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Key components are the steel sleepers and rail fastenings that we have developed in-house. They are the results of outstanding engineering ability and provide trendsetting solutions in terms of safety, long-lasting quality, and functionality.

And that’s not all

We also offer you our comprehensive range of services. Our specialists offer you individual advice, develop highly efficient solutions in collaboration with you, and ensure your project is reliably finished on time. One of our specialties: Together with our expert partners, we analyze critical structures such as bridges, railway stations, or railway lines nearby residential areas and develop comprehensive concepts for reducing noise emissions.

Working for you

Our range of services also includes the servicing and maintenance of tracks. For this purpose we use a state-of-the-art rail milling train, which precisely reprofiles worn tracks without disrupting railway timetables and extracts any dust and shavings at the same time.

Our strength, your advantage

Services/Infrastructure/Rail Superstructure is a division of thyssenkrupp Schulte GmbH, one of the leading materials services providers for steel, stainless steel and non-ferrous metals in Germany. A close-knit system of locations and logistics services means we are never far away for seamless delivery. In dialog with our customers, thyssenkrupp Schulte develops individually tailored concepts for optimal material flows and cost-saving storage or can even look after your entire supply chain management requirements.

First-class connections

Safe, long-lasting products, state-of-the-art noise protection concepts, and finely tailored service: These are the components of our steel sleepers range, which we are proud to present to you in this brochure.
01

Steel sleepers and rail fastenings
It’s all about the right mixture

Steel is extremely long-lasting, infinitely recyclable and therefore the material of the future in the field of track construction, too. Steel sleepers require very little maintenance and can remain in service for up to 70 years. A further key advantage compared with conventional sleepers is the possible variations in design for special purposes.

Our rail fastenings are a combination of steel with innovative types of plastic. We cooperate closely with our customers and well-known partners with the aim of developing and installing particularly long-lasting, noise-reducing systems.

Our products are the results of decades of experience and a comprehensive range of know-how. They are produced using the very latest equipment and continually inspected and improved according to the state of the art to tackle the various challenges our customers face.
Steel bridge sleeper SBS  
Our unique modular system

Flexible and highly functional: For the last two decades, not only Deutsche Bahn AG, but many other railway companies, too, have relied on our SBS modular system when it comes to smoothly and economically constructing railway junctions.

The SBS system meets a wide range of requirements for rail superstructures and can be pre-assembled at the plant to suit customer requirements. Additional equipment includes the ECF rail fasteners, which are used for the elastic fastening of vignole rails and guard rails for efficiently protecting various structures. Although the various components are ideally coordinated for installation with one another, they can also be utilized independently. The SBS system makes it possible to plan the installation exactly and is particularly easy to assemble.

Adjustments to the required position can be made at any time. Our designs for structural stability make the SBS system both vertically and laterally adjustable during installation. The configurable height adjustment plates make it possible to individually adjust the track position. The entire range of rail fastenings available enables super-elevations of up to 130 millimeters. Elaborate and cost-intensive measurements can therefore be postponed to construction periods.

The system is secured using hooks that interlock with the longitudinal beams of the track and divert the horizontal and vertical forces. Crossbars can be additionally mounted on the sleeper fixing brackets and the SBS system, depending on requirements.

1: SBS with elastic rail fastening  
2: Hooks for lock positioning  
3: Height structure
Steel bridge sleeper SBS

Product components

- Elastic intermediate spacer
- Guard and fastening plate
- Bridge main beam
- EVA height structure, variable up to 66 mm
- Cross bar for lock of position along track axis

Configuration and specifications

Sleeper
- Wide flange steel beam section HE A/B/M
- Coating against corrosion
- Superelevation up to 130 mm
- Track radii wider than 300 m

Sleeper bearing
- By weld-on plates even or canted, also onto existing center beams
- Height structure made of elastomer (EVA) and folded zinc sheet metal for lock positioning of EVA material at direct bearing onto bridge main beams

Sleeper lock positioning
- Cross bars with variable fastening for acceleration and retarding loads
- Hooks for horizontal/vertical lock positioning

Rail bearing
- Vibration absorbing elastic rail fastening ECF
- Adjustable in height - 4 mm/+ 26 mm, horizontally adjustable +/- 5 = max. 10 mm
- Elastically fastened expansion joints according to DB specifications

Noise reduction
- Track cover plates

Track covering
- Reinforced fiber covers GFK
- Individual types of covers available

Testings and approvals

- Type approval by Eisenbahn-Bundesamt (EBA) for systems SBS and Direct fixation fastener ECF
- Technical statement by DB Netz AG regarding supply and installation
- In track testing trials of SBS including rail expansion joints
- Efficiency assessment
- Several trials and testing of SBS at technical university Munich (TUM)

The video of our SBS you will find at our web page: thyssenkrupp-schulte-oberbau.de
1: Hohenzollern bridge, Cologne
2: SBS installation, Cologne
3: Pre-assembled rail expansion joint
4: Rail expansion joint
5: Rethe bascule bridge, Hamburg
6: Müngstener bridge, Solingen
Example:
Hohenzollern Bridge, Cologne

There are plenty of remarkable SBS projects. One of them is the Hohenzollern Bridge in Cologne, among the most frequently used railway bridges in Europe. In 2014, in the course of basic renovation work carried out on the bridge, in the short four-week period as the bridge was closed for construction work, 1,346 steel bridge sleepers, two sets of points, and four rail expansion joints were installed.

Various time-consuming noise reduction and structural protection tasks – such as installing the rail fastenings and guard rails – had previously been completed at the manufacturing plant. During the construction phase, after the measurements were completed, individually assembled height intermediate plates were installed, in order to bring the rails to the required height.

A custom-made track cover protects both the shipping and the adjacent pedestrian walkways below from any falling parts.

Example:
Müngstener Bridge near Solingen

During the last renovation of the Müngstener Bridge, which at 107 meters is the highest railway bridge in Germany, the entire track superstructure had to be renewed. The work presented a great challenge for the engineers, particularly due to the historically protected steel construction.

Firstly, the steel bridge sleepers were bolted together with the various new parts of the bridge. Using a special crane, it was possible to replace the old parts of the track with the new, section by section. Subsequently, the height structures were put together and installed, which serve as supports beneath the SBS. After making measurements directly at the construction site, the various adjustment options made it possible to install the tracks with great precision.
ECF rail fasteners
For quiet, long-lasting rails

A key component of this modular system is an elastic intermediate spacer. It reduces vibrations and plays a major role in minimizing structure-borne noise and bridge drumming when trains are running – on structures, in stations, and also in tunnels. The installation of our ECF rail fastenings thus greatly reduces noise emissions and significantly lengthens the life cycle of the rails.

ECF rail fastenings include a special tie plate, an elastic intermediate spacer, insulated collar bushings, intermediate layers, and rail fastenings. Depending on requirements, the ECF sinks by up to three millimeters when subjected to vertical vibrations, thereby interrupting the oscillations between the rail and the sleeper and/or between the rail and the track panel. Installed in combination with our steel bridge sleeper, it reduces the structure-borne noise on bridges by up to six decibels.

The overall structure enables flexible adjustability of five millimeters in each lateral direction due to the eccentrically insulated collar bushings. The height adjustment plates make it possible to precisely determine the height between +26 millimeters and -4 millimeters. The insulated collar bushings provide the electrical insulation.

All ECF models can be used independently of the SBS system.

1: Screwed joint assembly
2: Elastic intermediate plate and height adjustment plate
3: Assembled system with mounting plate
4: ECF onto concrete sleeper
5: ECF onto steel track panel
Configuration and specifications

Rail bearing
- Vertical deflection up to 3 mm
- Infinitely variable horizontally up to +/- 5 mm
- Adjustable in height beginning +26 mm to -4 mm per each single height adjustment plate
- Superelevation up to 130 mm
- Constant deflection due to configuration of materials
- Excellent position stability

Special features
- Electrical insulated
- Simple assembly
- Combinable with fastening plate for guard rails
- All materials to be fully recyclable

Applications
- Optional available in centrically or eccentrically design

Testings and approvals
- Approved by Eisenbahn-Bundesamt (EBA)
- Technical statement by DB Netz AG regarding supply and installation
- Several trials and testing of SBS at technical university Munich (TUM)
ECF rail fasteners for solid tracks made of concrete or steel

Our elastic ECF rail fasteners can also be installed on solid concrete or steel tracks. For this purpose, we provide special installation options, which are approved by the German Federal Railway Authority.

**Concrete tracks**

Here, the ECF is installed with threaded rods or As11 anchors. The respective holes can only be drilled after the height and the direction have been adjusted locally. The rail fasteners are affixed using a grout – made either of non-shrinking mortar or similar approved products. Depending on requirements, the mortar can be used directly as in-situ concrete. Optionally, the rail fasteners can be installed with adapter plates, in which case the required rail inclination must be taken into account.

One of our outstanding projects was completed in 2014, the restoring of the Kaiser-Wilhelm-Tunnel near Cochem, which required more than 10,000 rail fastening points and in which the ECF was integrated in the concrete production process.

**Steel tracks**

In the case of steel tracks, the ECF is installed using welded bolts with threads or bolted directly. Alternatively, the rail fasteners can be installed using adapter plates and approved mortar filling material. In both versions, the track position can be adapted by up to +26 millimeters using separate height adjustment plates.

**Rail bearing**
- Please see rail fastener ECF

**Concrete application**
- Optional with threaded rods or anchor bolt As11
- Grout assembly

**Steel application**
- Optional with adapter plate
- Assembly by weld-on bolt or through bolts

1: ECF onto steel track panel
ECF FFB Kü rail fasteners for steel track panels

For refurbishing old rail fasteners such as loarb 104, 112, 206, and loarv 199 with gauge plates on solid tracks, our technicians developed the elastic ECF FFB Kü.

The essential difference to the standard model is the geometry and the formation of the system.

Widely used fastening systems are compatible for securing, such as with welded bolts with threads or with through bolts, by which the feasibility of drilling the holes in the track cover plate needs to be checked. For sections of track with power rails, too, the system is available in the respective configuration.

### Rail bearing
- Vertical deflection up to 3 mm
- Infinitely variable horizontally up to +/- 5 mm
- Adjustable in height beginning + 26 mm to - 4 mm per each single height adjustment plate
- Superelevation up to 130 mm
- Constant deflection due to configuration of materials
- Excellent position stability

### Special features
- Electrical insulated
- Simple assembly
- Combinable with guard rail assembly type thyssenkrupp/DENA and angle steel section
- All materials to be fully recyclable

### Applications
- Optional available in centrically or eccentrically design

1: System loarb 199
2: Rehabilitated system

**Product components**
- Gauge plate
- ECF FFB Kü tie plate
- Elastic intermediate plate
- Insulated collar bushing
System accessories
Safety first

To improve railway safety, we offer a number of solutions for bridges and structures that can be specially configured for a certain train route, depending on local conditions and specific requirements.

Guard rail plate

The guard rail plate, developed in-house for steel bridge structures of 20 meters and greater in length, is a rail transport version. It is used by Deutsche Bahn AG (DB) as a standard solution on the SBS. New or even used vignole rails can be used for installation. Compatibility with the ECF rail fastening system is guaranteed and its positive elastic properties are not affected. The recess on the fastening plate guarantees the groove width of 180 millimeters for conventional types of rail. Together with the SBS, the fastening coordinates are calculated at the pre-planning stage and made at the plant.

Product component

Configuration and specifications

Fastening plate
- Guard rail 49E5, 54E4 und 60E2
- Assembly with rail clip
- Cast material according to EN-GJS-400-15

Special features
- System component SBS
- Simple assembly
L-angle profiles

It is possible to install L-angle profiles on steel or concrete track panels, or on concrete or steel sleepers. The corrosion protection of the components must be determined prior to installation. The profiles are fastened using angle brackets. The aligning of the L-angles on the 180 millimeter groove width must be performed on the spot.

thyssenkrupp/DENA guard rails

Our thyssenkrupp/DENA system is installed to comply with higher safety standards. The uniform design of the fastening and the defined support point distances enable it to be installed on concrete sleepers, solid tracks and steel sleepers. For the installation, guard rails are mounted on supporting blocks. The distances between them can be flexibly selected, depending on the track radius. The width of the groove to the guard rail is usually 180 millimeters or determined according to requirements.

thyssenkrupp/DENA can also be installed as guard rail in the 60 to 80 millimeters groove width.

Rail expansion joints

On steel bridges with support intervals of more than 60 meters, a rail expansion joint must be installed. Its geometry depends on the expansion of the bridge. The installation prevents rail tension caused by the expansion of the bridge. The stock rail and switch point absorb the longitudinal forces and temperature-related tension in the rail superstructure. Depending on requirements, the rail expansion joint is installed on the moveable grooves of the abutments and dividing pillars.

In collaboration with DB, the elastically fastened rail expansion joint was developed on steel bridge sleepers and approved by the German Federal Railway Authority.

Configuration and specifications

**Material**
- Guard rail support S 235
- Guard rail section S 355 J2 G3

**Special features**
- Installation onto all railway sleepers and guard rail support systems

**Material**
- Supporting angle steel section and L-angle steel S 355 MC/M
- Coating per specification

**Special features**
- Installation onto all railway sleepers and guard rail support systems

Testings and approvals

- Approved by Eisenbahn-Bundesamt (EBA)
- Technical statement by DB Netz AG regarding supply and installation
- Standard superstructure according to DB AG Ril 804.5301
Safety and economy, even on the most challenging of routes: This is where the Y-steel sleeper comes in – it has been installed in European railway networks for the last 30 years. Its advantages include increased ground coverage, improved track position stability, and a significant reduction in the number of sleepers needed and the bedding cross-section.

The narrower bedding cross-section, resulting from the geometric shape of this sleeper, creates higher resistance to lateral displacement compared with conventional railway superstructures and improves the frame rigidity of the track – conditions that make conversions possible without the need for further investment.

Their preferred applications include narrow routes or routes with lots of constraints such as bridges, platforms, or tunnels in which the prescribed elevation of the upper surface of the rail cannot be achieved without elaborate earthworks, sub-grade enlargement or the purchasing of property.

We manufacture Y-steel sleepers for track gauges from 750 millimeters to 1,520 millimeters and various types of rail. Furthermore, we design special-purpose applications such as for Rack and narrow gauge railways, multiple rail tracks, auxiliary bridges, guide rails, and guard rail facilities.

The range of applications stretches from light mountain railways to European standard gauge railways and heavy-duty train routes with 38 ton axle loads in use overseas.
Testings and approvals

- Approved by Eisenbahn-Bundesamt (EBA) for track radii > 170 m
- Technical statement by DB Netz AG regarding supply and installation
- Standard superstructure according to DB AG Ril 820.2010
- Installation at DB AG according to Ril 824.2010
- Additional Approvals by EBA for heavy haul operations, railroad crossings, guard rail applications
- Efficiency assessment

Configuration and specifications

Rail bearing
- Fully electrical insulated rail fastening S15
- Twin rail support made of rail pad and intermediate spacer, elastic rail pad on request
- Gauge widening by variable guide plates

Sleepers
- Sleeper body made of steel section IB 100 S
- Rail sections 49E5, 54E4 and 60E2
- Suitable transition sleepers according to relevant rail section
- Variable sleeper design for an effective track layout according to axle loads

Track covers
- Approved systems of rail crossing systems made of concrete and plastic available

Special features
- Economizing installation procedure with up to 50% less sleeper requirement
- Smaller and lower ballast body (eventually sidewalks can be achieved on existing subgrade
- Tight radii at continuously welded rails (CWR) tracks down to 150 m (standard gauge) respectively 20 m (narrow gauge) without any additional track position securing devices
- Individual solutions for any track available

Product components

- Rail fastening S15
- Variable Sleeper design
- Twin rail support made of rail pad and intermediate spacer
- Lower traverse cross bar

Configuration and specifications

Rail bearing
- Fully electrical insulated rail fastening S15
- Twin rail support made of rail pad and intermediate spacer, elastic rail pad on request
- Gauge widening by variable guide plates

Sleepers
- Sleeper body made of steel section IB 100 S
- Rail sections 49E5, 54E4 and 60E2
- Suitable transition sleepers according to relevant rail section
- Variable sleeper design for an effective track layout according to axle loads

Track covers
- Approved systems of rail crossing systems made of concrete and plastic available

Special features
- Economizing installation procedure with up to 50% less sleeper requirement
- Smaller and lower ballast body (eventually sidewalks can be achieved on existing subgrade
- Tight radii at continuously welded rails (CWR) tracks down to 150 m (standard gauge) respectively 20 m (narrow gauge) without any additional track position securing devices
- Individual solutions for any track available
1: Platform track
2: Y transition sleeper
3: Railway crossing with concrete panels
4: Guide and guard rail application
5: Light railway crossing with asphalt layers
Numerous projects and our analyses show: Y-steel sleepers have particularly low life cycle costs (LCC). The maintenance of sections of track is far later necessary than when using conventional sleepers, while installation and tamping times are roughly the same for both types, particularly due to the fact that fewer Y-steel sleepers are required for the same length of track. Further advantages are the lower weight per sleeper and fewer rail fastening points are required per kilometer of track.

**Example: Nordharz connection**

We have examined the track position stability of Y-sleepers on numerous routes. A good example for low life cycle costs is the Nordharz connection, where the first maintenance of the Y-sleeper sections only became necessary after 18 years. The route is used by mixed traffic with a maximum axle load of 22.5 tons and handles a load of approximately 20,000 tons per day.

The high frame rigidity of the Y-steel sleeper track greatly minimizes varying longitudinal rail forces, particularly around tight curves in the track with temperature-related movement.

**Continuously welded rails**

For the continuously welded tracks used by DB Netz AG, track curves over 170 meters do not require additional track positioning security measures such as security caps or a widening of the bedding cross-section.

The same applies to narrow gauge tracks with radii up to 20 meters and on routes of other standard gauge tracks up to 150 meters. Track widening may be required occasionally. Technical measurement monitoring and theoretical tests have affirmed the secure positioning of these sections of track.
Track positioning stability on low ballast substructure

Experience shows that Y-steel sleepers save considerably on follow-up costs. In many cases, when replacing tracks it is possible to continue using the existing earthworks without having to perform structural changes. It is not necessary to widen the track bedding, expand the hard core, or change the height of the subgrade. The same applies to engineering structures such as bridges or tunnels.

When using Y-steel sleepers, due to the narrower bedding cross-section compared with conventional sleepers, a walkway can also often be allowed for. For example, when reactivating the “Haller Wilhelm” route, neither the track nor the substructure needed to be changed, although these had originally been designed for wooden sleepers.

Successfully tackling challenges

In mountainous regions, the challenges are usually tight track radii, in flat regions mostly the lack of ballast substructure. However, our Y-steel sleepers have proven themselves in both situations.

For instance, on the DB Kiel-Osterrönfeld route 1022, an existing sleeper track was refurbished with Y-steel sleepers. The existing hard core was stable and suitable for further use. The DB Traunstein-Waging route 5734 was also refurbished at low cost, as no additional work was necessary on either the ballast or the substructure.
St 82 K steel sleepers
Low-cost evergreens

They’ve been in use for over one hundred years and still have a very bright future ahead of them. Due to their particular design, they remain extremely stable, even with very little ballast substructure, and are highly resistant to lateral sliding. St 82 K steel sleepers are designed to withstand 70 years of use, need very little maintenance and are therefore the preferred choice when it comes to finding highly economical solutions.

With the St 82 K, cutting or punching holes to install the rail fastenings is a thing of the past. We weld the gauge plates to the sleeper, thereby preventing material fatigue due to crack formation and enabling long life cycles.

During installation, the lateral caps engage with the bedding cross-section and the complete sleeper is filled with gravel when compacting the track. The bedding cross-section is correspondingly lower, which also ensures less total height. The compacted sleeper ends increase the resistance to lateral sliding, which is equivalent to the effectiveness of “gravel on gravel”. Steel sleepers therefore cause very little horizontal lateral shear force, guaranteeing a stable track position.

Due to their long service lives and maintenance intervals, their carbon footprint is very small and the life cycle costs of steel sleepers are extremely low when compared with alternative products. The same applies to the procurement costs, as relatively small amounts of material are required to make them.

The St 82 K is continuously produced in high volumes and quickly available in the required numbers at any time, giving you outstanding planning security. We take care of the storage and can deliver on a just-in-time basis.
**St 82 K steel sleepers**

**Product components**

- **Rail bearing**
  - Tie plate: Rolled section S 275 JR
  - Tie plate optionally insulated or standard rail fastener
  - Flexible rail fastener application
  - Optional: Guard rail application

- **Special features**
  - Variable turnout geometries
  - Supply according to basic agreement with DB Netz AG
  - Planning reliability due to low warehousing

- **Sleeper**
  - Steel section SW 82 S 235 JR, untreated
  - Low sleeper height, therefore safe application onto shallow ballast bodies
  - Higher lateral track resistance and optimum track stability
  - End caps for tight track radii ≥ 180 according to Ril 820
  - Sleeper length: 2.40 m to 2.60 m

**Configuration and specifications**

**Testings and approvals**

- Technical statement by DB Netz AG regarding supply and installation
- Standard superstructure according to DB AG Ril 820.2010

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1: Steel sleeper track
2: Weld-on tie plate Rsp 8
02

Services
Innovative concepts for complex tasks

Noise protection is one of the greatest challenges that the railway industry faces. Our flexible rail fastening systems and in-house developed noise emission reduction concepts play an important role in meeting this challenge.

In order to effectively reduce noise emissions, we also provide made-to-measure steel components for noise protection systems. Here, you can benefit from our wealth of know-how when it comes to developing and processing the right materials.

We call our track maintenance concept SF03-FFS – our track milling train that specializes in ideally maintaining entire track superstructures.
Noise protection and bridge anti-drumming
Comprehensive solutions for a quieter life

To date, noise emissions caused by railway traffic have been only partially and not very systematically examined. In order to comprehensively consider the network of conventional railway superstructures, the designs of the underground, signaling and safety technology, rolling stock manufacturing, railway stations, and services, thyssenkrupp Schulte collaborates with selected partners.

As an integral part of thyssenkrupp, we also have access to the concentrated knowledge and experience as well as the products of the entire Group. Together, we are capable of analyzing noise-critical structures such as bridges, railway stations, or railway lines nearby residential areas and developing comprehensive concepts for reducing noise emissions.

The basis of this large-scale project is the measurement of emissions using a standard scale, which also records sources of extraneous noise, the surrounding structures, and other prior factors. The measurement concepts are therefore adapted to suit the requirements of each location. A systematic approach guarantees the comparability and evaluation of this data and identifies weak points.

The comprehensive collecting and analysis of data as well as the planning and implementation of noise protection measures are the basis for developing universal noise protection concepts.

Standardized materials and service
- Steel bridge sleeper SBS
- Elastically rail bearings and fastenings
- Noise protection walls
- Rail milling and grinding

1: Rail noise caused by rail-wheel-interface
Analysis of data by unitary vertex matrix

This procedure provides an overview of our processes of planning and realization of noise protection activities. Based on those project steps we are generating integrated concepts.
Steel sleepers and fastening systems are only a small part of our range of products. We supply more than 70,000 customers from a wide variety of sectors with steel, stainless steel, and non-ferrous metals. With flat products, profiles, and tubes in all shapes and sizes and exactly the dimensions and forms required for each particular task. We provide the makers of noise protection walls with an entire range of steel components, including various stages in their processing, and make sure the goods are delivered to your location right on time.

Supply chain design
In dialog with our customers, we develop cost-transparent concepts for providing the entire range of supply chain management tasks for steel components.

We are supported by a tight mesh consisting of our own production capacities and coupled with a network of highly specialized supply companies for various types of manufacturing technology.

With this potential, we also support you in your striving to find high-quality but nevertheless low-cost products, enabling you to invest in your core competences by making good use of the resources saved through optimizing your production processes.

Services
Regulations
• ZTV-LSW 06
• Ril 804.5501

Procurement
• Ex-works sourcing of semi-finished products with WZ 2.2, APZ 3.1, APZ 3.2 in accordance with EN-10204 and profiles in accordance with DBS 918002-2 for steel supports from Q1 suppliers

Mechanical processing in accordance with DIN EN 1090-2 EXC 1 to EXC 3
• Fixed blanks, drilled holes, drilled threads, and lettering
• Processing designed to withstand galvanizing for welded constructions, cropped steel supports, corner supports, cantilever arm posts, foot and top flange plates, support sheets, flange and web reinforcements, post caps, earthing brackets, safety devices including attachment brackets, accessories, etc.

Corrosion protection in accordance with the requirements of ZTV-LSW / ZTV-KOR, TL/TP – KOR Steel Structures
• Galvanized up to 15 meters in accordance with DIN EN ISO 1461 and DAST regulation 022
• Duplex coating in accordance with ZTV-ING part 4, section 3 page 87 coating systems no. 1/no. 2
• Sweep blasting and fine coating
• Prime coat, intermediate and top coating in RAL or DB colors

Logistics
• Logistical performance along the entire supply chain
• Storage, scheduling, and JIT/JIS delivery

1: Noise protection wall with intermediate elements made of concrete
2: Post with base plate
3: Post with supporting plate
4: Noise protection wall with intermediate elements made of aluminum
Noise protection walls
Rail maintenance
Milling and grinding rolled into one

Frequent, heavy traffic on railway routes leads to wear on the tracks through the formation of corrugations, rolling contact fatigue, and deformation of the rail surface. Our SF03-FFS rail milling train eradicates these superficial imperfections while driving – without interrupting traffic along the route and without dismantling the rails.

The processes of wear and tear on tracks impair traveling comfort and cause a high level of noise emissions. In order to avoid the costly replacement of the rails and guarantee long-term traveling comfort, rails need to be regularly and preventatively corrected by means of milling and grinding. Specialists have developed the state-of-the-art SF03-FFS track milling train with the aim of keeping operating costs and delays in railway traffic to an absolute minimum.

Only one operation

Our highly efficient machine is equipped with two milling stations and one all-round grinding station per rail, which are precisely operated via an integrated tool control unit. Depending on the degree of damage, up to two millimeters can be milled off the rail surface and up to five millimeters from the rail edge in one single operation. The results are then recorded with the integrated measuring system for longitudinal and lateral profiles and with the integrated eddy current test instrument to examine the rails for any remaining errors.

The rail grinder can not only correct slight profile deviations on the surface of the rail but also perform complete reprofiling operations. The surface of the rail is improved and its life cycle is extended by up to 300 percent.

Specifications

- Processing depth at one cycle: up to 2.0 mm
- Processing depth at rail/wheel interface: up to 5 mm
- Longitudinal precision: 0.01 mm
- Transverse precision: +/- 0.2 mm
- Surface accuracy: Ra < 10 µm
- Operating speed: 13 m/min
- Audible improvement: up to 3 dB
- No requirement for removal of any track detectors and railway crossings

Unlimited use

The machining residues are suctioned away into two separate receptacles inside the machine. The milled material storage can be emptied into a separate container during operations, in order to increase the machine’s capacity. The second receptacle holds the particulate matter suctioned from the peripheral grinding process and properly disposed of separate from the collected metal shavings.

Our train is equipped with a soot particle filter system and already meets the standards of Deutsche Bahn AG that have been determined in the DB 2020 program.

1: Unit at work
2: Re-contoured head of rail
3: Work preparation on milling wheels
4: Milling station
5: Grinding wheel detail
Materials Services
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