

A Schaltbau Company

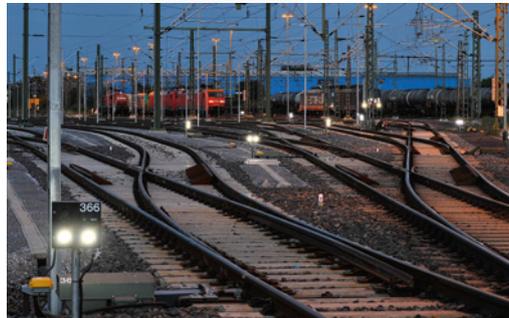


We set Priorities. System Solutions for Rail Infrastructure.



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Dear customers and partners,

Starting with its foundation **175 years ago by Julius Pintsch**, our corporate group has always originated important innovations to improve and ensure the safety and availability of international rail traffic. Around 1900, for instance, Germany saw the introduction of the first grade crossing, which did not have to be manually operated anymore, but which was controlled by the approaching train. In a book with the title "The railway in text and pictures" by Franz Czygan in 1925 it can be read that this innovation was treated very sceptically and safety-related or economic advantages were questioned.

Without you, our customers and partners, there would be no innovation. You can only create new things if you dare to engage in something new. He who never strays from the path, falls by the wayside. So we went new ways - grade crossing activated by the approaching train, axle counting, locally operated electrical points and many other innovations.

We are pleased to present you our present overview of products and services and we invite you, to stay on the forefront of innovation with us!



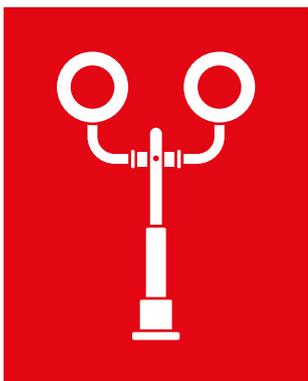
Dr. Dirk Pieler
Managing Director (speaker)



Dr. Rudo Grimm
Managing Director



Level Crossing Technology. Safe. Reliable. Capable.



Level crossings are neuralgic points, because here the railway traffic intersects with road vehicles and pedestrians. For the drivers of road vehicles, the rail tracks are often not observable. The stopping distance of the trains is too long to react quickly if the level crossing is blocked. Trains are driven on signal, not on sight.

This requires level crossings to be failsafe, even if single components fail. We ensure this by developing, reviewing and approving our level crossing technology according to CENELEC norms and SIL4 standard or equivalent processes of railway signalling and its main principles.

Safety first. But at the same time we must guarantee, that the systems are highly available in order to not affect the ever-increasing traffic flow. With more than a century of experience, we meet these requirements with our level crossing protection system in an excellent manner, which is documented in evaluations by DB Netz AG.

Level crossings must always be adapted to specific local conditions, such as complicated routeing, multi-track lines, level crossings in industrial areas, on factory sites or in ports – or in the middle of a roundabout, for a change. Efficient and economic planning and realisation of level crossings requires the proper technological base, complete with interfaces to electronic and classic railway control centres, paired with a lot of experience.

Our level crossing technology can be adapted to electronic and classic railway control centres by manufacturer-specific interfaces.

Serviceability and maintenance - simple and reliable

Diagnostic analysis and serviceability are key elements for our customers. Continuous self-tests in connection with a multilevel diagnostic system and the easy to service installations support your operational management.

Our diagnostic and maintenance systems allow our customers to quickly locate and analyse a report. The intervals of preventive maintenance can be adapted to the usage intervals of the system. "Diagnostics at a glance" allows quick and simple status evaluation on site without any further technical aids.

Our elaborate and sustainable obsolescence management guarantees an economic investment, which ensures spare part availability for many years.

Level crossing components

The PINTSCH GmbH develops, manufactures, assembles and maintains complete level crossing protection systems including housing, power supply, battery charging units and peripheral elements such as barrier, acoustic, street signal, supervision signals and rail sensors. All PINTSCH components are approved by the German Federal Railway Authority (EBA).





Platform Screen Doors. Safe and ecological.



Safety all along the line

Our company has extensive and long-standing experience in all areas of safety technology for railway infrastructure, which enables us to offer our customers platform screen doors that meet the highest safety requirements for railway operations.

Our platform screen doors enable unmanned train operation as well as increased train clock rates, resulting in improved reliability and availability. Our platform screen doors reduce incidents, even with increased passenger flow, to the benefit of both passengers and operators.

Bespoke platform screen doors

Modular, adaptable design, low energy consumption due to more energy-efficient components and an optimised electrical design are just as much a part of the advantages of our systems as the EN 50126 SIL3 certification of our safety functions.

Some special features are the integrated, uninterruptible power supply ensuring increased availability, while the web-based visualization enables simple and, if required, detailed remote diagnosis of the system.

Additionally, we offer our customers maximum flexibility with platform screen doors tailored to their needs, allowing them to choose from many options: a web-based remote diagnosis interface, sliding steps as an entry system to close the gap between vehicle and platform, illuminated displays at the entry points on the platform or signal lights for the driver on the track side. The modular design of our system offers many possibilities.

DOORTRONIC® - Our control system for platform screen doors

DOORTRONIC® was developed for safe, autonomous control of the platform screen door system and can be used as an upgrade to an existing system, including external systems. The DOORTRONIC® system renders the portable screen door system independent of the train control.

DOORTRONIC® generates the door release and the opening and closing commands for safe rail operation, consisting of two subsystems that are fully scalable to the required holding tolerance and detection zone.

The "Train Position and Stopping Detection" (TPSD) system immediately detects that the train has stopped within the correct range at the platform, while the "Door Motion Detection" (DMD) system immediately reports the opening and closing of the train doors by means of an innovative optical sensor technology.

The TPSD system is EN 50126 SIL3 certified. It can be extended with the Train Position Indication, which helps the driver to position the train doors in the best possible way behind the platform screen doors.





Lighting Technology. Seeing and being seen.



Lighting technology in signalling equipment

The subject "light" has been an integral component of PINTSCH since the foundation of the company in 1843 – i.e. long before the invention of the electric light. Like so many aspects of our company, the lighting technology developed over time. Introducing the LED technology in our lighting technology components was linked with new challenges regarding optical systems, measurement technology and obsolescence.

Besides a high degree of availability and reliability, there are considerable requirements regarding the photometric properties, which can be seen in the specifications for the luminous intensity distribution, the colour location, the phantom light and the service life. Due to its long-standing experience in lighting technology and its outstanding measurement technology, the PINTSCH GmbH is well suited to meet these challenges.

Measurement - Testing - Safety

The company-owned lighting laboratory, which has been approved according to DIN EN ISO IEC 17025 as a test laboratory for lighting technology by the Deutsche Akkreditierungsstelle GmbH (DAKKS), assists in the development of lighting technology products. It measures the illuminance, the luminous flux, the distribution of the luminous intensity and fast changes of the luminous intensity. Additionally, there are image-resolving luminance measurements, determination of standard colour values of primary light sources according to the tristimulus method, determination of the spectral composition of the light of primary light sources and determination of the most similar colour temperature.

Track signals - highly visible for the sake of safety

In addition to the lighting technology for level crossing modules SP200 LED and P145 LED, the PINTSCH GmbH also put emphasis on the track signals. The LED supplementary indicator (developed according to CENELEC EN5012X, safety integrity level SIL 4) was type approved by the German Federal Railway Authority (EBA) in October 2016 and has been released for series production by the Deutsche Bahn DB.

The product range is completed by a 70 mm insert for a multi-colour LED signalling device, which has an EBA approval for field testing since April 2018, if integrated in a light signal (Tiefenbach type) and an insert for a 136 mm multi-colour LED signalling device, which is currently under development. With these components, our company is well positioned for the new requirements on light signals (multi-colouredness and low power consumption).





Sensor Technology and Axle Counting. We provide more than just impulses.



As component manufacturer, we supply various inductive or magnetic sensors for the industry as well as sensors for detection and axle counting of rolling stock, based upon our previous activity as a specialised supplier in the coal mining area and the experience gathered there.

We also deliver axle counting systems to signal vacant and occupied states of points and tracks in interlocking system technology, for controlling level crossings by approaching rail vehicles and for other tasks.

Sensors for industry and mining

Compared to other commercially available sensors, our proximity switches, solenoid switches and fill level monitors (level switches) feature a unique sturdiness and longevity even under extreme environmental conditions.

Examples are hot rolling mills and presses in steel plants as well as underground mining or applications in the chemical industry with additional requirements regarding intrinsic safety and explosion protection.

Our customers benefit from our know-how and longstanding experience due to our application-oriented consulting, combined with additional devices for the evaluation of sensor signals. This guarantees the ideal solution for the specific application.

Wheel sensors for railways

Our wheel sensors refined the principle of the inductive proximity switch and adapted it for the railway infrastructure. The sensors are attached to the rail and contactlessly capture the metallic flange of rail vehicle wheels. These characteristics open up a broad range of applications, starting from simple switching and positioning tasks up to direction detection and axle counting.

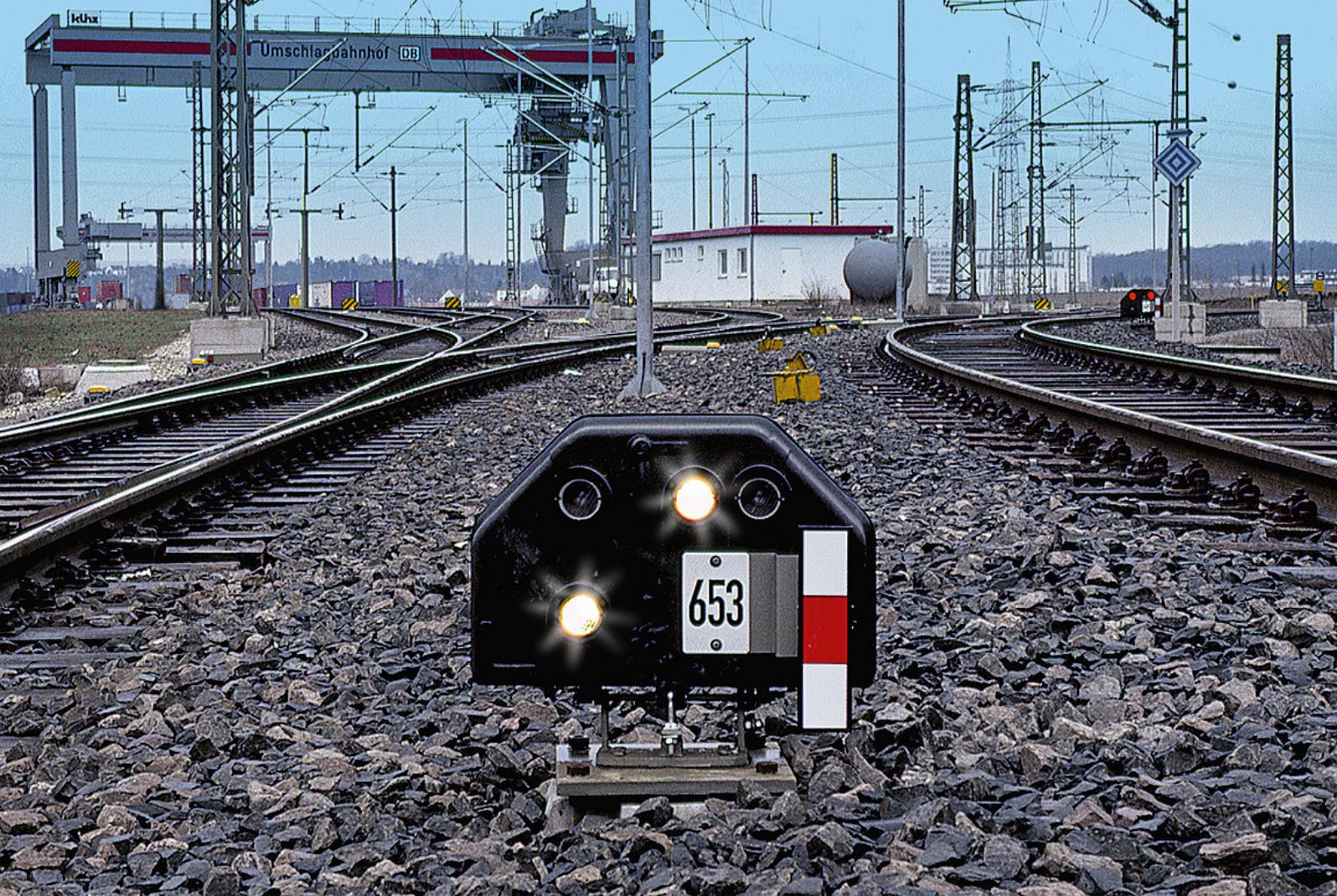
Our know-how in developing and manufacturing wheel sensors for railway and light rail systems is based upon more than 30 years of experience, in which these products have been constantly improved.

Axle counting systems - track vacancy detection and more

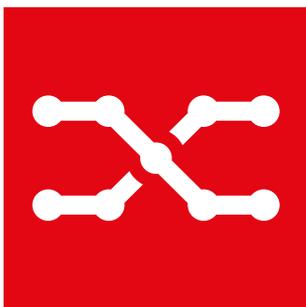
Main tasks of our axle counting systems is the failsafe detection of vacant and occupied states. Wheel sensors are used to build track sections where an evaluation system counts the single impulses caused by the wheels as incoming or outgoing "axles". A comparison of the results provides the vacant and occupied information.

Our axle counting systems are certified for the highest safety integrity level SIL 4. As subsystems, they are being used worldwide in signal boxes, train protection systems and level crossings, while at the same time being a central feature of our own system applications. Axle counting systems are also used in the automation of operational sequences whenever high availability is key, e.g. for hotbox detection systems, weighbridges or for the control of track gates and hall doors.





Interlocking System Technology. We set the course.



As a system vendor, we supply specialised interlocking system technology for shunting and ancillary areas, which can be scaled from a single pair of points up to a complex train formation yard, depending on the required performance. Due to this high flexibility, the deployment of technology can be adjusted to the operational requirements in an optimal way.

Locally operated electrical points (EOW)

Our decentral EOW controls enable an easy and efficient setting of the points in locally operated shunting areas by the shunting personnel or the train crews using pushbuttons or route set panels in the field. Points signals in LED technology signal the monitored end position and axle counters prevent untimely throwing of the points. Thanks to networked controls, even these simple systems allow to control and secure complete routes up to the storage of route lists and their automatic processing.

Electronic interlocking systems (ERaStw)

Electronic interlocking systems are used in areas, where signalled shunting and train routes are preferred over free shunting using EOWs due to operational requirements. In this case, the points are remotely thrown electrically. Axle counters ensure safe signalling of points and track sections and light signals with multicolour LEDs signal the secured routes to the driving personnel. Typical areas of application of this interlocking system technology are depots and maintenance facilities of rail passenger traffic as well as goods traffic areas in different occurrences such as shunting yards, freight terminals or core areas of industrial railways.

Train formation yards (ZBA)

A special form of electronic interlocking is used in train formation yards for goods traffic, which fully automatically control the composition and de-composition of freight trains by the aid of a hump, thus rationalising and optimizing the cumbersome marshalling operations, especially for single cars or groups of cars, with regards to time and costs.

Here too, wheel sensors and axle counting are used for points and track vacancy detection, which are also used for speed measurement and filling level monitoring of the tracks.

Modern networked computer systems control and monitor the points, having interfaces to the process controls of the retarders, haulage systems and to the radio-controlled hump locomotive as well as to the multi-sensor environment of wheel sensors, light grids, radar devices and balises used here.





Haulage Technology.

Automated transportation of railway vehicles.



Our towing and conveying systems with wheelset working point enable optimal solutions wherever movement sequences of wagons or trains have to be automated, whether for train formation in marshalling yards such as Maschen, Rotterdam-Kijfhoek and St. Petersburg-Luzhskaja or for transporting and positioning in train washing facilities, industrial tracks and maintenance depots. Our company has built more than 1,000 systems in almost 50 years.

Through continuous advancement and modularization of the main components, we have been able to significantly reduce costs and maintenance expenditure.

An important milestone was the transition to gearless torque motors with frequency converter control for gentle and energy-saving waggon handling. Another milestone was the modularisation and standardization of the pits for the cable winch.

Supplemented by the products of our signal technology division and the possibility to manufacture of our own control systems, we can implement complete solutions for almost all technical shunting tasks, ranging from haulage stroke lengths of 700 m and speeds of up to 1.5 m/s in high-performance train formation yards to ICE washing plants with 600 m/h washing capacity or for particularly high haulage power in logistics centres.

We can also perform the complete maintenance of your systems

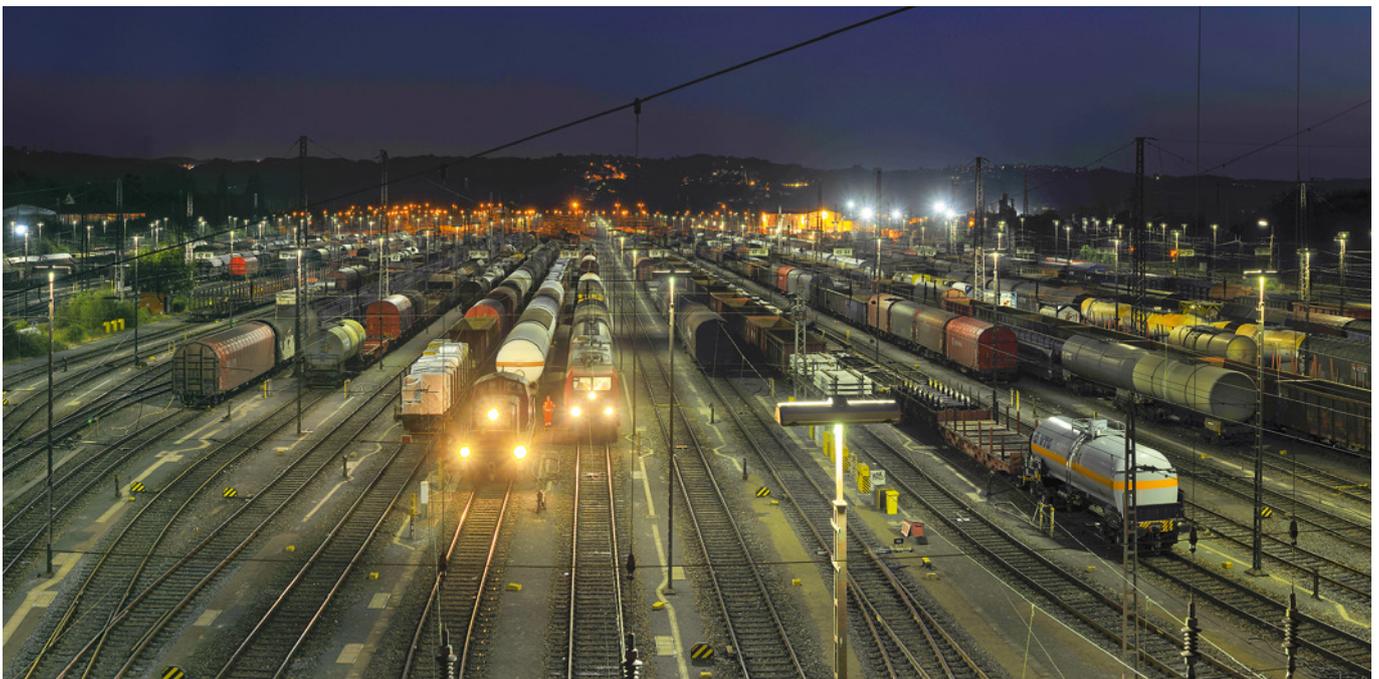
Quality and reliability all along the line

Our haulage technology offers many advantages over conventional shunting using locomotives: reduced personnel and operating costs, avoidance of cargo damage and significantly increased work safety, as hazardous work in the track area is reduced by both automation and standardization of movements.

By largely dispensing with locomotive shunting operations, cycle times are shortened and performance is increased. The constant availability of the conveyor systems leads to a reduction in wagon processing times, reduces pollutant emissions compared to diesel locomotive operation and minimizes operating noise due to the controlled work flow.

Additionally, our haulage systems can be crossed by rail vehicles in both directions due to their low height below the standard clearance profile. All system components are located inside the track, the drive unit is mounted under the floor in a standard concrete pit. The trolley is guided in the existing rails, therefore additional guard rails are not required. All this results in advantages when planning the trackage, for example for limited surface areas.

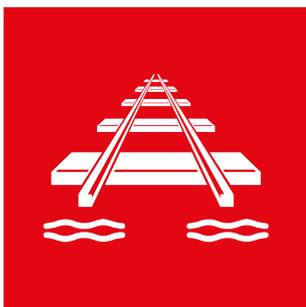
Bespoke turnkey solutions for your tasks are our speciality!





Point Heating Systems.

Safety in spite of ice and snow.



As infrastructure operator, ensuring maximum availability of your rail network is a challenge, especially during the winter months. Our point heating systems keep the moving parts of the points free of snow and ice and thus ensure smooth train traffic.

Intelligent control and monitoring systems stand for a minimum heating energy input with guaranteed functionality of the points based on local measurement data as well as forecasted weather events. With the modular architecture of the control, we can meet your requirements regarding system complexity in a range from low-cost systems to high-end solutions. The control unit of a point heating system automatically performs all controlling and diagnosis tasks.

Our PA LINE WEB software ensures location-independent visualisation and evaluation of both current and archived data in the process and control level. This enables you to plan and perform maintenance work preventively and to continuously increase plant availability.

For economic and ecological reasons, the main challenge for all point heating systems is an optimised energy consumption, since the operating costs outweigh the purchase costs many times over. The analogy to electric point heating would be a residential house with open windows and electric heating.

Electric point heating

Different control concepts, from separate control of stock rail and lock compartment heaters, to the prioritization of points within a railway station, and to comprehensive control management allow for a resource-saving use of energy while ensuring the maximum availability of the point.

Simple installation of the heating equipment and variability characterize our electrical point heating. Effective heating capacity and system size can be easily varied: Long-life system components reduce maintenance to a minimum while increasing reliability. The required electrical energy can be taken from the catenary or from the public grid.

Gas infrared point heating

With the immediately available high heating capacity, our gas infrared point heating system is predestined for areas with high snowfall. You can use natural or propane gas. Gas as primary energy source means low operating costs and reduced CO₂ emissions, while corrosion-resistant components for the heating equipment ensure a long service life with low maintenance costs.

Geothermal point heating

Our geothermal point heating system works on the principle of direct evaporation, does not require any external energy supply for heating operation, is self-sufficient and thus meeting the highest requirements in terms of CO₂ emissions and environmental friendliness. There are absolutely no emissions during the operation. Preferred location for this type of heating is in structurally weak areas far away from any power supply.





Tunnel Safety Lighting.

Lights on for safety.



What to do if the train stops in the tunnel and the passengers need to be evacuated? Our tunnel safety lighting (TSB) provides emergency lighting for the escape routes within the tunnel, thus ensuring sufficient spatial orientation for the passengers so that they can be safely evacuated on the shortest possible route. As a demand-oriented lighting system in constant stand-by operation, our TSB is subject to high safety standards.

Our company develops and supplies reliable and state-of-the-art TSB system components in accordance with Deutsche Bahn regulations, consisting of tunnel safety lights (TSL) or handrails with integrated safety lighting (HiT), emergency light supply units (NVG) for fluorescent and LED lamps and a tunnel monitoring centre (TÜZ).

Light not only at the end of the tunnel

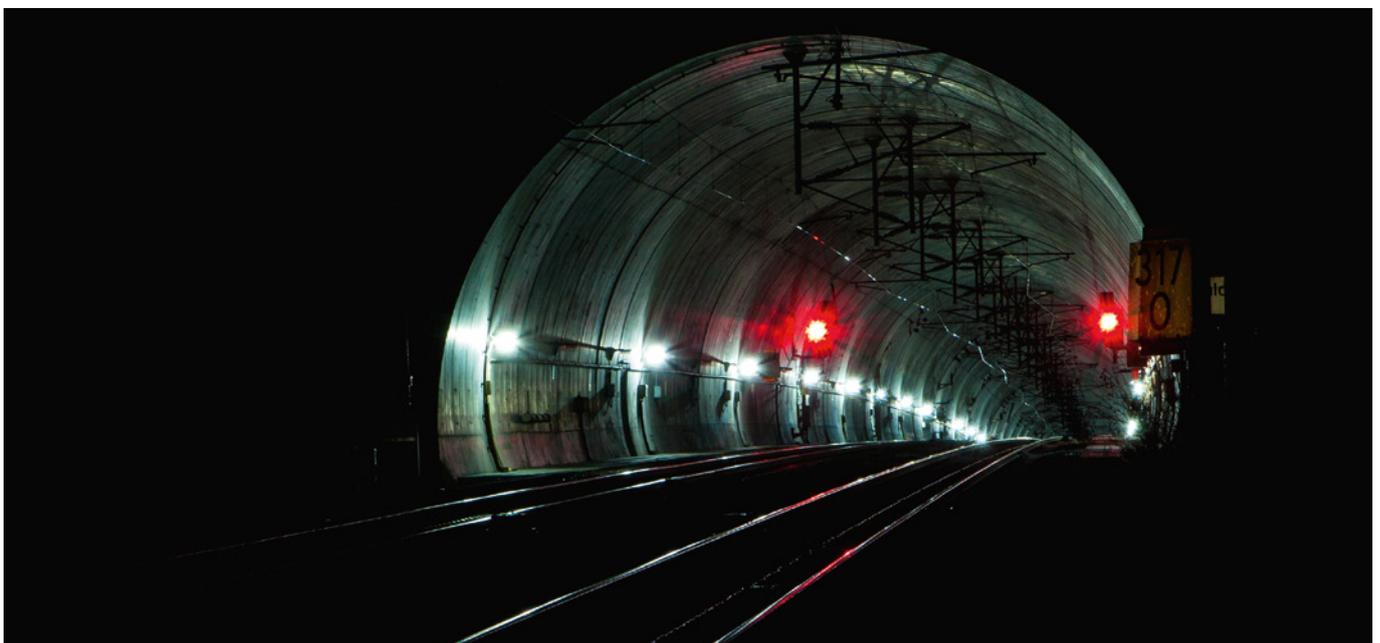
Each emergency lighting supply unit can control, monitor and supply emergency power to two lights or handrail sections and is connected to a tunnel monitoring centre to control and monitor the functions, which provides an easy-to-operate graphic user interface and serves as interface to control systems such as to visualisation and control systems such as DBMAS or PA LINE WEB.

For many years, our company has been a qualified and reliable supplier of tunnel monitoring control centres and emergency lighting supply units for Deutsche Bahn AG, and all components have been developed with the utmost care in accordance with DB Netz AG specifications and adapted to current requirements. All components meet the strictest quality requirements and offer the longevity that is indispensable in railway environments.

Special features to your advantage

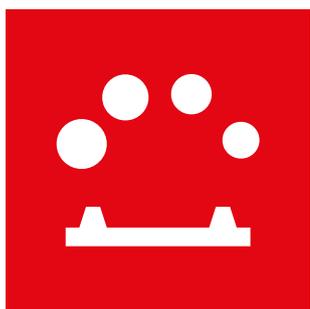
The TÜZ software archives all data coming from the tunnel and provides effective filters and high-performance evaluation functions, so that the relevant information can easily be found in the huge amount of data. The system monitors up to 999 NVG, which can be grouped freely within the software for a better overview. The same applies to external systems which can be connected to the central office via industrial interfaces. The central visualization of the entire system can be adapted to the requirements of the operator.

We only use products that have been approved by Deutsche Bahn AG through a strict qualification process and have proven themselves in many projects. The PINTSCH NVG is fully configurable by maintenance personnel; no programming by the manufacturer is required after commissioning. Basic functions are combined on a NVG control board, which simplifies the stocking of spare parts. The modular design allows to adapt the tunnel monitoring centre to project conditions.





Track Field Lighting. Always one lamp ahead.



Track field lightings illuminate workplaces and working paths at marshalling yards, level crossings, parking areas, train formation yards, goods stations, train washing facilities and container train stations, providing greater safety by illuminating the track field, improving the recognition of obstacles in the track field, helping staff working there to see both the vehicles and the points settings better and helping train drivers to recognise working personnel. Good lighting also helps in general when working on the track or loading and unloading trains, thereby also improving efficiency.

Our company has been dedicated to the automatic control and monitoring of lighting systems for many years and has continuously advanced this product area, using controls approved by Deutsche Bahn AG for demanding applications in the rail sector, which meet the strictest quality requirements and offer the longevity that is indispensable in railway environments. The lighting control technology is fully compatible with other systems of our company, such as points heaters, and can be integrated into the data transmission technology used there.

Obvious advantages

Depending on the application, our Micro Control Unit Lighting Control (MCU BS) is available as an external cabinet with control cabinet base, as an internal cabinet for wall mounting or as a floorstanding cabinet for installation in control rooms with elevated intermediate floors.

An automatic mode for the track field lighting is controlled by the MCU BS. It operates using a twilight switch, allowing manual intervention at any time, which suspends automatic operation until the next day or night change. It optionally offers a computerized control centre for the centralised control of distribution boards via an individually adaptable digital calendar with radio clock support.

The key components are Deutsche Bahn AG approved components. The DB-approved visualization system PA LINE WEB is used for remote control and monitoring. This server technology also allows for a connection to the DIANA diagnostic system of Deutsche Bahn AG. The overall system is also suited for LED lighting technology, offers debounced switching thresholds, optional insulation monitoring and the possibility of phased switching of lighting circuits.

Even with low-consumption LEDs, their intelligent control pays off if only those zones are selectively illuminated in which activities take place or are initiated. Inactive zones can remain without lighting, thus lowering consumption, protecting the environment and causing less so-called light pollution.





Digitisation and Diagnosis.

Everything in sight. Everything under control.



For many years, our company has been a qualified and reliable supplier for diagnostic systems.

Whether they be point heating systems, track lighting controls or tunnel safety controls, all are remotely monitored and controlled by the visualisation and diagnosis system PA LINE WEB. PA LINE WEB is an in-house development, based upon HTML5 technology. A data server collects all information from the field and processes these data for web sites, which can be shown in different web browsers. This makes our customers independent from device platforms, operating systems and monitor sizes.

The data sets are centrally maintained on the server. Neither client updates nor installation of a special software is required. For you, this means that you can use a wide range of different devices to centrally access the data you require via the company network.

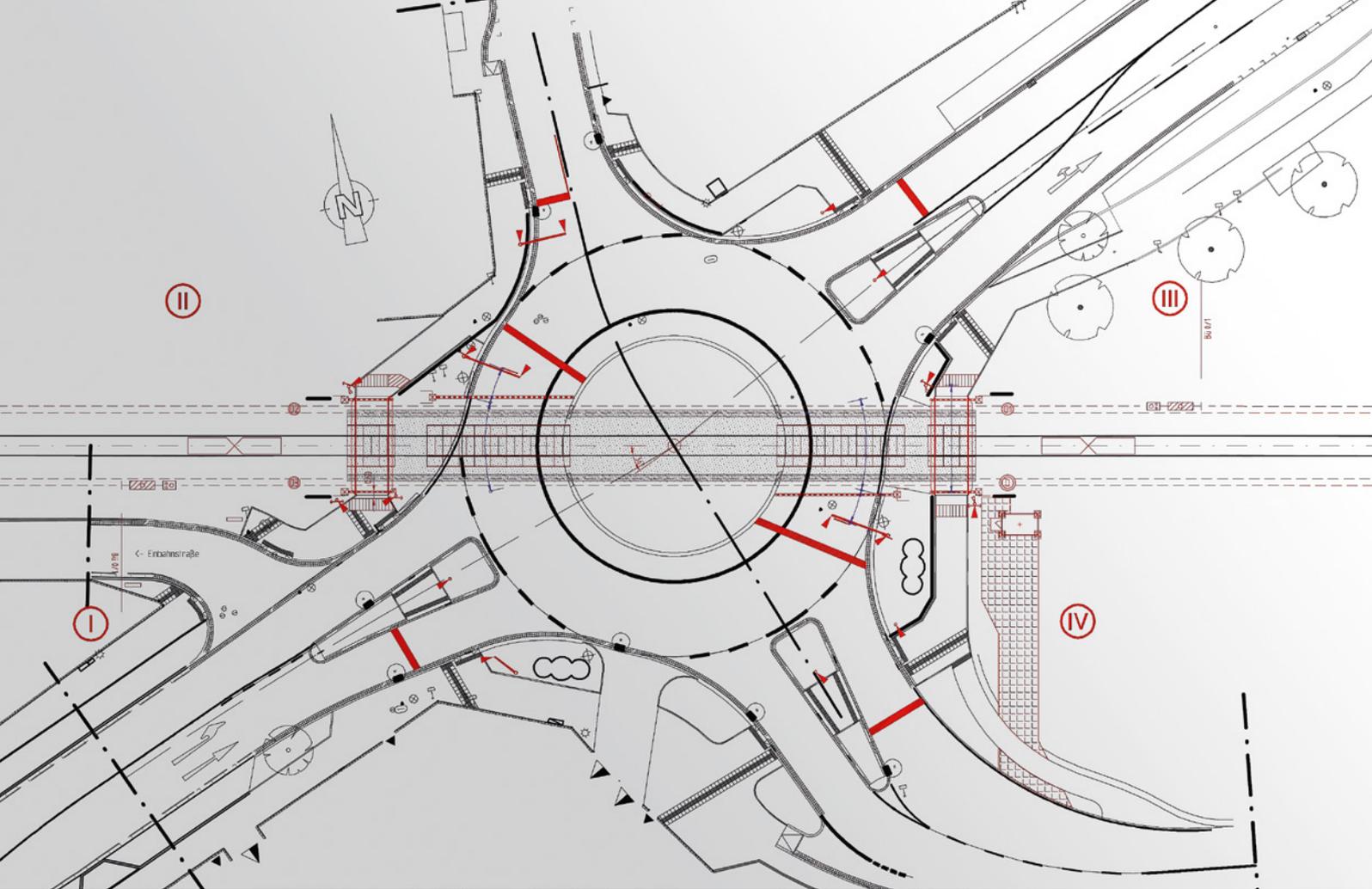
A central user administration manages sifting through the available evaluation modules and switching authorisations, based on information previously given.

Your current and future benefits

Process visualisations for many other mechanical facilities besides PINTSCH-specific systems can be created and stored in the visualisation system. Our company consistently uses the freely assignable IOs (Input and Outputs) of the control units that are already available in the field, to gather data of foreign device or to control these devices. The newly developed controller MCU XIO is even capable to group its IOs to defined stations with their own addresses in a flexible way. By this, several foreign devices can be integrated by a single controller. Ideally, the existing communication channels, e.g. from the point heating, are used.

Thanks to the server and the HTML5 technology, no software installation on the client computers is necessary. Therefore data base and system maintenance only takes place in one central location. The responsive web design ensures independence from display sizes and adapts itself automatically to PC systems, tablets and smartphones. The visualisation system itself offers you a user management including language switching. Cartographical facility overviews, freely definable facility groups and status and failure overviews provide you with the necessary overview of all connected facilities.





Planning and Project Management. Safety from a single source.



Plan - connect - implement

As a system supplier, the PINTSCH GmbH covers the whole range of services for the realisation of technically protected systems such as level crossings or interlocking systems. Therefore our customers involve us early on in the planning stage. Our services include the object planning for signalling and construction, design planning, approval planning and implementation planning including PT1 and PT2. Apart from the planning of our current systems, we are also recognized in the marketplace as a competent contact for the adaptation of legacy technology.

Managing projects successfully from start to finish

In the area of system equipment and component supply, project management is key. Therefore, for us to understand the challenges of our customers is paramount.

Be it depots, train formation yards, point heatings or the large-scale technical equipment of railway networks with level crossings: All these tasks require the project management to have comprehensive skills, be they technically or in the project management itself.

The most diverse requirements coming from very customer-specific projects ask for versatile utilisation of all available solutions, among others also the adaptation of the interfaces.

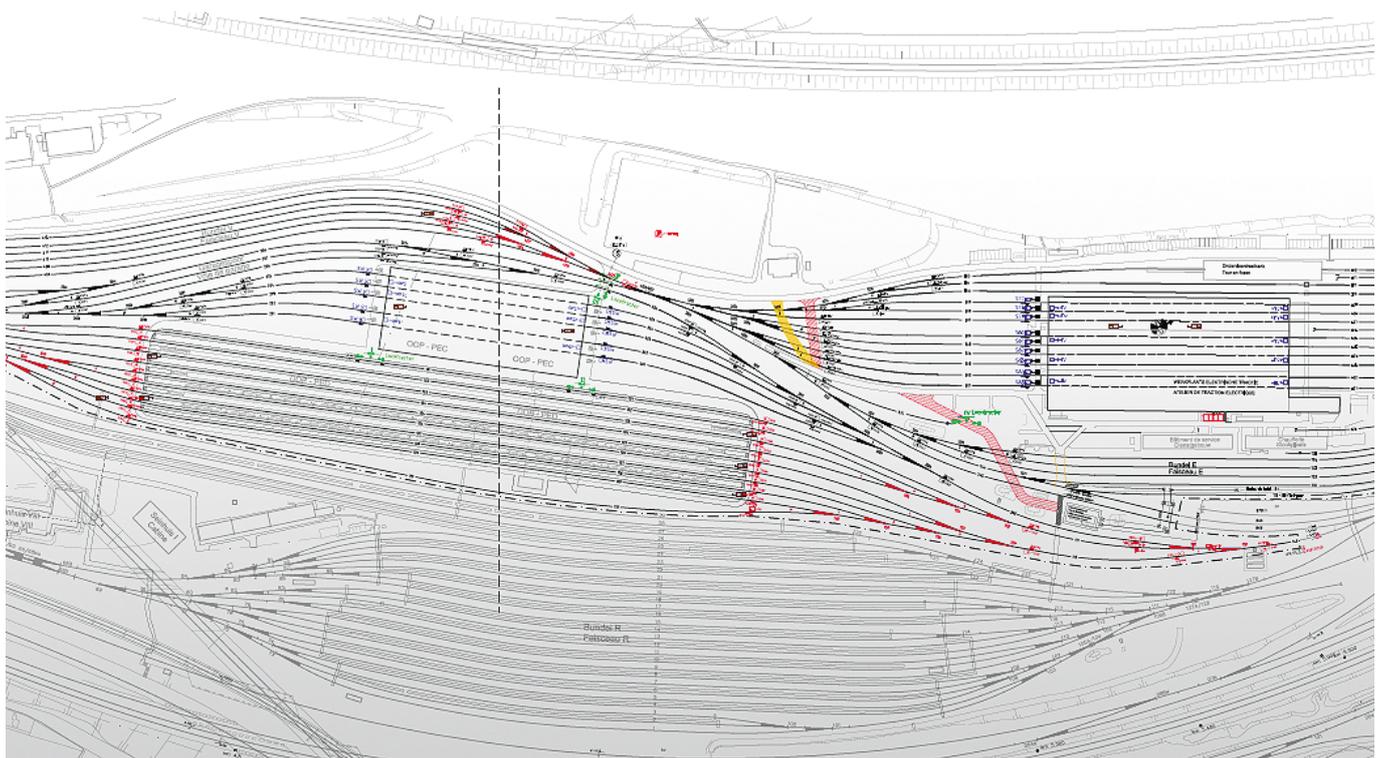
A close coordination with the customer is our basis for the efficient handling of complex projects.

Setting a good example

The project "Schaarbeek Brussels, Belgium" showcases an innovative solution for operators of rail infrastructure depots.

For "TCM RaSTW 2.0", 153 signals, 87 points, 136 clear track signalling circuits, 12 route setting terminals, 16 shed control panels, 8 SLOTS, 4 insertion points for road-rail vehicles and 2 level crossings were constructed, coordinated and technically harmonized. A scheduling system with SAP interfaces, train identification system and signal box belong to the project as well as the maintenance management system.

The project "RBUEP Banedanmark, Denmark" features 321 level crossings for the ETCS , using RBUEP DK technology, 11 level crossings to be used in the legacy system for subsequent conversion to ETCS as well as 72 PWS systems (traveller protection systems). Additionally, there are 146 pedestrian crossings in LED-ZA technology and maintenance computers with interfaces to the customer's diagnosis network. This project is a part of the nationwide "Signalling Program" for the conversion of all long-distance lines in Denmark to ETCS Level 2.





Service.

We are always personally available for you.



Trusting in our services starts a reliable partnership with a quality and service oriented company. This applies to every stage of our business relation. Starting with planning, development and production of our solutions, to assembly, testing and commissioning up, and to repair, service and maintenance.

Our skilled and experienced technicians attend to your needs by phone, by remote control as well as on site. Upon request our skilled staff trains your teams in the operation and maintenance of all deployed systems.

Upon request, we also service and maintain your installations. To optimize availability and service life of your installations, we perform pre-emptive maintenance based upon evaluation of operation status data.

We dispose of a multitude of components and modules on stock and can immediately rely on spare parts, if worst comes to worst.. This is how we guarantee smooth processes and permanent availability.



Due to the transgenerational expertise of our employees, we are able to repair all kind of different technical systems. Depending on the demand, our technicians are available for you day and night.



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