



Mobile, Non-contact Measuring System for Detection of the Contact Wire Position

Online contact wire measuring system for monitoring the contact wire position during travel

- non-contact detection of the height and stagger of the contact wire
- detection of up to 4 wires simultaneously
- can also be used for twin-wire systems
- data inputs for compensation of the vehicle movements
- battery operated
- mobile system with an installation time of < 1 hour (optional: fixed installation)
- accuracy of $\pm 2\text{mm}$
- measuring speeds of up to 160 km/h
- extensive software package with post processing



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Requirements of online contact wire position measurement

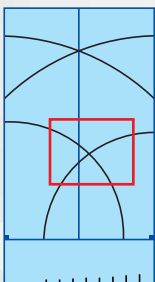
Observance of the exact contact wire position is extremely important for the safe operation of electrified rail stretches, both on railways and tramways. This applies especially for modern high speed lines. The gradient between two masts is a criterion which has to be monitored constantly in addition to the contact wire height and stagger.

The OVHWizard system

Two specially developed high-performance ultrasonic distance sensors form the core of the OVHWizard contact wire position measuring system.

These sensors are installed respectively at an optimum angle at the ends of the measuring instrument.

The entire processing electronics are located in the connecting tube between the sensors. The system is battery operated and can therefore be used on every vehicle.



Measuring principle and system concept

The OVHWizard measures the distance by means of ultrasound and the pulse echo method, i.e. a sonar pulse transmitted by the sensor is reflected by the contact wire and back to the sensor. The time which elapses (runtime) is proportional to the distance. The exact contact wire position is given by the point of intersection of the two distance measurements.

The measured data are picked up in synchronisation with the line kilometering, triggered by pulses from a distance sensor.

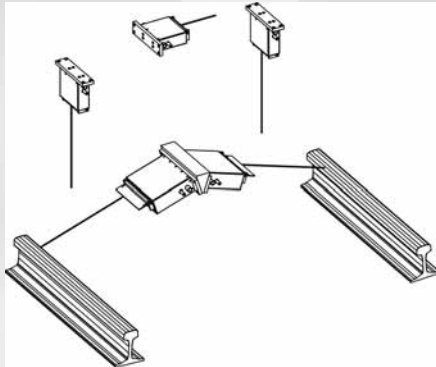
Areas of application of the OVHWizard



The small size of the OVHWizard allows a wide range of application in contact wire position detection.
The OVHWizard can be used on:

- road-rail vehicles
- contact wire laying vehicles
- measuring trolleys
- measuring trains
- rail laying machines

Vehicle compensation



By mounting the OVHWizard, the measurement of the contact wire position in relation to the top edge and centre of the rail is influenced directly by the movement of the measuring vehicle. The measurement can be made without compensating these errors when moving very slowly (up to approx. 10 km/h) or when the demands on the measuring accuracy are low.

For high-precision measurements when the vehicle is moving the OVHWizard offers compensation inputs for the vertical (suspension) and horizontal (track clearance) movement of the vehicle as well as for the rolling angle around a known centre of rotation. Compensation takes place directly in the measuring system.

Data output

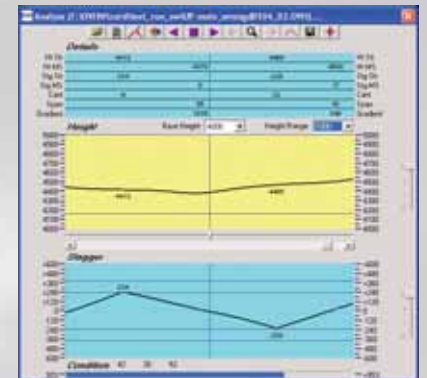
If the vehicles on which the OVHWizard is to be used already have vehicle compensation, all the measured data of the contact wire position with distance and time reference can be transferred to this system via TCP/IP.

PC software

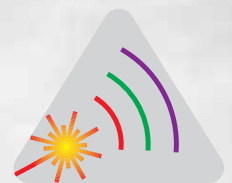
The software which runs on all Windows systems enables both measured data entry and online display and a comprehensive post-processing after completion of the measurement in addition to creation of the measuring profiles for the vehicle set-up.

The following standard evaluations are possible:

- tolerance monitoring for side and height
- display of overlaps
- height of the contact wire
- height of the support cable
- stagger of the contact wire
- stagger of the support cable
- determination of the mast distance
- determination of the gradient
- detection of line events (signals, crossings, points etc.)
- compensation of the vehicle position
- table printout
- video surveillance of the wire (optional)



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