Rail Documentation

Slab Track

Pre-measurement for Tamping

GEDO CE
Customized solutions

Sinning’s internal development department includes mechanical engineers, electronic engineers, surveying engineers and computer scientists. Additionally, our on-site assembly site allows for customized system solutions.

Interdisciplinary know-how from a single source guarantees fast and smooth realization of new projects. Modern CAD-systems, development environments and CNC machines for metalworking are used by staff to speed up the development and the production process.

With the aid of these assets, Sinning over the course of the last 15 years developed the first imagery-aided rail adjustment system, the first laser target plate for rail adjustment and the first automated geodetical adjustment system for track slabs.

Cooperation

Strategic cooperations in development ensure system solutions that are optimally adjusted to the construction project and that are up-to-date. Builders, building enterprises and manufacturers contribute their knowledge about construction sequences and methods and profit from our perfectly adapted measurement systems.

Sales partners in the respective countries ensure global and local availability and service for our systems. These partners are thoroughly trained and are fully able to support the application on site. Using this support network, the worldwide servicing of the systems is ensured.

Since the German government started to build ballastless rails on open sections in the mid 90’s, Sinning measurement systems became an integral part of the railway construction measurement. Meanwhile, propelled by the export of German technology for railway construction, Sinning measurement systems are used worldwide. Consequently, there are proven system solutions available for every construction type, be it a ballast or slab track. Both local conditions and special customer requirements are always being considered in the process.

Your Partner

ADVANTAGE
THROUGH EXPERIENCE

Sinning Vermessungsbedarf GmbH is committed to designing rail measurement systems for over 15 years. Based on the vast amount of experience gained throughout these years, our products were updated continuously and adapted to the needs of customers and to project requirements.

For that reason, the first rail measurement trolley for adjusting and checking slab track constructions was built by Sinning. Subsequently, the first measurement system for ballast rail construction was developed. Today the Vorpos GEDO CE version is the most efficient geodetic system available on the market.

Sinning – part of every track

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Flexible technology

Different projects require different applications of measurement techniques. Using a single total station, two total stations overlapping or even a GNSS receiver — the GEDO system supports the ideal measurement technique for each project. Therefore, the same system can be used to build slab tracks with sub millimeter accuracy, build ballast tracks with millimeter accuracy and for documentation with centimeter accuracy. The flexible setup of the GEDO CE rail measurement trolley makes it possible to convert the trolley quickly and simply on site. This results in the best possible efficiency, depending on the required accuracy and the site.

Pushing frontiers

Rails connect. Especially in these times of climate change, railways remain an important part of infrastructure and enable investments in the expansion and preservation of existing railway lines. Wherever there are no or incomplete railway line plans, productive rail measurement systems are required for surveying the existing track.

The flexible applicable GEDO system enables the complete geometrical survey of the line axis. Beside the absolute rail position, the track’s cant and the track gauge are recorded. With these recordings all necessary information for a realigning is available.

Every inch counts

In continuous measurement, every parameter is recorded in movement. As a result, long distances can be measured fast and during traffic.

Clearance diagram

Using the profiler, single points can be measured to check the clearance. In this way the distances to rail signals, signs, and other objects can be measured during the recording of the rail and without generating huge amounts of data, for example by using scans.
Perfectly prepared for everything
- GEDO CE is usable for all kinds of different rail adjustment systems due to its flexible software and individualized hardware.
- GEDO CE supports the adjustment of high speed switch slabs with FAKOP widening
- A variety of geometrical elements are supported
- Design-oriented trolley implementations widen the application range
- An electronic rail measurement staff allows the use of GEDO as a portal adjustment system where it is not possible to use a conventional measurement trolley

Highly precise correction values - on site
High standards are set in surveying with the purpose of building a slab track. It requires much effort to adjust an already fitted rail. That is why deviations must be detected with millimeter accuracy on site and the correction values have to be made available online. GEDO CE also delivers the precision for measuring tracks for over 300km/h – all absolutely reliable. All correction values are calculated immediately and are displayed to the user on site. This method grants a productive and smooth adjustment process and an immediate quality check. Using the GEDO CE system reduces the risk of re-adjustments and lowers overall construction costs.

Individualized application
Using GEDO CE, all measurements during and after the installation of a ballastless track can be made. It doesn’t matter whether you do a rough or a fine adjustment, a final inspection or a posterior quality check, in GEDO CE you have a highly precise, easy to use and practical measurement tool.
Development

All over the world different construction methods are being used and new ones are developed and tested. New measurement procedures and systems are developed in this process by Sinning. Besides our custom-made GEDO CE rail measurement trolleys and the staff systems we will also develop the perfect measurement solution for your construction method. Our in-house development and production ensures a fast and flexible implementation.

Benefit from our long experience for your project.

Japanse plate

Instead of using a bed that is integrated into the concrete slab for rail detachment, the Japanese slab procedure utilizes flat screwed-on rail attachments. As a result, the range is larger for the side adjustment when mounting the rail. The fine adjustment of the rail is done during or after the rail is mounted. GEDO J-Slab is an optimal measurement system for mounting Japanese slabs. The rail measurement system GEDO CE is then used to do the fine adjustment.

SPS and SSPS for Slab Track Bögl

The Slab Track Bögl system (FFB) consists of preassembled rail plates which are linked lengthwise. This construction method leads to a homogenous railway and good long-time performance. The system can be used on dirt structures, frame structures, in tunnels and in low ground as well as on bridges. In close cooperation with Max Bögl, the measurement system “SPS” was developed to realize the patented adjustment process of the rail plate. With this system, precise produced rail plates are adjusted with highest precision. The special algorithms of the SPS system allow an up to today unmatched inner coherence and a fast construction progress. The FFB system also can be used for the adjustment of high speed switch slabs. The “SSPS” system that is optimized for the construction sequence of switch slabs was also developed in cooperation with Max Bögl.
Pre-measurement for Tamping

Optimized measurement procedure

The one thing that really matters besides measurement precision is measurement pace. Using GEDO Vorsys, you can supply the tamping machine with adjustment data nearly in real-time – thereby avoiding idle time for the tamping machine. Because the system is not bound to the track the construction process is not interrupted and the trolley can be lifted off the track at any time, if necessary. Especially at small and medium sized construction operations, the Vorsys system can fully show off its advantages.

Simple handling

GEDO CE in the Vorsys layout was specially developed to do the tamping pre-measurement.
- Quick conversion. Due to its design, the rail measurement system GEDO CE is ready to be used without any assemblage.
- Simple handling. The user interface is intuitive and is based on well-known pre-measurement methods for tamping machines. It’s just much more efficient!
- Reliable staff. Do not hesitate to fall back onto your already trained and experienced staff.
- Continuous data flow. Starting with the paper layout plan to creating the tamping disk – everything is completely digitalized.
- Highest measuring performance – for highest efficiency.

Measuring methods

There is a measuring method for every task, thereby ensuring a completely full workload.
- Based on fix-points with paper layout plan
- Digital line data with fix-point coordinates
- Relative measurement mode completely without fix-points

Special functionalities

- Platform edges
- Distance value check at masts
- Nominal-actual comparison at fix-points
- Continuous measurement

HIGHEST EFFICIENCY
One system - many advantages

The base of the rail measurement system GEDO CE is the rail measurement trolley. Its well-engineered technology offers a whole range of advantages.

- Low weight
- The rollers are not profiled which means less wear and longer maintenance intervals
- The whole system is wireless and ensures a high reliability
- Latest total station technology: high tracking speed at the highest precision
- Over 24 hours of battery life using one set of batteries

Approved by the Deutsche Bahn AG (German Railways, Inc.)

GEDO CE was approved by the DB Netz AG as measurement equipment for railway construction. In the process, the compatibility with the network (e.g. signals), the aptitude of the verification process, the functionality and occupational safety as well as the ergonomics were approved. It is also possible to work with GEDO CE on a track that is open to traffic and quickly gather all relevant data concerning the track condition. In addition, the system is also authorized in many other countries.

System of modules

On the GEDO CE rail measurement trolley as a base, there are a few variants available fitting to the respective application:

- Profiler. The clearance can be measured in the same process. This saves valuable time.
- GNSS. The GEDO CE trolley can also be fitted with a GNSS receiver for rail measurement. This is a good alternative for when there are no fix-points.
- Total station trolley. The total station trolley extends the system to a pre-measurement system. Using the combination of the total station and the trolley makes it possible to actually have such high measurement speeds.
GEDO Track
GEDO Vorsys
GEDO
Tamp
GEDO
Software

GEDO CE Software

Continuous data flow
The most important thing is data – whether prior to, during or after the measurement. We guarantee easy data handling without data getting lost while using GEDO CE software products. It all starts with line data coming from the designer or the contractor. The import and the consistency check are no issue using our system. Even if the data is only available as a paper layout plan – GEDO CE is well prepared so that you do not need to spend too much time at the office. In outside work, a Windows Mobile control unit is used to run the powerful and reliable software. Data evaluation and preparation can be done fast and target-aimed. All in all, this presents a well-balanced package.

To the point
GEDO Tamp
Data generation for tamping machines
- Clear, flexible and fast handling through graphical visualization.
- Miscellaneous functionalities: ramping, fixed points, parallel shift, maximal lifting and shifting values
- Station point coupling
- Nominal-actual comparison of the fix-points
- All current export formats are supported

GEDO Calc
Proof and documentation of the construction of ballastless track
- Checking the inner and outer precision
- Long and short chord calculation with various selectable chord lengths to describe the relative rail position
- Graphical as well as tabular output
- Automatic station point coupling to compensate for tensions in the fix-point grid
- Fully automated generation of correction lists (“slab lists”) for a subsequent optimization of the rail position

Data preparation - fast and simple
GEDO Office
The one piece of software you need to optimally support the project.
- Supports all current import and line data formats
- Line check
- Input of paper layout plans
- Synchronizing data with the field control unit
- Export of sync- and GEO-data for the tamping machine
- Transform coordinates onto the line and vice versa

EVALUATION AND ANALYSIS
GEDO CE