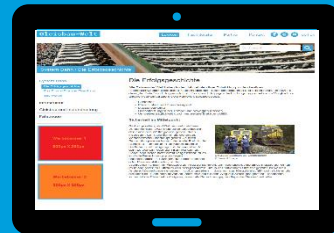
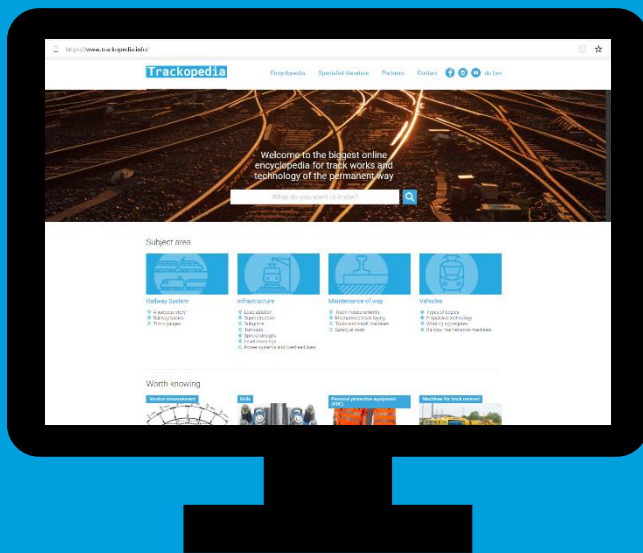


# Trackopedia

The biggest online encyclopedia for track works  
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#### Railway system

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#### Infrastructure

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#### Maintenance of way

- Track measurements
  - Geodetical measuring**
  - Taking bearings
  - Versine measurement
  - Track centreline distance
  - Symbols
  - Formulary
- Mechanised track laying
- Tools and small machines
- Safety at work

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#### Railway vehicles

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### Geodetical measuring

**Geodetic pre-measurement with total station and track measuring trolley**

When pre-measuring with a total station and a track measuring trolley, the track position is recorded by geodetic surveying. This measuring method is particularly suitable if the quality of the reference point field must be checked. This enables the identification of incorrect reference points in addition to the track surveying.

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In classical geodetic surveying, the total station is usually mounted on a tripod next to the track and its position is determined by free station setup (resection). Horizontal directions and vertical angles as well as distances to several known reference points are measured by electronic distance measurement directed towards with a prism. For this purpose, at least three track-marking points should be measured. Each further measuring point leads to an overdetermination, which enables conclusions to be drawn about the quality of the reference points.

After the position of the total station is known, each prism position in this reference system can be recorded as a three-dimensional coordinate. The prism can also be mounted on a measuring trolley, which simultaneously records the track gauge in the track. This enables the determination of the as-built track position and height for left rail, right rail and track center line with only one measurement.

With integrated measurement systems (e.g. Trimble GEDO Track), the software directly compares the as-built position with the design alignment and displays the deviations on the fly. The user immediately gets an impression of the currently necessary lifting and lining and can react instantly if necessary. In addition, the track tangent points are displayed and can be marked in the location for the synchronization of the tamping machine.

Modern total stations can automatically detect and track a prism and continuously provide the measured values (tracking). With this mode it is possible to continuously record the position of the track while the track measuring trolley is constantly pushed. The measured values are stored fully automatically in the predefined point interval.

Precondition for a successful measurement is an unhindered aiming of the prism by the total station. The area that can be measured from one position depends on the surroundings of the track. Refraction (e.g. by air flickering) can also limit the transmission of the measurement signal. For this reason, it is






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unstable markings identified. Therefore, in some countries this measuring method is mandatory as proof of accuracy.

Of course, the target positioning and measurement of the reference points results in an expenditure of time which limits the performance of the system. For easier positioning in the track and for easier transport between positions, the total station can be mounted on a second track measuring trolley instead of a tripod. Another possibility to speed up the measuring process is the use of two total stations. Thus, one total station can be set up while the other – already set up total station – is used for the measurement with the track measuring trolley.

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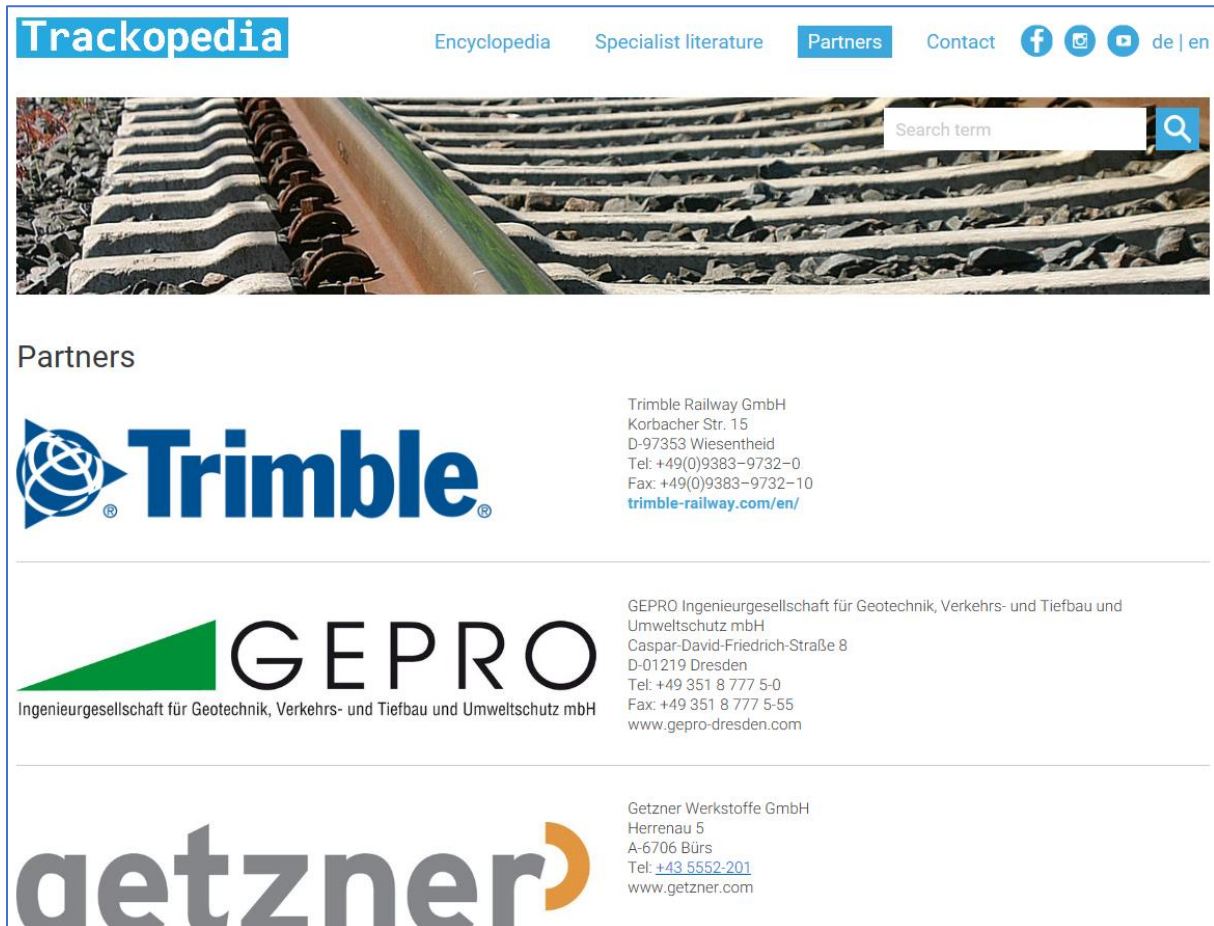
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