVO will result in emission savings of 148,000kg of CO_2 annually compared to the continued use of diesel, a 90% reduction in OTM carbon emissions.

The changes fit not only with the wider RSRG Climate Action Plan, but also with the Irish Rail Climate Action Plan. Irish Rail is working to reduce its emissions by 51% by 2030.

NEW LOOK FOR DS09-4X AND USP-1

The track construction machines DS09-4X and USP-1 were painted with the RSRG design in spring 2024.

Matthias Manhart
Head of RST,
Swiss Market

Willy Ly
Designer,
Swiss Market

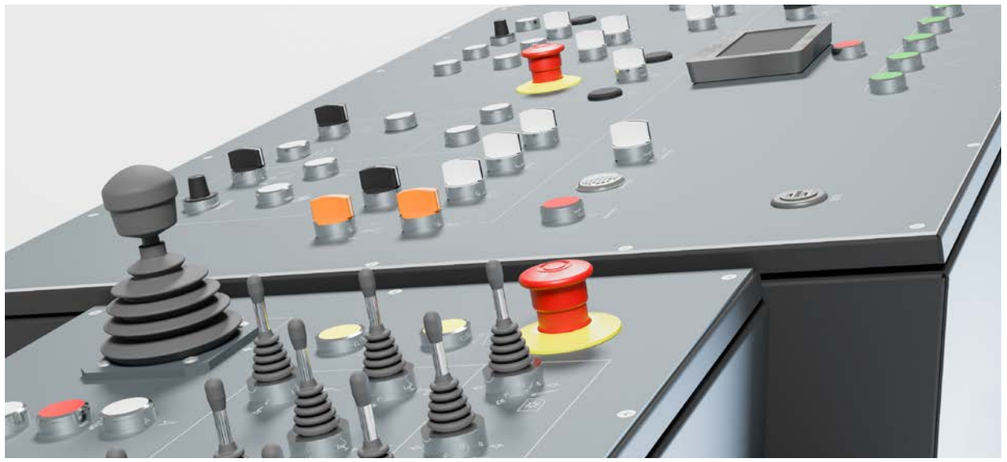
CHE IN 2008, THE TRACK CONSTRUCTION MACHINES DS09-4X AND USP-1 WERE PROCURED FOR USE IN SWITZERLAND. AFTER 16 YEARS, THE TWO DIESEL ENGINES OF THE DS09-4X HAD TO BE REPLACED. AT THE SAME TIME, BOTH MACHINES WERE BRANDED WITH THE RSRG DESIGN.

Since 2008, the high-performance machines DS09-4X and USP-1 have reliably carried out tamping and leveling work on the SBB track lines. Due to technical problems with the two Deutz diesel engines, each with 440 kW power, the project to replace the engines was initiated in the winter of 2022/23. Demtech AG delivered and installed the new Deutz diesel engines in the winter of 2023/24. These engines meet the EU Stage V emission standards using AdBlue. The exhaust cleaning was replaced by a newly integrated solution from Deutz.

Since 2008, the DS09-4X has performed over three million tamping cycles. During each overhaul, crack inspections are conducted in the tamping unit area. In the winter of 2022/23, some repair welding was necessary. The overhaul in the winter of 2023/24 was used for extensive inspection and repair, ensuring the machine is ready for future operations.

In the USP-1 leveling machine, bogie 2 was removed to fit new wheel discs. The removal and installation of the bogie were prepared and supervised by the engineering team at Rhomberg Sersa Technology (RST).

At the same time, both machines received a new paint job according to the new RSRG design. There are European standards for the painting of track construction machines, such as requiring the fronts to be yellow to ensure the machines are visible on construction sites. The guidelines for railway technical markings are also regularly updated. Therefore, the engineering team created a detailed visualisation of both machines, which was reviewed and approved by the Federal Office of Transport. These graphics served as precise work templates in the workshop. In addition to the large logos, over 180 small pictograms were applied to the DS09-4X and around 75 symbols to the USP-1.



MODERNISATION OF TRACK CONSTRUCTION MACHINES

An old high-speed ballast regulator gets a second lease on life.

Christoph Schürz
Product-Segment-Coordinator,
GF P&I

JUMBOTEC EXPANDS ITS PORTFOLIO IN THE MAINTENANCE BUSINESS FOR THIRD PARTIES. MODERNISATION OF THE CONTROL SYSTEM, A NEWLY DESIGNED CAB WITH ERGONOMICALLY AND OPTIMALLY ARRANGED WORK CONSOLES INCLUDING INNOVATIVE LIGHTING, AND A DIGITAL SPARE PARTS CATALOG WILL BE OFFERED FOR THIS TYPE OF MACHINE.

Currently, many “old” high-speed ballast regulators from the years 1987 to 2000 are still in operation and urgently need their control systems modernised. The existing work controls are becoming increasingly prone to errors and malfunctions. Additionally, spare parts and maintenance experts are scarcely available. Temporary fixes and makeshift solutions are only marginally reliable.

The resulting downtimes cause significant costs for the operators of track construction machines and undermine customer confidence in the companies. The process reliability and adherence to schedules of construction projects are then jeopardised.

To avoid decommissioning the vehicles and to save customers from costly new acquisitions with long lead times, JumboTec offers a special modernisation package for the high-speed ballast regulator machine type (manufactured around 1987–2000), in addition to its existing services in rail vehicle maintenance:

- Renewal of the work control system, including wiring
- Digital 2D-3D spare parts catalogue
- Optional redesign of the cab
- Optional ergonomic work consoles

This offers significant advantages for our customers:

- Significantly lower investment and delivery times compared to new purchases
- Reduced training requirements for personnel
- Elimination of approval costs and waiting times (existing approval remains valid)
- Reliable implementation by a partner with long-standing experience in third-party maintenance
- High-quality execution, efficient handling, and minimal downtimes
- Secure spare parts supply

Operators of high-speed ballast regulators and interested customers who have been introduced to the modernisation package are enthusiastic about the new lighting concept, the new arrangement of the control stands, and the intuitive control system.

Currently - the prototype, one of JumboTec’s own high-speed ballast regulators - is being modernised and can be viewed on-site by appointment.

WORLD FIRST REGULATOR

System7 Regulator purchased by Irish Rail.

Darryl Gwilliam
Continuous Improvement and Digitisation Manager, Irish Market

IRL OFFICIALLY UNVEILED IN APRIL AT THE TRANSPORT RESEARCH ARENA (TRA) CONFERENCE IN DUBLIN, IRELAND, THE NEW REGULATOR IS ONE OF SEVERAL NEW ON TRACK MACHINES (OTMS) WHICH IRISH RAIL HAS INVESTED IN. IT WILL BE OPERATED BY RHOMBERG SERSA RAIL GROUP (IRELAND).

The regulator is a crucial machine for preventative track maintenance. Ballast regulators create a ballast profile designed to deliver stability for the required track position. This ensures that the track remains stable under load and during thermal rail expansion.

The new regulator – which will be known as 705 – will replace one of the existing two regulators which are over 30 years old and are nearing the end of their working life.

Irish Rail's Human Factors team, led by Nora Balfe, worked closely with RSRG Operators and System7 to make the machine operator focused and to ensure enhanced ergonomics.

"The machine is easier to use and more comfortable thanks to collaboration between System7 and Nora's team," said Darryl Gwilliam, Continuous Improvement and Digitisation Manager with Rhomberg Sersa in Ireland.

"It's a smart machine that is environmentally friendly, efficient and will deliver the highest quality of work."

One major difference between the new regulator and older machines is the unique LiDAR laser scanning systems – also known as profile scanners - at both the front and the back of the machine. This means the machine can automatically distribute the ballast to achieve the required profile.

Maintenance on the new regulator will also be easier as there is a digital machine diagnostic interface which shows all the vital working functions.

The cab is pressurised to prevent any dust entering while there is also a water suppression system to dampen the ballast before brushing.

Another major improvement is the ability to change the brushes in just 10 minutes. On existing machines the machine is required to transit back to the depot and be changed manually.

The machine will start the commissioning process later in 2024.

More information can be found in our Online Magazine.

OPTIMISING BALLAST MAINTENANCE

RSRG and Zetica Rail lead industry in GPR technology advancement.

Steve Atherton
Chief Operations Office, North American Market

NORTH AMERICAN RAILROADS CONTINUE TO INVEST BILLIONS IN MAINTENANCE ANNUALLY. ADVANCEMENTS IN GROUND PENETRATING RADAR ARE BEING USED TO IMPROVE SAFETY AND TARGET INVESTMENT IN BALLAST MAINTENANCE.

In 2023 Rhomberg Sersa and technology partner Zetica Rail surveyed and processed over 48,000km of track providing GPR condition-based metrics to drive efficiencies in planning and execution of ballast cleaning activities include ballast cleaner / undercutter, shoulder ballast cleaning and tamping of track.

With 'near real time' autonomous processing of data and reporting being implemented, this enables railroads to cost effectively monitor ballast and subgrade conditions at a higher frequency which in turn allows monitoring asset performance and degradation and the ability to track change in conditions and forecast future maintenance intervention requirements.

"Since 2011 Rhomberg Sersa and Zetica have been long standing partners and continue to lead the industry in GPR technology advancement and the delivery of cost savings."

Adam Bankston
Assistant Director Roadway Planning – Ballast, BNSF Railway

04

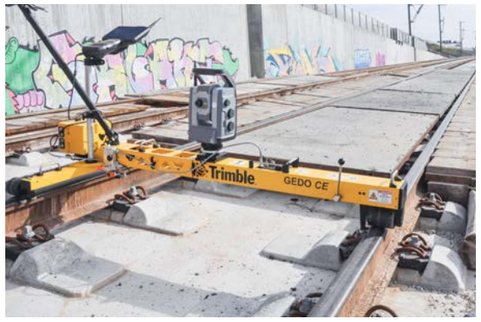
PRODUCTS

ACCURACY OF KINEMATIC TRACK MEASUREMENT

Innovative Measurement Method
Proves High Efficiency and Accuracy.

Helge Grafinger
Segment Coordinator
Geomatic Technologies

Lisa-Maria Riedel
Team Leader Reality Capture,
Project Business



THE USE OF TOTAL STATION, INERTIAL MEASUREMENT UNIT, AND LASER TRACKER ON A TRACK MEASUREMENT TROLLEY IS COMPREHENSIVELY EXAMINED REGARDING ACHIEVABLE ACCURACY AND FULLY MEETS HIGH EXPECTATIONS.

The geometry of the tracks on a slab track must be checked for compliance with tolerances before handover, according to the guidelines of Deutsche Bahn, through a so-called final documentation. This documentation requires measurement results – horizontal and vertical deviation from the plan data, super elevation, track gauge, short- and long-wave relative geometry – at each rail fastening. With a kinematic measurement using a total station, inertial measurement unit, and laser detector mounted on a track measurement trolley, this measurement process can be carried out significantly more effectively than with the previous conventional method, which requires stops at each sleeper. The accuracies with which the results of the new method can be obtained were determined by experienced RSRG staff through an extensive measurement program consisting of multiple reference and test measurements.

A dual conventional measurement, whose accuracy has been confirmed over many years, was used as a reference. The kinematic test measurements were carried out four times. The extensive analysis of the results confirmed compliance with high accuracy requirements. The accuracy of the horizontal and vertical track position determined by the study is within +/- 1 mm, and that of the super elevation and track gauge is within +/- 0.5 mm. The position of the rail fastenings, required for the output of the results, can be determined with an accuracy of +/- 3 cm. The measurement method achieves daily outputs that are six times higher compared to the conventional method. This allowed RSRG to demonstrate both increased efficiency and high precision.

“The use of this measurement method is an absolute quantum leap in terms of efficiency and precision.”

Helge Grafinger
Segment Coordinator
Geomatic Technologies

WE ARE SHAPING THE *FUTURE* OF TRACK SUPERSTRUCTURE

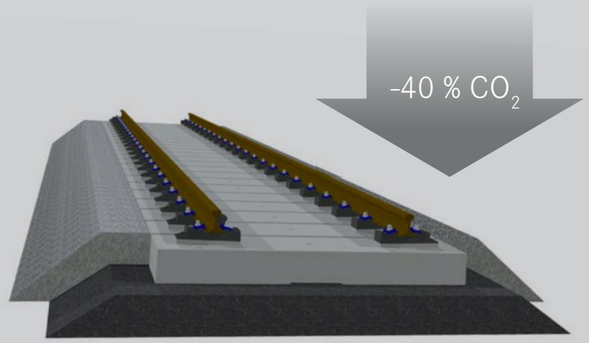
RSRG is developing pioneering solutions for railway superstructure with a focus on maximising customer benefits.

THE TRACK SUPERSTRUCTURE PRODUCTS DIVISION IS RESPONSIBLE FOR DEVELOPING SOLUTIONS FOR RAILWAY SUPERSTRUCTURE. DECADES OF EXPERIENCE IN THE CONSTRUCTION AND MAINTENANCE OF RAILWAY INFRASTRUCTURE AT RSRG ARE COMBINED WITH NEW TECHNOLOGIES AND MODERN APPROACHES.

The primary focus is on maximising customer benefit. Products and solutions that are meaningful and provide added value to our customers are always the clear goal.

Currently, the superstructure products portfolio includes two main product lines: the IVES slab track system and the V-TRAS universal transition module. Both products are fully developed and have already been used in various projects. Concurrently, we are continuously improving our products as well as incorporating feedback from construction sites and operations into product revisions. This ongoing process ensures our solutions get better year by year. A stringent R&D process ensures that products and solutions are developed to be applicable in as many markets as possible. This approach ensures the scalability of our products while taking into account local conditions in different markets and making adjustments to the products as necessary to meet these conditions.

Stefan Vonbun
Head of Superstructure Products, Project Business



1 WAO

News about Low-Maintenance Superstructure (WaO)

In a previous issue of “keep track” (2022 edition), we reported on the so-called Low-Maintenance Superstructure: a system that combines the advantages of ballast track (SchO) and slab track (FF).

The “WaO effect” is achieved by directly reusing the old ballast, processing it into a broad-grain mixture, and reinstalling it on-site as an unbound base layer, significantly reducing the necessary transport per track kilometre.

There are now important updates: In a Master's thesis from TU Dresden (Author: J. Steinbicker), we compared the CO_2 balance of WaO with other superstructure systems. The result: Due to its long lifespan and low maintenance requirements, WaO performs very well compared to SchO, with around 40% less CO_2 emissions per year.

Furthermore, after extensive laboratory tests, WaO has been submitted to the German Federal Railway Authority (EBA) for approval for operational testing. Once this hurdle is cleared, the system can be used in a real test track.

2 IVES

Stop maintaining, keep moving. Go IVES!

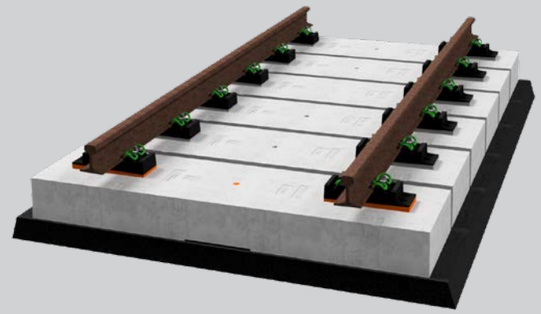
There is also very good news about our FF system IVES: The operational testing, which lasted for five years (from 2018 to 2023), was completed at the end of 2023. During a night closure, a delegation consisting of EBA, Deutsche Bahn, Vossloh Fastening Systems (VFS), TU Darmstadt, and of course, Rhomberg Sersa Rail Group, visited a site to verify the quality of the IVES system installed in 2018.

During the inspection of the Zierenberg Tunnel, which is located near Kassel and is nearly one kilometre long, our FF system was thoroughly examined by all parties involved. Each support point (model DFF 300 RS) was individually examined, and each supporting element was carefully inspected.

After several hours on the track, it was clear: The system is in the best possible condition, and from a superstructure perspective, there are no obstacles to the safe, long-term operation of the Kurhessenbahn. Based on the positive findings of the operational testing, the general approval for IVES for the DB InfraGO (formerly DB Netz AG) network will be granted this year.

“The guiding star of our work is always to develop meaningful solutions that provide clear customer benefits.”

Robert Kumpusch
Managing Director Project Business



05

ON SITE

MODERNISATION OF MAISHOFEN-SAALBACH STATION

Track construction and overhead line work by Rhomberg Sersa.

Ronald Ehrenhöfer
Authorised Officer, Head of Sales/Project Management, Rhomberg Fahrleitungsbau, Austrian/German Market

Jürgen Beran
Managing Director, Universale Bau, Austrian/German Market

Project Bahnhof Maishofen
Scope: Construction of barrier-free side platforms, renewal of track and overhead line systems, creation of a modern waiting area
Completion: December 2024

AUT THE MAISHOFEN-SAALBACH STATION IS UNDERGOING A COMPREHENSIVE MODERNISATION WITH THE AIM OF SERVING AS A CENTRAL TRANSPORT HUB FOR THE 2025 SKI WORLD CHAMPIONSHIPS. COMMISSIONED BY ÖBB-INFRASTRUKTUR AG, THE RHOMBERG SERSA RAIL GROUP IS INVOLVED IN THIS PROJECT THROUGH UNIVERSALE BAU AND RHOMBERG FAHRLEITUNGSBAU.

The modernisation includes the construction of new barrier-free side platforms, the renewal of track and overhead line systems, the creation of a modern waiting area, and other infrastructure improvements. Universale Bau was responsible for the track construction. During the summer months of this year, two tracks, each 350 metres long, were laid using a portal crane.

Rhomberg Fahrleitungsbau, the specialist in overhead lines and electrical equipment within the RSRG, was awarded the contract for the new installation of the entire overhead line system at Maishofen-Saalbach station. The installation work includes the erection of approximately 3.1 kilometres of Type 1.3 overhead lines, with 53 mast locations, 4 switch connections, 20 light points, and a new switch heating transformer. The power supply, including a new switchgear frame, is also being renewed. In the course of this new construction, the old overhead line was dismantled and the old reinforced concrete masts were removed. Both the track construction and overhead line installation crews are working in all weather conditions and with full commitment to complete the project on schedule.

The total budget for this project amounts to approximately 18.5 million euros, financed by ÖBB, the state of Salzburg, and the municipality of Maishofen. The main construction work is being carried out this year and is expected to be completed by December 2024, just in time for the 2025 Ski World Championships.

In addition to the modernisation of the station, these measures contribute to the promotion of sustainable travel by rail by improving the connectivity of this region to the public transport network.

CONTINUING AS EXECUTION PARTNER

New Cottbus Plant: Construction of the Second Hall Underway. “Railway Partnership Model” Proves Effective.

David Wurnitsch
Project Manager,
Project Business

Source: © Deutsche Bahn AG / Annette Riedl

Project New Cottbus Plant Hall 1
Location: Cottbus
Client: Deutsche Bahn AG (DB)
Contract: Transportation facilities, civil engineering, railway technical equipment, medium voltage supply
Completion: 2026

DEU **SINCE MARCH 2024, CONSTRUCTION HAS BEEN UNDERWAY FOR THE SECOND HALL OF DEUTSCHE BAHN'S (DB) ICE MAINTENANCE PLANT IN COTTBUS. BRANDENBURG'S PRIME MINISTER DR. DIETMAR WOIDKE AND DR. DANIELA GERD TOM MARKOTTEN, DB'S BOARD MEMBER FOR DIGITALISATION AND TECHNOLOGY, MARKED THE COMMENCEMENT OF THE PROJECT WITH A SYMBOLIC GROUNDBREAKING. RHOMBERG SERSA RAIL GROUP IS ALSO INVOLVED, ALONG WITH PARTNERS, AND IS RESPONSIBLE FOR THE TRANSPORTATION FACILITIES, CIVIL ENGINEERING, RAILWAY TECHNICAL EQUIPMENT, AND MEDIUM VOLTAGE SUPPLY.**

The over 500-metre-long, four-track hall will complete DB's most modern and largest maintenance facility. Thanks to innovative technologies like augmented reality glasses, material management apps, and infrastructure tailored to the ICE 4, trains in Cottbus can be maintained significantly faster than in other facilities, where they need to be split and laboriously shunted for servicing. This ensures that trains are quickly and reliably available again for passengers traveling in Germany, Austria, or Switzerland.

In January, DB opened the first two-track maintenance hall in Cottbus just 20 months after the initial groundbreaking. Earthworks for the second construction project also began in January, and the four-track maintenance hall plus paint shop is expected to be operational in 2026. Then, in DB's most modern facility, the full capacity for heavy maintenance of the entire ICE 4 fleet will be available just four years after construction began.

The ICE 4 is the backbone of DB's long-distance services, with 137 of these trains already in operation. By the end of the decade, around 450 ICE trains of various series are expected to be running on the tracks. More trains require more maintenance capacity. With modern technology and automation, the new plant in Cottbus ensures that trains can quickly be returned to service. This allows more people to travel in an environmentally friendly and comfortable manner, contributing to the transportation transformation in Germany.

TUNNEL RENOVATIONS IN FULL SWING

Gotthard Base Tunnel, Hauenstein Base Tunnel, Lötschberg Summit Tunnel, and Toua Tunnel.

Marco Mosimann
Head of Region South,
Swiss Market

Dominko Bilic
Project Manager,
Swiss Market

Michal Szymanski
Junior Construction Manager, Swiss Market

Kilian Rüf
Construction Manager,
Swiss Market

Tunnel Renovations

More information can be found in the Online Magazine.

CHE **IN THE CURRENT FOUR MAJOR RENOVATION PROJECTS IN SWITZERLAND, THE RHOMBERG SERSA RAIL GROUP (RSRG) EITHER HOLDS OVERALL RESPONSIBILITY OR IS IN CHARGE OF A SIGNIFICANT PORTION OF THE RENOVATION PROJECT.**

1. Gotthard Base Tunnel (GBT)

The key element of the work in the Gotthard Base Tunnel (GBT) was the track dismantling using state-of-the-art technology, allowing significant sections to be handled daily. The dismantling work, which involved track panels measuring 18 metres in length, was completed before mid-April 2024. This was followed by milling and concreting works, before tackling the rail welding operations.

2. Hauenstein Base Tunnel

The fundamental renovation of the Hauenstein Base Tunnel began as a joint venture (ARGE RSRG) in early September 2023 and is scheduled for completion by autumn 2027. All work is carried out at night on one of the two tracks, which is closed for construction while the other remains operational. This makes work organisation extremely challenging and requires an even greater emphasis on safety.

3. Lötschberg Summit Tunnel

For the Lötschberg Summit Tunnel, we are tasked with converting the southern section of the track from ballast to slab track (LVT system) and installing four switches (LVT-EW VI-900-1:19) in the tunnel section from kilometre 46.750 to 48.210. The project is being implemented this year and is expected to be completed by the end of December. All work phases are carried out while the tunnel remains fully operational, with only the track which is being converted closed at any given time.

4. Toua Tunnel

The installation work was already carried out in autumn 2023. The renovation work for the 677-metre-long Toua Tunnel on the Rhätische Bahn network began in 2024. The single-track loop tunnel is located on the route between Thusis and Preda. The challenge of this project, which is expected to be completed in 2027, is that all renovation work must be carried out during night breaks while train traffic runs according to schedule during the day.

WESTBAHN - FOUR-TRACK EXPANSION LINZ-WELS

Eastern Entrance of the
Wels Marshalling Yard.

Wolfgang Stroißmüller
Commercial Managing Director of the ARGE,
Austrian/German Market

Project Four-Track Expansion Linz-Wels
Contract Track laying in continuous process, switch installation
Construction Sections: Marchtrenk-Wels and Linz-Marchtrenk

AUT **IN THE MARCHTRENK-WELS SECTION, WORK IS CONTINUING, WHILE CONSTRUCTION STARTS IN THE LINZ-MARCHTRENK SECTION WITH THE REALIGNMENT OF THE LINZ LOCAL RAILWAY TRACK.**

Closure of gaps, alignment, commissioning – words that signify the time-sensitive nature of the track construction work by Bahnbau Wels.

Spring was marked by significant achievements. Several kilometres of tracks were laid in a continuous process, twelve pre-assembled state-of-the-art switches were precisely positioned, and thousands of tons of ballast were installed. The high-tech track construction machines from Bahnbau Wels' equipment fleet were promptly deployed following their coordinated winter maintenance for the first operations in 2024. The teams braved the weather, fulfilling their tasks on schedule with their usual high precision and quality, to the complete satisfaction of the client.

The following months were characterised by intense, short construction phases, requiring precise coordination and shift work for track construction. Gap closures had to be executed, and all trades involved in the construction had to be meticulously coordinated. In June of this year, the commissioning of the track systems in the area of the Wels marshalling yard and the first part of the temporary valley tracks in Marchtrenk was completed as part of a software upgrade. In August, provisional switches were installed on the existing Westbahn route as part of the renewal process. The key to success lay in the collaborative execution and planning of the detailed construction phases by all trades involved, along with the project team from the client ÖBB.

This autumn, the new central platform in Marchtrenk is set to be fully operational, presenting further challenges in track construction for the project team.

TAMPING WORK IN THE FAR NORTH

Processing the 8.8 km long
Grakallbane in Trondheim, Norway.

Sebastian Klotz
Construction Manager, JumboTec,
Austrian/German Market

Project Trondheim Tram Trondheim
Location: Trondheim, Norway
Client: Boreal Bane AS
Contract: Tamping and leveling work (8.8 km)

NOR **IN MAY LAST YEAR, JUMBOTEC RECEIVED A CONTRACT THAT EXTENDED FAR BEYOND THE NORTHERN BORDER OF GERMANY. EXTENSIVE TAMPING AND LEVELING WORK ON THE TRAM LINE IN TRONDHEIM, NORWAY, WAS TO BE CARRIED OUT FOR THE CLIENT BOREL BANE AS.**

The Grakallbane is the northernmost tram line in the world, which opened on July 18, 1924, with the first 5.7 km. It was later extended to a total length of 8.8 km. For this project, JumboTec enlisted two strong partners: Bahnbau Wels and IngVeBa. Bahnbau Wels supported with their ballast leveling machine PBR 205 while the surveying office IngVeBa took over the track surveying and marked the entire route.

Norway is not a member of the EU, making the import procedures for machines, spare parts, and all accessories more complex than usual. JumboTec was able to demonstrate its competence in handling international assignments by easily overcoming these bureaucratic hurdles. Thanks to close coordination in advance with the client Borel Bane AS, work successfully began in July. JumboTec used the narrow-gauge tamping machine type Plasser & Theurer 08-75 /4ZW for the tamping work.

After tracking in Munkvoll – Trondheim, the machine crew started the tamping work. Over a period of three weeks, the entire route was processed, and the initial contract for the client Borel Bane AS was successfully completed.

By executing this project, the Rhomberg Sersa Rail Group proved that through cross-company collaboration, we can offer a complete package for their customers in narrow-gauge technology and deliver excellent tamping performance beyond the borders of Germany. In addition to technical capability, the versatility and readiness of the staff were crucial to the success of this unique project.

TRACK RENEWAL BY RSRG

In October 2023, the platform and track facilities at Châtelard-Frontière station were made accessible for disabled individuals.

Eduard Merz
Head of Construction West,
Swiss Market

Project Track Renewal
Location: Châtelard-Frontière, Switzerland
Client: Transports de Martigny et Régions SA (TMR)
Contract: Renovation of the three station tracks (420 m), tamping in systematic maintenance of 1300 track metres and six switches

“Like a Swiss clockwork – the cogs of the group mesh together. Or as they say in western Switzerland: 'réglé comme une horloge suisse'.”

Eduard Merz
Head of Construction West, Swiss Market

More information can be found in the online magazine.

CHE THE TRACK CONSTRUCTION WAS AWARDED TO RSRG SWITZERLAND WEST. IN CONNECTION WITH THIS, AN ADDITIONAL CONTRACT FOR MECHANISED TRACK MAINTENANCE WAS SECURED. THE CONTRACT, CARRIED OUT BY MECHANISED TRACK CONSTRUCTION, WAS A STRONG ARGUMENT FOR FURTHER CONTRACT AWARDING.

The border station is located on the Martigny (CH) – Chamonix (F) line, where the famous Mont-Blanc Express operates. Following the award from Transports de Martigny et Régions SA (TMR), the internal capabilities of RSRG in mechanised track maintenance were also presented. The presentation was convincing, and TMR SA decided to use the B24C tamping machine for systematic track maintenance in 2023. Due to the planned line closure, it was necessary to ensure that the B24C could be transported by road into the narrow valley and also transferred and used in the area of the existing third rail. Thanks to some machine modifications, the use of the B24C was finally confirmed. It was further proof that the bundled competencies within RSRG pay off.

In almost winter-like weather, the three station tracks, totaling 420 metres, were rebuilt in autumn 2023. A challenge was coordinating the reconstruction work with the platform renovation work which was being carried out by the local construction company. But the work at Châtelard-Frontière station was completed on time and to the complete satisfaction of the customer. At the same time, the B24C tamped 1300 track metres and six switches in systematic maintenance.

TMR SA is also interested in the track-specific analysis platform and measurement database IRISSYS, developed in part by Rhomberg Sersa Technology's diagnostics. The geometry data of the track facilities recorded during the maintenance campaign demonstrated the competencies of the measurement and analysis platform so convincingly that RSRG Diagnostics and the ARGE FahrwegDiagnose can now celebrate a contract success. The measuring vehicle will conduct measurement runs for track analysis on the TMR meter-gauge network in August 2024.

THE FIRST STAGE

Expansion of the Connection Track Facility at the National Distribution Centre Coop (NVZ) Successfully Launched.

Patrick Schneider
Construction Manager,
Swiss Market

CHE THE EXPANSION WORK ON THE CONNECTION TRACK FACILITY OF THE NVZ FROM COOP IN WANGEN BEI OLTEN IS AIMED AT OPTIMISING CAPACITY. A NEW HIGH-BAY WAREHOUSE WITH TWO LOADING TRACKS IS BEING CONSTRUCTED, AND EXISTING HALLS ARE BEING EXTENDED TO THE EAST TO CREATE SPACE FOR 6-AXLE CARRIERS WITH TWO 45-FOOT CONTAINERS EACH.

The track realignment, carried out in March 2024, laid the foundation for subsequent work, which will extend over six further stages until 2026. The implementation of the first stage was initially planned for two weeks of daytime work without weekend deployment.

However, during the final kick-off meeting, it quickly became clear to those involved that following the original construction schedule would result in 50% of the transport goods being shifted from rail to road. Such a logistical challenge would have been unmanageable.

Thanks to the focused and spontaneous readiness of the Rhomberg Sersa Rail Group in Switzerland, the main work was successfully rescheduled` to a single weekend. The days leading up to the reconstruction weekend were used for meticulous preparatory work, ensuring that the work could start punctually on a Saturday morning. The intensive effort of all involved ensured the track was fully operational again by Monday morning, therefore keeping the rail traffic disruption to an absolute minimum. The old track had to be dismantled down to the subgrade during the available shifts. Surveying and sampling for contaminant analysis during the preparation phase revealed that the subgrade was in excellent condition and required no remediation.

The preliminary ballast was laid, the panels were positioned, ballasted, and tamped twice. Thus, the track could be used for a week before the final work was completed the following weekend. By Monday morning, the new track was ready for operation.

FORGING PARTNERSHIPS TO THE BENEFIT OF THE *NETWORK*

The Success Story of Rhomberg Sersa Australia and Sydney Trains.

Marcus Graham
Project Manager,
Australian Market

AUS ON THE SYDNEY TRAINS NETWORK EFFICIENCY AND RELIABILITY ARE PARAMOUNT, PRIORITISING MAINTENANCE OF THAT NETWORK DIRECTLY ENSURES THOSE TARGETS ARE MET!

The collaboration, between Rhomberg Sersa Australia (RSA) and Sydney Trains, stands out as a shining example of effective partnerships and operational excellence. Through hard work and dedication for delivering to our clients, RSA has become one of Sydney Trains primary suppliers, the journey of RSA with Sydney Trains is a testament to the power of collaboration in enhancing railway infrastructure.

RSA's journey with Sydney Trains began with a commitment to develop a robust partnership. Initially serving as a secondary supplier, RSA steadily earned the trust and confidence of Sydney Trains through consistent delivery of high-quality maintenance services and unwavering dedication to meeting the client's needs.

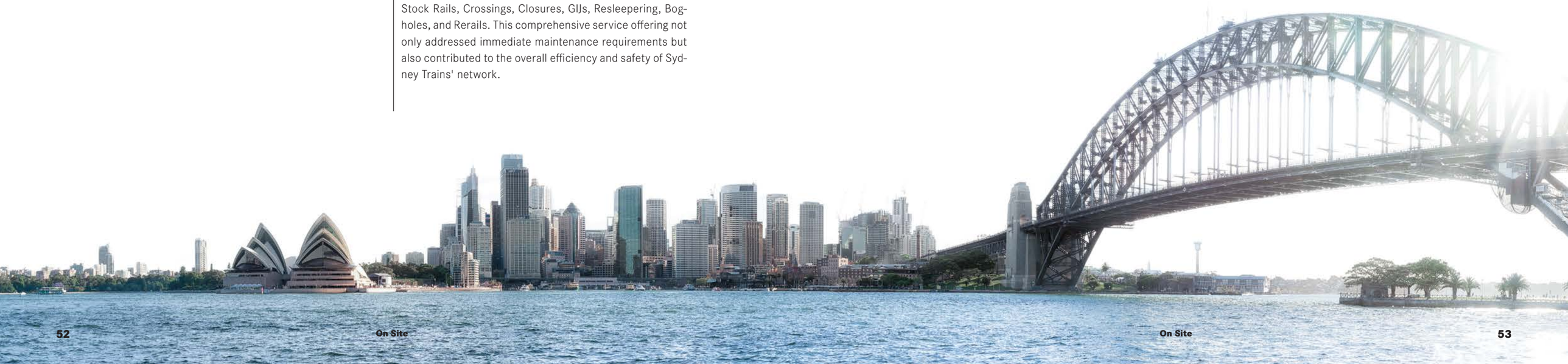
RSA have showcased the capability to undertake a wide range of defect rectification tasks, including Switch & Stock Rails, Crossings, Closures, GIJs, Resleepering, Bogholes, and Rerails. This comprehensive service offering not only addressed immediate maintenance requirements but also contributed to the overall efficiency and safety of Sydney Trains' network.

This collaboration has been instrumental in fostering a culture of continuous learning and improvement. Through hands-on experience and extensive training programs, RSA's team has not only mastered various maintenance scopes but has also gained invaluable insights into the intricate nuances of Sydney Trains' expansive network. This depth of understanding has enabled RSA to provide tailored solutions that align seamlessly with Sydney Trains' operational objectives.

Moreover, RSA's collaboration with Sydney Trains has extended beyond the boundaries of their immediate partnership. By forging key partnerships with critical suppliers, RSA has further strengthened its service capabilities.

By showcasing continuity with other departments within RSA, such as resurfacing and overhead wiring (OHW), the collaboration has positioned RSA as a one-stop-shop for Sydney Trains' maintenance needs. This holistic approach not only streamlines processes but also reinforces the Rhomberg brand as a trusted partner committed to excellence and reliability.

In conclusion, the collaboration between Rhomberg Sersa Australia and Sydney Trains stands as a shining example of what can be achieved through strategic partnership, dedication to quality, and a shared commitment to results.



WINTRY OPERATION

Renewal of the Railway Power System in Mattsand.

Thomas Lunzer
Head of Overhead Lines,
Swiss Market

Project Mattsand
Partner: Furrer + Frey AG (planning)
Contract: Renewal of the railway power system (31 masts, two special A330 gantries, and three additional cantilevers)
Construction Phase: April - May 2023

CHE THE MATTERHORN GOTTHARD BAHN (MGB) AWARDED THE RHOMBERG SERSA RAIL GROUP IN SWITZERLAND THE CONTRACT FOR THE RENEWAL OF THE OVERHEAD CONTACT LINE IN MATTSAND (SIDING STATION), ST. NIKLAUS IN THE CANTON OF VALAIS IN 2023.

In collaboration with Furrer + Frey AG (planning), the overhead line team of RSRG in Switzerland (execution) carried out the complete project for the renewal of the railway power system.

A total of 31 masts, two special A330 gantries, and three additional cantilevers were installed and constructed using special dual-gauge vehicles.

In April 2023, the pre-assembly and equipping of the masts and gantries began. This was followed by the placement of the masts on the foundations, as well as the feeder line installation and grounding of the cable pull.

In October 2023, the demolition of the existing system began, with tracks 1 and 2 being completely dismantled. By November, the new catenary system, including 600 metres of contact wire and catenary wire, was installed and regulated. Before acceptance and successful commissioning, the entire grounding installation was completed.

The extremely intensive work hours took place under extreme weather conditions (snow and rain) at sub-zero temperatures. Despite this, the entire team was fully motivated. All employees pulled together and, with tremendous dedication, did an outstanding job to the satisfaction of all involved.

The overhead line was even released on time so that trains from Visp to Zermatt could run again for the FIS ski race. Unfortunately, the ski race had to be cancelled, but the most important thing was that spectators and skiers were able to travel CO_2-free by train.

The trust that the Matterhorn Gotthard Bahn placed in RSRG Switzerland with this contract, as well as the active support of the Valais colleagues in Gamsen, is highly appreciated.

RSRG BRINGS LIGHT TO THE FEHMARNBELT TUNNEL

Complete solution for the once in a century project impresses.

Stephan Ottersbach
Managing Director,
RS safetec

Project Fehmarnbelt Tunnel
Location: Germany (Puttgarden) and Denmark (Rødbyhavn)
Client: FLC (Femern Link Contractors)
Contract: Approx. 98 km of LED light strips (28 m each), approx. 82 km of power cables (3 x 2.5 and 5 x 4), approx. 108 main distribution cabinets, approx. 360 small distribution units, approx. 1,750 emergency lighting units

DEU DNK THE FEHMARNBELT TUNNEL, UPON COMPLETION, WILL BE THE LONGEST IMMERSED TUNNEL IN THE WORLD. FOR ILLUMINATION DURING THE CONSTRUCTION AND EQUIPMENT PHASE, RSRG, THROUGH RS SAFETEC, WAS CONTRACTED BY FLC (FEMERN LINK CONTRACTORS).

Construction on the Fehmarnbelt Tunnel began in the summer of 2020. Once completed, the road and rail tunnel will connect Germany (Puttgarden) and Denmark (Rødbyhavn) under the Baltic Sea, creating a direct rail and road link between the metropolitan areas of Hamburg and Copenhagen.

Rhomberg Sersa Rail Group, through RS safetec, will bring light to the tunnel. Following a demanding proposal and concept phase, they convinced the client with a complete solution. RSRG's lighting specialists will provide all power cables (halogen-free flexible construction cables with pre-assembled plugs), distribution cabinets, emergency lighting units, and light sources, consisting of flexible LED strips with a section length of 28 metres from a supply point of a tunnel element.

The project includes a total of 79 tunnel elements of 217 metres each and ten special elements of 38 metres each, as well as elements in the access ramp areas. The entire energy and lighting system is designed on a plug-and-play basis, allowing for easy installation with minimal prior knowledge. The emergency lighting units ensure reduced emergency lighting in the tunnel in case of a power failure, with an autonomy time of 120 minutes.

1

TRACK CONSTRUCTION WORK ON HISTORIC NARROW-GAUGE RAILWAY

/

Mariazeller Railway - New Track Layout Erlaufklause – Mitterbach with Rehabilitation of Minor Structures.

Wolfgang Stroißmüller
Commercial Managing Director of the ARGE,
Austrian/German Market

AUT THE HISTORIC MOUNTAIN RAILWAY WITH A GAUGE OF 760 MM CONNECTS THE LOWER AUSTRIAN CAPITAL ST. PÖLTEN WITH THE WELL-KNOWN PILGRIMAGE SITE MARIAZELL. THIS SPRING, BAHNBAU WELS CARRIED OUT TRACK RENEWAL WORK IN A CONSORTIUM FOR THE CLIENT LOWER AUSTRIAN TRANSPORT COMPANY M.B.H. (NÖVOG).

The track construction team renewed a total of around 1900 metres of track, including substructure, cable troughs, and minor structures. The were a number of significant challenges for the project team and the construction crews including a very difficult-to-access section of the route, the altitude, the early execution dates with significant weather dependence, and the short closure times.

Despite the challenges, the work was completed on schedule with our civil engineering partner. At the same time we maintained a high quality and with proven collaborative execution, the works were concluded to the complete satisfaction of the client NÖVOG.

2

NEW STORAGE HALL IN LEESDORF

/

RSRG Installs Overhead Line System.

Ronald Ehrenhöfer
Authorized Signatory, Head of Sales / Project Management,
Rhomberg Fahrleitungsbau, Austrian/German Market

AUT AS PART OF THE MODERNISATION AND EXPANSION OF THEIR VEHICLE FLEET, WIENER LOKALBAHNEN INVESTED IN THE CONSTRUCTION OF A NEW STORAGE HALL FOR BADNER BAHN TRAINS IN BADEN-LEESDORF. RHOMBERG FAHRLEITUNGSBAU, A SPECIALIST IN ELECTRICAL EQUIPMENT, WAS COMMISSIONED BY RSRG TO INSTALL THE OVERHEAD LINE SYSTEM.

The tracks in the storage hall were equipped with a simple overhead contact line, and in the outdoor area with an overhead line type 1.1. The project also included the installation of the masts. Using a two-way aerial work platform and a motor tower wagon, the fitters from Rhomberg Fahrleitungsbau carried out the mast installation and the assembly of the overhead line both in the outdoor area and in the storage hall.

The new hall accommodates 24 train sets on six tracks. After a construction period of eight months, the project was successfully completed in May of this year, to the complete satisfaction of our customer.

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