keep track

Rhomberg Sersa Rail Group Customer Magazine

// Rail 4.0: the future of railways, pages 6_7

// Tunnelling: expertise from a single source, pages 14_17

// “Full of beans”: Konrad Schnyder interview, pages 24_26

RHOMBERG SERSA RAIL GROUP

The course has been set

Dear Readers,

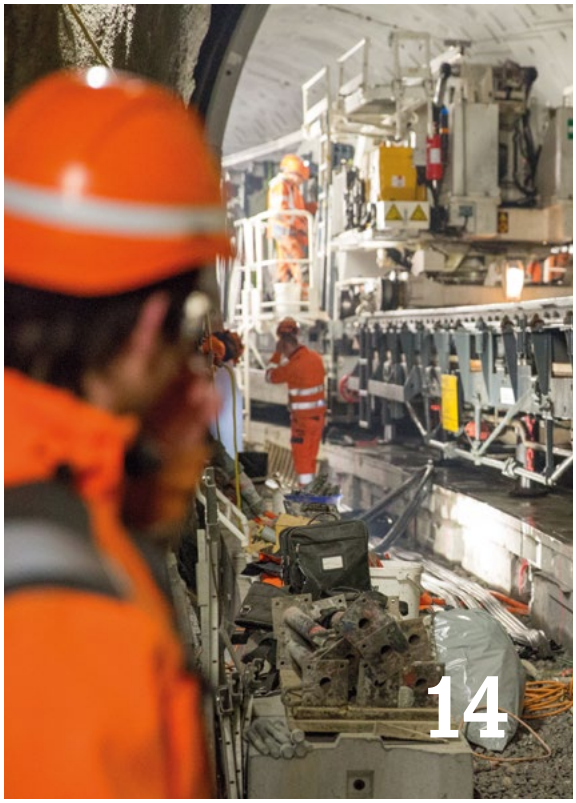
Have you heard of “human logarithmic thinking”? This theory suggests planning for the future by looking ahead, for example, a year, and then mentally “travelling” back by the same amount of time and trying to duplicate the developments you imagined over the coming year. The flaw in this reasoning is, in order to predict the state of the world in 2017, we may need to go back as far as 2006. This is because change occurs, not in a linear fashion; but exponentially.

Rapid technological development has brought about what might be called a fourth industrial revolution: after mechanisation, mass production and automation, we are currently experiencing a fourth wave of change due to digitalisation. This has provided many opportunities while also destabilising a great deal. This is what makes our job and our work so exciting. So much is currently happening both on and off the tracks that it is easy to overlook things, and it is our job to ensure that this does not happen, either for the Group or for you, our customers.

We will achieve this through hard work, wise foresight, professional planning and above all innovation. All this is what our latest “keep track” customer magazine is about, and we would like to wish you happy reading.

The Owner Board

Jürg Braunschweiler, Hubert Rhomberg, Konrad Schnyder and Ernst Thurnher



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The railway of tomorrow – today

// The fourth industrial revolution has finally reached the rail industry: after mechanisation, mass production and automation, digitalisation is now also gearing up to shake up economic life on the rails. The Rhomberg Sersa Rail Group is prepared for this and wants to use its know-how and its extensive service portfolio to support its customers in keeping the railways sustainable. Read on to find out how the full railway engineering service provider is going to achieve its aim.

What is "Rail 4.0"?

The term "Rail 4.0" attempts to describe everything that the new opportunities of digitalisation and networking makes possible for the railways and all of their stakeholders. "Ultimately it really doesn't matter what we call this phenomenon," says Hubert Rhomberg, CEO of the Rhomberg Sersa Rail Group. "The influence of new digital opportunities will massively change services, products and the existing processes. And I'm totally convinced it will do so for the good!" After all, just collecting information and data is simple. What makes the difference is what happens to this data: how it is prepared and evaluated. This means Rail 4.0 provides great opportunities for Rhomberg Rail and for the industry as a whole.

Great opportunities

Digitalisation predominantly affects three areas: machines, infrastructure and safety. “We are already active in all three areas,” explains Hubert Rhomberg.

For example, machine parks: “Our goal,” says Rhomberg, “is to equip the entire fleet of the Rhomberg Sersa Rail Group, everything from road-rail excavators upwards, with transponders. We will then, of course, offer this service to our customers.” The radio communication devices will record work locations and times, but also, more importantly, signs of wear or glitches so that predictive maintenance can be implemented. They will send this data directly to the Cloud, ideally to a regional “Rhomberg Sersa Rail Group Cloud”, in order to achieve a high level of safety and short latency times. The maintenance companies, for example, can then be informed and can intervene at the right place and at the right time. The advantage is that the fleet is always in top condition. For example, in infrastructure Rhomberg predicts that, “With the help of measuring sensors on the power cable of the switch motor, we will be in a position to record the load curves of switches in operation and also send them to the Cloud.” . There an algorithm filters out the conspicuous curves and allows a quick and low-cost preliminary examination. The switches with limited functionality are added to a list, which the responsible area can handle on its next tour. “We therefore guarantee the performance of the infrastructure without unnecessary extra work,” says the CEO of the Rhomberg Sersa Rail Group, giving an insight into the future of predictive maintenance.

Digitalisation also affects the area of safety: “The most exciting part for me, because it’s also the most important, is our “Smart Rail System” project in the area of access, tracking, communication, alarm, in short: safety,” he explains. What’s undervalued, in his opinion, is the evaluation of near misses: “Around 90 per cent of these are not reported, with the thinking, ‘why bother? Nothing happened.’ Yet this is where most can be learned. With the help of digital recording systems such as SRS, near misses will no longer slip past us.” Those responsible can reproduce where individual railway construction workers were as a train passed through the works. They then also know who should undergo more training. “This means they no longer have to send the whole team”, explains Rhomberg. “And if anything does ever happen, there is a black box available. This does not yet exist anywhere. We are very advanced in this area and are close to the first partnerships.”

The experts of the Rhomberg Sersa Rail Group are also working intensively on diagnostics. They are in the process of setting up a communications platform, which contains all the relevant information, individually configured, about the group, the market, the department and the projects. “This is to some extent a successful mixture of the Intranet, e-mail and Facebook.”

Customer benefits 4.0

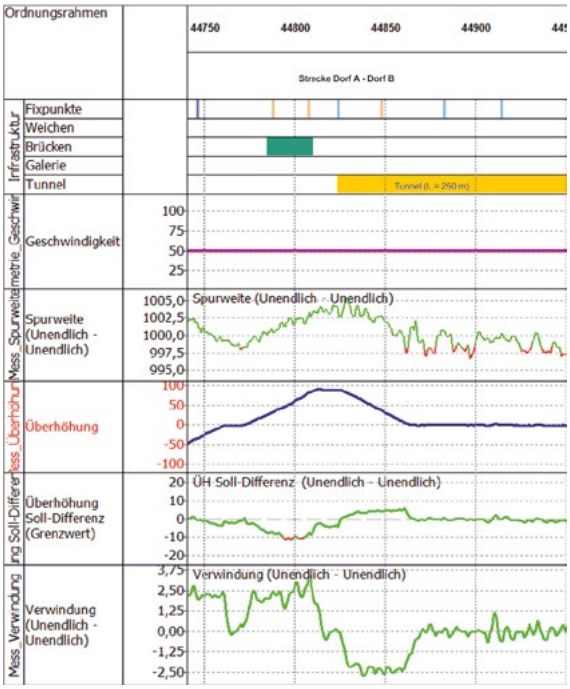
“We support local and long-distance trains, freight traffic routes and private infrastructure with the perfect mixture of start-up and established players,” says Rhomberg, summarising the benefits for the Rhomberg Sersa Rail Group’s customers. “Many products – and this includes some really good ideas – are worked out by fledgling companies, who are then not able to implement them. They often fail because they are missing the necessary authorisations even to get onto the tracks. We combine everything from digital products to machine services and from the management of complex major projects to the man with the shovel. This expertise and this breadth allow us to completely think through, consider and implement innovative ideas and digitisation.

In summary: our customer benefits from efficient processes, greater transparency, improved safety and lower costs.”

The rail network

// More efficient, more straightforward, more economical: these are the advantages offered by digitalisation of the rail network – i.e. systematic electronic collection and assessment of data about the condition and development of railway infrastructure. Digitalisation opens up a plethora of opportunities for service companies such as Rhomberg Sersa Rail Group to support their customers. current status of research:

From individual fault assessment to big data



The field of diagnostics is developing quickly. From individual fault observation of individual parameters, the focus has moved to the assessment of fault combinations.

Sersa Maschineller Gleisbau AG operates a flexible and particularly user-friendly measurement database within the Rhomberg Sersa Rail Group. Customers rent precisely the area needed for their rail network within this "pool" and keep hold of the data. Measurement data is stored and assessed independently of measurement providers. Upgrades and maintenance of the rail network are planned using the measurement data, the experience and the local expertise of railway experts.

As the figure above shows, fault assessment of individual parameters is already standard. Rhomberg Sersa Rail Group even produces its own measurement data. Alongside the classic track parameters of rail geometry and gauge, the height and distortion of the overhead contact wire is also measured. The next stage is to evaluate critical fault combinations. For example, exceeding the torsion limit combined with a gauge that is too narrow and a high line speed is much more serious than if the limit of the distortion occurs with an unremarkable gauge and low line speed.

In some circumstances, the combination of these parameters is so unfavourable that the individual parameter is not exceeded and yet a dangerous situation still occurs on the network. Our goal is to offer the customer an algorithm which will recognise the fault combinations outlined above. In the future, far more measurement data will be available, and recognising dangerous fault combinations will be the major challenge.

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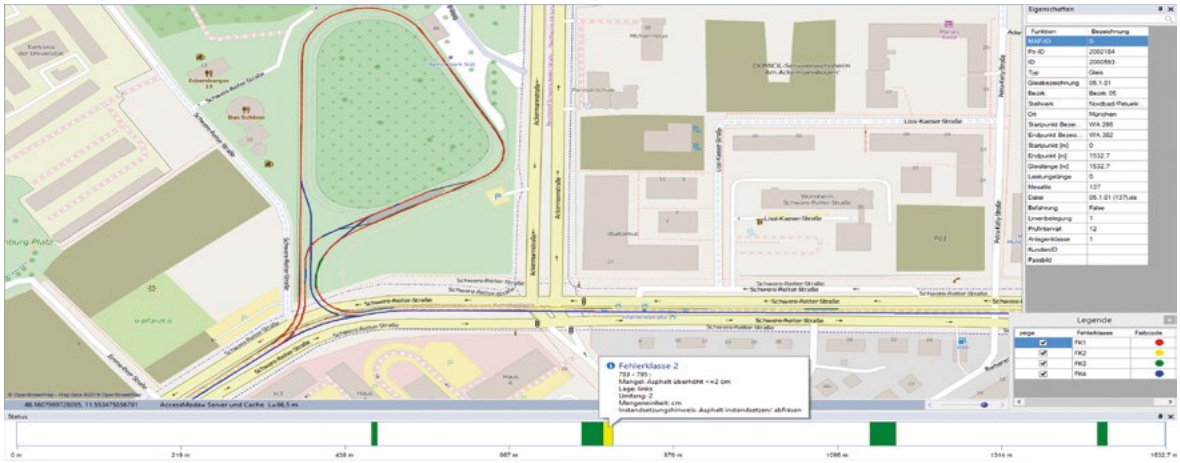
Rail network digitalisation – infrastructure data management – information systems



Rail 4.0 will help to sustainably and affordably implement the opportunities provided by the new mobility. It is therefore important for the future that we, as a manufacturer, deal much more with the availability of our products. The sharing of comprehensive information on the availability and quality of infrastructure can offer a valuable contribution to sustainable and economic operation and maintenance.

Intelligent data evaluation – big data management

It is the goal of networking to use intelligent links from large data quantities, big data, to make hidden links, "smart data", as it were, visible. The data comes from such varying sources as the traffic load, line allocation, inventory data, system age or maintenance costs.

If it is possible to bring together existing data from the widest range of sources, the survey of further data is often not required. The real added value comes from the type of data evaluation and its clear graphical display.

An example of a big data management system for railway networks is MR.pro®, which is a technical information and expert system specially tailored to the requirements of the rail industry. This in-house development supports the management of the network infrastructure from initial recording to continuous checking as well as planning, awarding and control of maintenance and repair tasks from the point of view of achieving efficiency and preserving value.

Current project in Belgium

In just six months at the start of the year, RS Gleisbau carried out the railway network digitalisation for all three tram networks of the Belgian transport company De Lijn. The customer received a software-supported maintenance management system for the transparent, comprehensible planning and control of infrastructure maintenance.

- Segmenting of the railway network into database-ready individual objects
- Database structure with all inventory and condition data
- Coding and prioritisation of conditions and measures
- Prioritisation of derived maintenance measures
- Touching measurement and evaluation
- Scanning of the rail profiles and comparison with new profile
- Determination of geocoordinates
- Delivery and installation of a Flemish language version of MR.pro®

De Lijn can use MR.pro® to access networked data and the company benefits from a unique workflow: once recorded, the maintenance requirement is budgeted for, awarded and reported as completed in an ERP system. All information flows back to MR.pro® and gives a comprehensive overview of quality in the entire maintenance cycle. Any maintenance requirements are already recognised during collection of the data.

MR.pro® uses intelligent data evaluation to make the life cycle of the rail transparent and, furthermore, allows predictive analyses for long-term planning and asset development (KAV-wear margin indicator).

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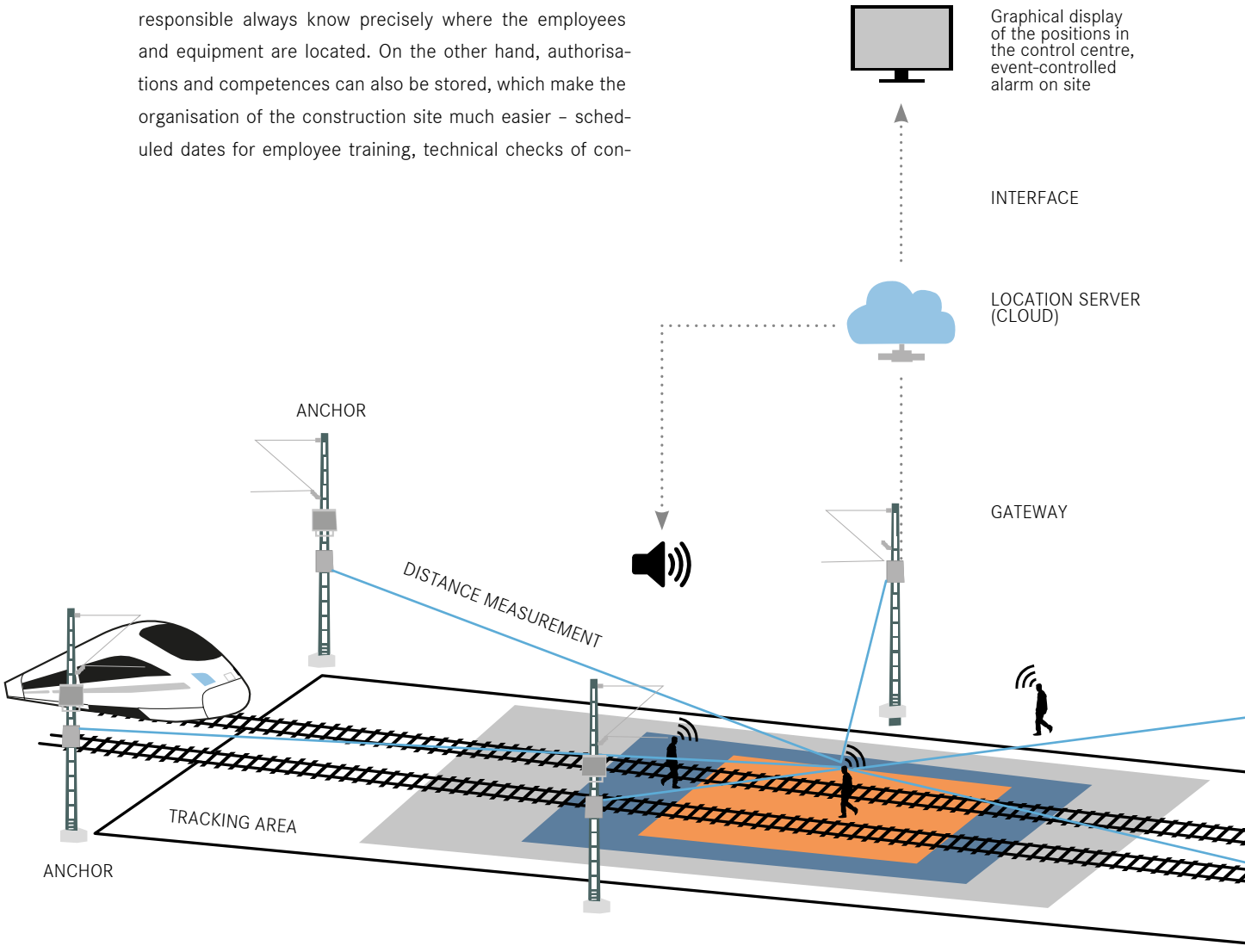
Efficiency in track safety

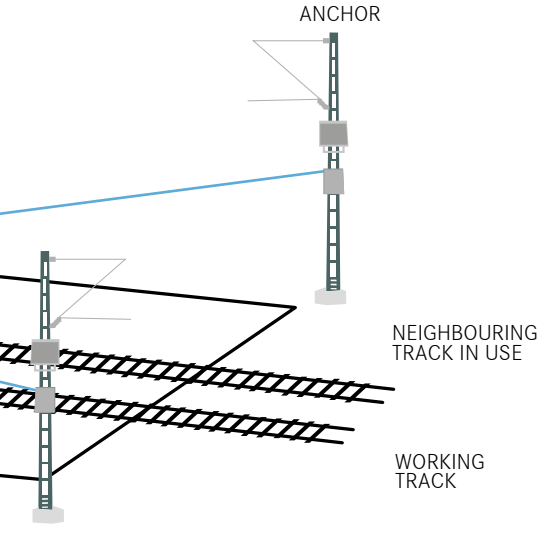
// RK safetec makes track construction sites significantly safer places: thanks to state-of-the-art technology, those responsible always have a complete overview of everything that happens on-site.

The technology is so new that it doesn't even have a name yet: under the project name "Smart Rail Safety", the safety experts of the Rhomberg Sersa Rail Group are currently working together with partners on a completely new organisation, tracking and warning system. The core elements are IDs in the form of badges/tags and anchors regularly arranged along the route, which can determine the locations of their carriers – be it track construction workers or construction machines – precisely to the centimetre and generate movement logs. On the one hand, this means those responsible always know precisely where the employees and equipment are located. On the other hand, authorisations and competences can also be stored, which make the organisation of the construction site much easier – scheduled dates for employee training, technical checks of construction vehicles or the expiration of authorisations are saved. Those responsible for the construction site are automatically informed in a timely manner. Critical situations can then be precisely evaluated and employee training can be adjusted correspondingly. Naturally, anonymity and data protection are guaranteed: access to the data is restricted and strictly regulated.



The following examples demonstrate the advantages provided by the system:

Passing train:
Notification units detect every train that approaches the construction site area in a timely manner, and trigger an immediate, effective alarm. By means of visual (warning lights), acoustic (horns) and sensory (vibration of the pad) signals, all workers in the track area are prompted to move to a place of safety. Using the real-time location of the train and track workers, supervisors can check that everyone has actually heeded the warning and that no track construction machinery is still on the route. If people/vehicles are still in the danger zone, they can be warned again by the safety supervision staff.



Collision warning:
In addition to the available reversing warning systems, tracking can also serve as a warning in possible collision situations. Thanks to the inclusion of the road-rail machines, any people behind the machine can be displayed to the operator, who can therefore be warned of a possible collision.

Machine maintenance/employee training:
The tags of the track-laying machines on site can be fed with all the relevant information: maintenance intervals, fields of application, use authorisations etc. If an approval check for the two-way excavator is then required, for example, the site manager is informed ahead of time, and can schedule a date and organise a replacement. The same also applies, for example, to track construction workers whose access authorisation is expiring or who require training. The reminder function of the system ensures that nobody misses an appointment or has to wait in front of locked gates.

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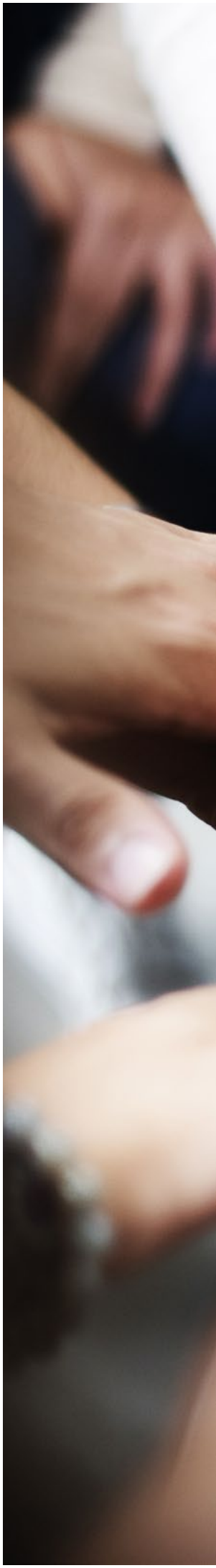
Hand in hand

// Collaboration in the Rhomberg Sersa Rail Group will significantly shape future internal and external communication.

Communication and cooperation will change rapidly in future as part of digitalisation this is an unstoppable force within the railway engineering industry. This is a fact and the change cannot be reversed. The simple networking of information and people as well as the desire for timely satisfaction of information requirements and the use of timely information channels play a significant role in this. Cross-country and project activities, as they are carried out on a daily basis in the Rhomberg Sersa Rail Group, will be simplified and generated knowledge will be shared and made available to everyone. Sustainable applications or instruments are to offer an attractive and contemporary workplace and make existing knowledge more freely available to colleagues, and above all to customers. Working methods, structures and processes within the company will move forward as a result. Close fruitful cooperation – collaboration – is the key to success. This is the only way that developments and market-specific requests can be taken up and comprehensively shown within your own value added chain and the correct solutions offered to the customer. Corresponding applications are currently being evaluated in the Group and are to be implemented over the course of the year.

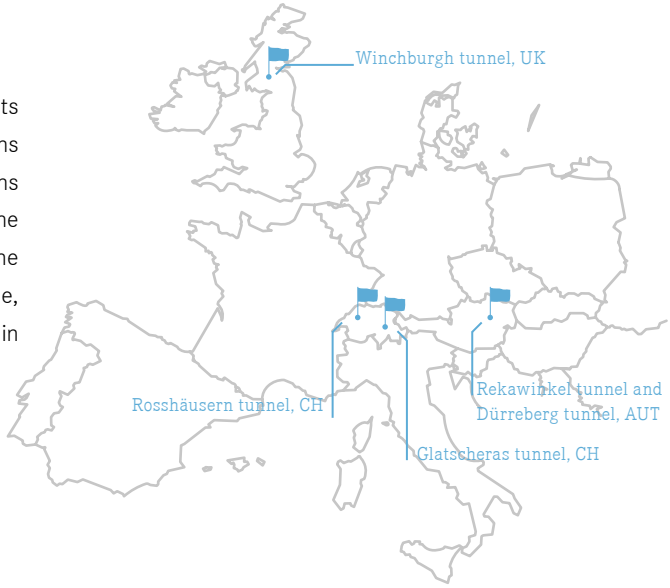


Première in the Glatscheras tunnel: the Rhomberg Sersa Rail Group's innovative transfer equipment in use.

Tunnel vision

// Thanks to innovations and complete solutions, the Rhomberg Sersa Rail Group is driving forward railway tunnel construction. hanks to innovations and complete solutions:

The Rhomberg Sersa Rail Group is a strong partner in aspects of the tunnel structure. Its contribution includes innovations such as the protective wall constructions on the work trains in the Rekawinkel tunnel or the transfer equipment in the Glatscheras tunnel. In Switzerland, the Group acted as the general contractor on this type of project for the first time, taking responsibility for the works from the shell onwards in the Rosshäusern tunnel.

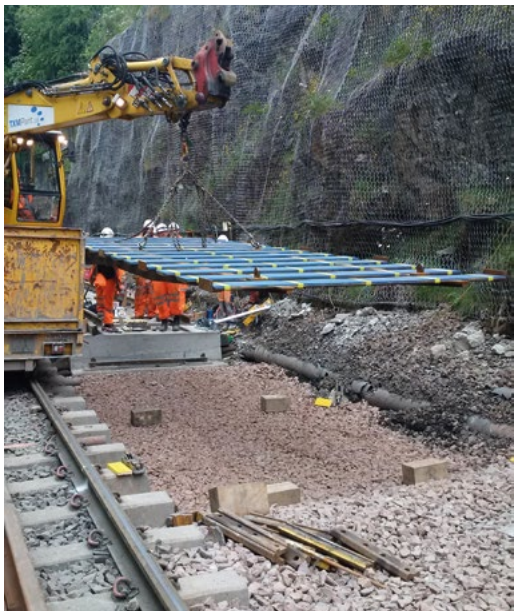


Glatscheras tunnel, Switzerland

Railway construction experts at the Rhomberg Sersa Rail Group have also come up with intelligent solutions for the repair of the Glatscheras tunnel, which save the customer time and money and increase flexibility. On behalf of the Rhätische Bahn, Rhomberg Bahntechnik and Sersa are involved in breaking out the old building material, increasing the cross section by around 20% and installing the enlarged tunnel structure. In order to achieve this, experts have developed a protective structure with telescopic overhead conductor rails, which, for the first time, allows construction work to continue in an electrified tunnel on an operating railway line – in the Glatscheras, for example, the detonations are prepared with this protection in place. Then at night, a further innovation is also used: transfer equipment that drives from wagon to wagon and installs the segments.

Winchburgh tunnel, Scotland

The Winchburgh tunnel project is a part of the Edinburgh to Glasgow Improvement Programme (EGIP), which will improve the most heavily used rail connection in Scotland by electrifying the route and upgrading it to provide higher capacity and speeds. To this end, the Rhomberg Sersa Rail Group has installed 490 metres of Porr system slab track as well as the Rhomberg V-Tras transfer module onto the ballast track in the two-track tunnel. The Group subsidiaries Rhomberg Bahntechnik and Rhomberg Sersa UK were involved.
After the Ashfordby project, Winchburgh is the second tunnel in the UK to be equipped with the Porr/V-TRAS system. Two further projects – Queen Street, Glasgow, and Gospel Oak, London – are being prepared or undertaken in order to provide technical benefits.



Technology that inspires: slab track elements and the V-Tras module are being installed in the Winchburgh tunnel.

Impressive images of the restoration work in the Rekawinkel and Dürreberg tunnels.

Rekawinkel and Dürreberg tunnels, Austria

Restoring, equipping or expanding a tunnel with trains running through it is common practice in the railway industry. And it is no different with the contract for the Rekawinkel (length: 307.14 m) and the Kleiner Dürreberg tunnels (length: 247.12 m) in Wienerwald, Lower Austria, which Rhomberg Bahntechnik won in a consortium – this time not with another Group company. What is new is the clever invention of a protective wall structure fitted to the wagons with which Rhomberg Bahntechnik has secured its workforce and equipment in the two-track tunnels. This allows operatives to partially remove the 19th century brick lining, reinforce the walls with shotcrete and replace the tunnel floor and equipment, while the trains continue to run without delay.

A glimpse of the future: this is how the Rosshäusern tunnel portal will look like.

Rosshäusern tunnel, Switzerland

The project might be one of the smaller ones for the industry – the client BLS Netz AG is paying an estimated CHF 10.5 m for it – and yet it is noteworthy, as the first time a tunnel project has been awarded to a single contractor as a complete railway infrastructure contract. From site logistics to the installation of the track and the railway equipment to the interior works, the specialists at the full service provider Rhomberg Sersa Rail Group are responsible for every part of the works. The participants are Rhomberg Bahntechnik GmbH, Sersa Group AG, Sersa Maschineller Gleisbau AG and Sersa Technik AG. The 2.1 km tunnel forms the backbone of the new Rosshäusern – Mauss line, a branch of the two-track expansion of the railway line between Bern and Neuchâtel. “This contract is even more valuable because we, the Rhomberg Sersa Rail Group, have been able to convince the BLS of our overall expertise,” explains Roland Kugler, project leader at the Rhomberg Sersa Rail Group. “This is the first time we have been able to equip a tunnel from the shell stage onwards with our railway engineering infrastructure and therefore show our expertise across the whole range of works involved. This sends out a strong signal!”

State of the Art Switches & Crossing Renewals

// Rhomberg Sersa Rail Group's switch expertise in demand.

The Rhomberg Sersa Rail Group made big waves when it won the major contract for switch replacements in a large section of the British rail network two years ago. The framework contract with the SBB for the complete overhaul of switches also underlines the expertise and experience of the Group in this area. Now the Dutch have also experienced the expertise of the market leader in the complete replacement of switches: in the RET marshalling yard of Waalhaven Rotterdam, the specialists at Sersa B. V. and Rhomberg Bahntechnik are working together to replace 13 switches on behalf of Rotterdamse Elektrische Tram. Eleven of those are on ballast; two are slab track switches with single support point fastening. In addition, 800 m of rail, 550 sleepers and 820 m of conductor rail are being replaced and a total of 2,000 m of track tamped. It is the first contract for switch replacement in the Netherlands for both Rhomberg and Sersa.

Complete switch replacement

Our concept for the complete replacement of switches is based on the modular construction of all services in the area of switches, and involves sophisticated machine technology, optimised building site planning and the use of synergies. In the modular principle, all work processes connect to one another perfectly and build upon one another, and yet can be flexibly and individually adapted to various site requirements.

Complete switch replacement – the benefits at a glance

- Flexible, individual building site processes
- Massive time savings and shortened possessions
- Immediate restart of railway traffic after the switch installation
- Significant quality increase thanks to maximum performance efficiency
- Minimisation of costs

Our comprehensive and particularly economical performance portfolio

Site management	Measurement work	Switch transportation	Crane services
Excavation, ballast cleaning and removal	Ballast placement and compaction	Levelling, lining and tamping work	Overhead contact wire regulation
Welding work incl. destressing	Grinding work	Removal and repositioning of switches	Switch heating systems
Installation of switch drives and their safety components	Switch maintenance and individual defect rectification		

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Machine use in the far north

// BBW machine train inspires in Stockholm

The signing of a contract caused Bahnbau Wels GmbH (BBW) to dispatch a machine train to the north of Stockholm last year. More than 60 years of experience in mechanised track construction and decades of know-how qualified the track construction company from Wels as a supplier.
The customer was very quickly impressed not just by the high performance and quality standard, but also by the reliability and operational safety of the machines. BBW subsequently received many more follow-up orders from the Swedish infrastructure company and the two companies developed a strong partnership.

“It should be noted that the high performance was only made possible thanks to the close and valued cooperation with Infraservice Scandinavian AB,” underlines Andreas Kiesenhofer, CEO of Bahnbau Wels.

Tamping technique at the highest level

// BBW high-performance tamping machine maintains DB routes

For years Bahnbau Wels GmbH (BBW) has worked as a partner in cooperation with DB Bahnbau Gruppe GmbH. The track construction company from Wels maintains the tracks in Germany using the high-performance track tamping machine 09-4X Dynamic, combined with the ballast management system BDS 2000. Thanks to the optimum preliminary work of the DB Bahnbau Group, this machine duo combined with the MFS 100 can tamp between 10,000 m and 14,000 m in one shift. The introduction of BDS 2000 has allowed the performance of the 09-4X Dynamic to be optimised.

A significant part of the success is due not only to the technology used, but to the very good and constructive cooperation of the employees of DB Bahnbau Gruppe GmbH. This year, too, the blue and yellow track construction machines of Bahnbau Wels will once again prove the advantages of tamping technology at the highest level on DB routes.

New team member for Rhomberg Fahrleitungsbau

// MTW 100 installation device in use since April

With a total weight of 66 tonnes and a length over buffers of almost 18 m, the MTW 100 catenary maintenance vehicle represents the latest generation of catenary installation vehicles and is technically state-of-the-art. Using this vehicle, the track construction specialists at Rhomberg Fahrleitungsbau can reach every point of the overhead line efficiently and safely. Since the start of April, the vehicle has been in use at the “St. Pölten freight train bypass” site.

The new team member is a 4-axle catenary installation vehicle with a three-part working platform and a PKR265E heavy railway loading crane, including working cage. The vehicle is additionally equipped with two cable controllers, a collector, a contact wire-height standard gauge tower and an ultrasound measurement unit for the determining the height and lateral position of the overhead wire. It is powered by two low-emission units, one of 440 kW for transfer journeys, and the other of 180 kW for work journeys, and reaches a top speed of 100 km/h.

66 tonnes over 18 metres: the MTW 100 catenary maintenance vehicle.

Space for 150 track sleepers: the new STT HGV with loading crane.

Growth in STT vehicles

// New HGV begins service in Canada

Sersa Total Track has received its new HGV with a loading crane and ZW chassis just in time for the new working season. The HGV, made by Western Star, is renowned for its high level of usability, as it has a central buffer coupling and can pull up to three rail wagons. Either a loading magnet for ironmongery or a sleeper gripper for sleeper transportation can be used as attachments to the loading crane. Thanks to the modified design it is also possible to transport up to 150 track sleepers.

“I am full of beans.”

// An interview with Konrad Schnyder, President of the Owner Board of the Rhomberg Sersa Rail Group, about his 60th birthday at the start of 2016, his greatest successes, the future of the Group and his succession.

Mr Schnyder, happy belated 60th birthday! You have spent half your life living and working for Sersa or now the Rhomberg Sersa Rail Group. Did you never get bored with it?

Thank you very much. And, no. How could working for my company ever have got boring, with all the exciting things that have happened in this time – and are still happening? Sersa, which I acquired in 1986 together with 35 employees of the family firm, has since become – most recently through the merger with Rhomberg – a large, strong and internationally renowned railway engineering company, with locations in Switzerland, Germany, Austria, the Netherlands, UK, Canada and Australia. And it is carrying on without signs of slowing down, even now, with many other exponents putting their shoulders to the operative wheel. All that is required is the right direction and management culture.

What does management mean to you? What will the management models of the future look like?

For me, management means “leading”, “setting the course” and “getting things moving”, in short: coordinated and controlling tasks in groups and organisations. What’s very important for me is fulfilling the role of an exemplar, setting or agreeing goals, developing capabilities or monitoring the success of services. I therefore expect openness, honesty, patience, commitment and corporate thinking from my management team that is goal-orientated and also permits unconventional solutions. In future, we will be working in many and increasingly in newly created teams. Therefore good and quick exchanges of opinions and experiences within a flat organisational hierarchy will be decisive for success.

You have already touched on it with “other exponents”: how are things to continue with the Rhomberg Sersa Rail Group?

The Rhomberg Sersa Rail Group is a healthy, solid company that has established itself on the market as a full service provider for railway engineering and is set to positively develop and qualitatively grow in the future, too. We therefore want to extend our technological leadership with increasing digitalisation. Of course, above all, our dedicated, corporate-thinking, expert colleagues contribute towards this. And, organisationally, we have also set ourselves up very well for this in the recent past. However, this process is not yet complete, with the “New Generation”, many managers are preparing for the new tasks. This transformation process is hugely important for the future of our company.

Where do you see the company being in say, five or ten years’ time?

We are an independent, owner-operated technology company for railway infrastructure highly focused on values and management culture. We want to and will still be that in ten years’ time. Our goal also does not change: the highest possible track availability! It is important that personal advice and close contact with customers continue to be upheld and maintained. We work daily on the requirements for this service – qualified, expert and dedicated personnel. In short: for me, railways are the mode of transport of the future, for both passenger and freight. Working together with all our employees, we can make a great contribution towards the development of the rail industry. And we will continue to do this in the future.

And what about the individual markets?

Sersa Switzerland has been a reliable and consistent partner for years, that’s confirmed to me in my many conversations with customers. With our locations, we achieve a high market coverage and therefore customer contact on every level. Our investments in development and flexibility of employees are paying for themselves. In Austria with Bahnbau Wels, Universale Bau and Rhomberg Fahrleitungsbau, we have the highest level of expertise in the area of machines, track construction and track superstructures. We are currently developing and training the new generation at management level. Here we have a unique opportunity to transfer many years of know-how directly to the younger employees in a planned successor process. In the German market, we are able to position our services, products and

machines close to the customers thanks to our unique locations. This means we are able to create advantages that money can't buy. Our decision to enlarge our management team for Germany from April was also intended to move us in the same direction. We have therefore set a course to strengthen our Group even further.

Due to their topography, Australia and Canada need good infrastructure. With our Swiss-German-Austrian knowhow, we are able to get involved there and comprehensively support our local partners. What's important to me is that I'm also regularly on site in person. This allows us to connect well on a person-to-person level with our colleagues, in spite of the geographical distance between us. In the UK, with our joint venture with Amey, we have the opportunity to revolutionise switch replacements in the United Kingdom over the next ten years. This has also allowed us to be an outstanding position to continue to be very successful in the slab track project business. Finally, our team in Holland is equipped mainly for the area of welding. Thanks to their flexibility, we plan to develop them into a special operations team for deployment across the Group.

And what about you personally?

At just 30 I had already decided: at 55 I will address my succession plan and at 60 I would just like to be responsible for the strategic side of the business. I have had very bad experiences with old companies that haven't realised they should make space for young and fresh employees. I categorically wanted to avoid making this mistake. I am convinced that I have achieved this. Therefore, I will in future take part in strategic decisions as President of the Owner Board. Of course, I will support Hubert Rhomberg as CEO, offer advice on the markets where required as well as keep up contacts with politicians and our key customers. In short: I am still full of beans, I simply don't have time to be bored.

Quality in the mountains

// Rack railways: Sersa impresses TMB by meeting deadlines and budgets

Work on phase 2 of the renovation of the superstructure of the Le Fayet-Nid d'Aigle mountain line, known as the Tramway du Mont Blanc (TMB), is set to continue until 2018. And yet the client Compagnie du Mont Blanc is already highly impressed with contractor Sersa Switzerland: "Those responsible in TMB have already thanked the Sersa employees many times and praised their professionalism, expertise and adaptability, which has allowed the upholding of quality, deadlines and costs at every opportunity," says project coordinator Stefano Rossi, head of the Sersa subsidiary Lumino.

The line in Haute-Savoie was built in 1914 and connects Le Fayet-Saint Gervais les Bains, at 581 m above sea level, with the Glacier du Bionassay at 2,372 m above sea level, over a route that extends over approx. 12.5 km. The maximum gradient of the route is 24%, with a radius of curvature of 70 m. The existing track, a metre gauge system made from standard steel sleepers, Vignol rails (26 kg/m) and a Strub TN 50 rack, is to be renovated with Y steel sleepers, VST 36 rails and a TN 70 rack. The track and the rack are continuously welded. Sersa is responsible for the removal of the existing system, the installation of the ballast bed on site, the track drainage system, the installation of the geotextile for protection against erosion and finally the construction of the track system.

Untying the “Bernese knot”

// Rhomberg Sersa companies active in the Bernese Wylerfeld

Everyone knows the legendary “Gordian knot”, which Alexander the Great was supposed to have cut through with his sword. This tale now symbolically stands for overcoming a difficult problem with energetic and unconventional methods. It is therefore apt to speak of the Rhomberg Sersa building site in Wylerfeld, the eastern access route of the Bern railway station, as the “Bernese knot”.

This is the place where the busy Zürich/Biel–Bern and Thun–Bern lines meet. The three tracks from Zürich/Biel and the two tracks from Thun combine to flow in four tracks as far as Bern railway station. As a result, the paths of the trains often cross. This limits capacity and prevents expansion of long-distance and local traffic.

The project requires a single-track, 300-metre underpass structure. As seen from Bern railway station, it crosses under three tracks between Wylerfeld and the Bern Wankdorf Süd stop and heads towards Thun. This disentanglement allows trains to cross over at the same time on different levels without stopping one another. In order to be able to create the structure, extensive adjustments to the tracks and the Bern Wankdorf Süd stop (Bern–Thun line) are necessary.
This is where the Rhomberg Sersa Rail Group comes into play: SBB has divided the project into various contracts. ARGE RS Wylerfeld won the general contractor contract for the railway engineering works. It is made up of Rhomberg Bahntechnik, the Sersa Group Switzerland, Sersa Technik and Sersa Maschineller Gleisbau.

The contract comprises services in 20 construction phases until 2023. Up to now, 6.9 km of track, 31 switches and 15.8 km of cable have been decommissioned. From August 2017

To be untied: the many tracks at the Wylerfeld still form the “Bernese knot”.

12 km of track, 22 switches, track-side signalling equipment and switch heating are to be built. A further 6 km of track and 16 switches will be decommissioned again.

The safety of the works alongside operating rail tracks makes high demands of the team. As there is an SBB substation near Wankdorf station, the topic of grounding is given constant attention even during dismantling. A severed track cannot provide grounding for a track excavator. Due to the truncation of the tracks, the masts supporting the conductors had to be regrounded, as they will remain in operation until the next phase.

Continuously good

// Sersa Total Track secures a follow-up contract

Continuity is an important criterion in maintenance: rail operators have to stay on the ball to keep their infrastructure in peak condition at all times. It is helpful, then, if there is also continuity with the company carrying out the work. Sersa Total Track was once again, as in past years, able to secure the major contract for track repair from VIA Rail Canada. The construction works are being carried out in the Montreal-Ottawa-Toronto and Toronto-Windsor corridor. The construction period is four months (May to August 2016). Most of the services will be provided during night closures. Up to 35 employees are working on this project. The order volume comes to around CAD 6 m.

Furthermore, Sersa Total Track has already set up an overtaking track on the Beachburg subdivision for the client in the past year. The signal technology and civil engineering were parts of the contract.

FACT BOX

- Installation of 50,000 feet of track (around 15 km)
- Gap elimination over 5 km
- Installation of 13,500 track sleepers
- Installation of 11,600 tonnes of railway ballast
- Installation of a No.12 switch point
- Replacement of 9 crossings
- Replacement of guard rails over 20 bridges

Tight schedule on the vast continent

// Rhomberg Rail Australia modernises Plasser's railway system

On time, with in budget and to the customer's full satisfaction: our colleagues "Down Under" have impressed Plasser Australia with the professional modernisation of the company's own railway system in St. Marys, Western Australia over the past year. The system of one of the leading providers of infrastructure for track construction and maintenance in the country not only had to be modernised due to massive drainage problems, but also required a second maintenance hangar, in order to be able to keep pace with the demand of the market.

The project was a complex one in terms of design, project coordination, access to the location and time frame. That's why a system for consistent communication between all teams was set up, in order to manage the restricted access to the location and avoid delays or possible incidents. The first phase for construction and earthworks began at the start of 2015, after the existing tracks were removed. Work was completed in July and the Rhomberg Rail track team began with the track construction. The team was able to complete its part of the work – the construction of three switches with two track gauges, a standard switch, 400 m track with two track gauges and 300 m track with the standard track gauge – in just three months. All tracks were

laid with special track fasteners, developed by Rhomberg Rail, on slab track. The project was made that much more complex by the fact that the system was in use during the construction work. But this was no problem for Rhomberg Rail: the site team laid temporary tracks in various phases, so that Plasser's newly built machines could leave the production facility. "Such an amazing result with such a major project is a great success," says Michael Match, Manager Business Development.

Two trains for Britain's railways

// Sersa Maschineller Gleisbau innovates with continuous operation

Sersa Maschineller Gleisbau AG shows that innovations don't stop even while projects are running: the subsidiary of the Rhomberg Sersa Rail Group is currently supporting the AmeySersa joint venture to install switches and crossings for the Northern S+C Alliance across the United Kingdom - previously done using a traditional British process. But from October, this is due to change: the track construction experts from Switzerland have developed two innovative machine groups (MG) to carry out the works more efficiently and more economically for the customer.

MG1 is headed by an ICT 312 excavator, which was specially developed for the replacement of switches and crossings, included a tailor-made conveyor system and 3D control. Added to this are an MFS+ Caterpillar ballast wagon, a UMH ballast handling system and a row of standard MFS wagons. MG2 is to follow in mid-2017 and is made up of a W+ with REINER – which was individually tailored to the British kinematic gauge W6 – made up of an MFS+ Caterpillar ballast wagon, a UMH ballast handling system and the standard MFS wagon. All machines were and are subjected to strict tests and assessments by the Swiss team.

In order to achieve the best possible result, AmeySersa has employed new staff to operate the two machine groups. The new staff have undergone a comprehensive training programme and have been instructed in Switzerland by Sersa Maschineller Gleisbau AG. Alongside the core workforce, this creates a disciplined team with a wide spectrum of capabilities.

"This is an exciting phase for the British railway industry. The introduction of technologies and procedures developed by the Rhomberg Sersa Rail Group is a decisive factor for the success of the Amey Sersa joint venture and the broader Northern S+C Alliance," says Hubert Rhomberg, CEO of the Rhomberg Sersa Rail Group.

A hot summer in Berlin

// RS Gleisbau upgrades the S-Bahn ring

From 17 July to 31 August 2015 was the only window for RS Gleisbau to upgrade the southern S-Bahn ring in Berlin. Around six kilometres of track was to be upgraded, starting with the Bundesplatz S-Bahn station with six switches, and continuing up to the Halensee S-Bahn station. There, in a separate contract, RS Gleisbau was to upgrade further station tracks, eight switches and a crossing, which were partially under Berlin's best-known shopping street: the "Kurfürstendamm".

Alongside the tight schedule, the high summer temperatures of at times 40 °C in the shade became a real challenge for the teams from the subsidiaries in Berlin and Schwedt. Track temperatures of up to 70 °C were recorded. Not only the heat, but also a previously unknown, old and hydraulically bound structural layer in the existing construction made hard work for the JumboTec machines: first a tamping machine lifted itself and derailed, then the ballast cleaning machine did the same. Luckily, the welder from SIT was able to use a special permit and seamlessly reconnect the tracks and switches with more than 200 thermite welds overnight, whilst track and contact rail builders were able to make up the lost time during the day. And so, in spite of the heat and increased pressure, the site team were able to stop the pot from boiling over. On the contrary: thanks to the tireless efforts of the RSRG employees, all company subsidiaries involved, the reliable subcontractors LAT and LOCON as well as the constructive and targeted cooperation with the representatives of clients and construction supervision staff, the S-Bahn was able to start up its operation again, right on time, on 31 August.

FACT BOX

Order volume:	€5.95 m
Order scope:	2 orders, 1 route; southern S-Bahn ring Berlin
	Replacement of 14 switches
	1 crossing and 7,000 m of track
	Ballast cleaning of the tracks
	Full excavation in the area of the four stations
	Replacement of the complete conductor rail, incl. material delivery
	- approx. 11,000 sleepers
	- 15,000 m of track
	- 8,000 m of conductor rail
Execution time:	6 weeks, 6 am – 10 pm

Bridge building at the weekend

// Klenk Gleis- und Tiefbau builds type ZH 14 temporary bridges for tracks and platforms

The Sersa Germany subsidiary Klenk Gleis- und Tiefbau GmbH & Co. KG installed five platform support bridges and six track support bridges for tracks, including the required 22 girder supports, in Stuttgart-Feuerbach at the start of the year. A pedestrian underpass and emergency access were also built under the long-distance and S-Bahn tracks as safety measures for the Rhomberg works.

The type ZH track support bridges had a length of 14.94 m and a total weight of 32,300 t each. With the platform support bridges, the length varied between 12 and 17 m; the weight between 7.5 t and 12 t. The installation of the track support bridges was made more difficult by the existing track curvature with radii of 500 m and a cant of 95 mm–115 mm. During four weekend possessions in January and February 2016, the Rhomberg Sersa Rail Group track construction specialists were able to meet the requirements for installation. For this track panels were removed and fitted, sleepers were repositioned, the track position was recreated and finally the four platform support bridges were reinstalled with 200 t truck-mounted cranes or road-rail excavators. This ensured that travellers and commuters had interruption-free access to trains on weekdays in Feuerbach station. Over the same period a track crossing, including gates and height limitation, was installed.

The last major possession, which lasted 36 hours, was on the last weekend in February. During this possession, four road-rail excavators were used to remove four platform support bridges for the installation of the track support bridges and store them to one side. The track support bridges were delivered by road with heavy load vehicles from Konz at two different transfer points. After the simultaneous installation of the four platform support bridges with two railway rotary cranes (EDK KRC 810 and KRC 120) from two sides, the platform support bridges stored to the side were reinstalled to their intended location.
After all the bridges were in their final positions, the connection ramps were tamped using an attachment tamping device and finally the tracks were tensioned and welded.

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