

Dortmund Central Station

Automatic track monitoring with chain inclinometers



An automatic measuring system was installed at Dortmund Central Station, which automatically monitored the above-ground track systems and the catenary masts between April 2014 and the end of March 2017.

The measuring system consisted of a motorised total station and approx. 600 newly developed inclination sensors. The inclination sensors were connected in individual chains and attached directly to the rail using rail foot clamps. The inclination sensors provided information on inclination and temperature at 6-minute intervals. The longitudinal settlements and twists of the tracks were calculated from the inclination values, thus enabling the entire construction site to be monitored in real time. If the limit values were exceeded, the responsible persons were automatically notified and appropriate countermeasures were initiated.

- 📍 Dortmund, Germany
- 👤 Civil Engineering Office of the City of Dortmund
- 🕒 2014 - 2017

Services

- ◆ Installation of a complex measuring system consisting of inclination sensors and a total station during night-time closures
- ◆ Measurements at 6-minute intervals
- ◆ Evaluation and management of approx. 500,000 measurement values per day
- ◆ Automatic calculation of settlements, torsions and deflections
- ◆ Limit value checks with automatic alarm

Technologies

- ◆ 28 chain inclinometers, each with 21 sensor elements at a distance of 1.2 m
- ◆ 1 precision total station with 40 measuring points
- ◆ Web-based, password-protected customer portal with 24/7 access