

Geotechnical monitoring of the Eppenbergl Tunnel

Country

Switzerland

Project type:

Tunnel monitoring

Sector:

Construction

Main product:

Monitoring Solution

Challenge

When work started in 2015 on the 3,114-meter Eppenbergl Tunnel, it was clearly an important moment for the canton of Soleura in Switzerland. The tunnel was designed to link the towns of Aarau and Olten and decongest traffic on one of the most transited railway routes in the country, used by 550 trains every day. But an infrastructure project of this type required permanent and reliable geotechnical monitoring to detect any incident that might affect the works.

Advantages

- Enhanced safety from real-time collection and analysis of geotechnical data
- Easy integration into a wide range of geotechnical instruments
- Reduced costs by avoiding on-site instrument readings

Solution

Contractor Terra Vermessungen, one of the leading monitoring companies in Switzerland, opted to solve the challenge with the Worldsensing Monitoring Solution. The Monitoring Solution allows Terra to gather readings from the geotechnical instruments used across the Eppenbergl Tunnel works. The remote monitoring system covers 55 load anchors and five extensometers, all controlled from a central gateway outside the tunnel. The system's wireless operation and low power consumption offered a minimum-impact way of guaranteeing that the system does not interfere with construction work.

The battery-operated Worldsensing data loggers, which are installed in a covered shaft to protect against vandalism, send the data wirelessly to a gateway that is installed in a temporary office on site. From there the network transfers the data to an evaluation and visualization system.

DISCLAIMER:

All Content published or distributed by Worldsensing is made available for the purposes of general information. You are not permitted to publish our content or make any commercial use of our content without our express written consent. This material or any portion of this material may not be reproduced, duplicated, copied, sold, resold, edited, or modified without our express written consent.

"Worldsensing is very easy to use. You attach the node next to the load cell, connect the cable to the node, do a quick configuration and that's it. I think the most important benefit is the wireless connection, in combination with the long range and the low-power consumption. This cable-free product is great for locations like tunneling sites. In addition, the long battery life makes Worldsensing perfect for nodes in remote spots, for example rocks, where you would usually need a professional climber. With Worldsensing I don't even think about installing cables and I don't have to change batteries every couple of weeks."

Erdmann Jacobeit

Terra Vermessungen

Benefits

Worldsensing's robustness, flexibility, ease of expansion and low power consumption have given Terra a highly efficient monitoring system. The system integrates seamlessly with the many geotechnical instruments that Terra uses for measurements.

And by using Worldsensing software to automate the supervision of sensor measurements, Terra has been able to eliminate most manual readings, saving the company's staff from having to travel to site to gather data. This has cut the cost and the time needed for supervision. Terra's experience with Worldsensing has been such a success that it was featured in the prestigious engineering magazine Ernst & Sohn.



The Eppenbergl tunnel during the construction phase