



Poland: Innovative Geotechnical Monitoring

Setting new engineering and construction benchmarks with an expressway tunnel



(Photo Credit: GEO-Instruments Polska)

The Expressway S19 represents a critical link in Europe's transportation network, stretching 570 km (354.2 mi) from the Poland-Belarus border to Slovakia. Serving as a vital corridor connecting the Baltic countries with Southern Europe, this project is transforming the region's infrastructure and promising economic growth. A key project component is the construction of a 2.2 km (1.4 mi) tunnel using advanced Tunnel Boring Machine (TBM) technology between Rzeszów Południe and Babica. Scheduled for completion between 2025 and 2028, this ambitious infrastructure project will set new benchmarks for engineering and construction in Poland.

GEO-Instruments Polska: Technical Excellence in Monitoring

Tasked with providing accurate, real-time geotechnical monitoring for this monumental project, GEO-Instruments Polska designed and implemented a custom monitoring solution well-suited for the challenges of large-scale tunneling. With the responsibility to monitor the structural integrity of the tunnel and surrounding areas, GEO-Instruments Polska deployed a robust and highly flexible monitoring system capable of capturing dynamic changes in the tunnel and surrounding earth with pinpoint precision.

Advanced Data-Acquisition Systems and Small Data File Outputs

Case Study Summary

Application

Custom monitoring solution for large-scale tunneling

Location

Poland

Products Used

AM16/32B, CR6

Measured Parameters

Temperature, strain, convergence, earth pressure, settlement and heave



At the heart of this monitoring network is a comprehensive array of instruments including strain gauges, earth pressure cells, and extensometers, which all feed data to a custom-configured data-acquisition system. Using Campbell Scientific's [CR6-RF422 Automated Monitoring Platform](#), GEO-Instruments Polska demonstrated their advanced technical expertise in dynamically measuring a wide range of parameters. The result? Seamless and continuous data transmission with remarkably small data file outputs that optimize both storage and near real-time monitoring efficiency. These small data file outputs provide a massive advantage, allowing rapid analysis while reducing network strain, transmission costs, and data management challenges—all essential elements for a project of this scale.

Reliability Meets Flexibility

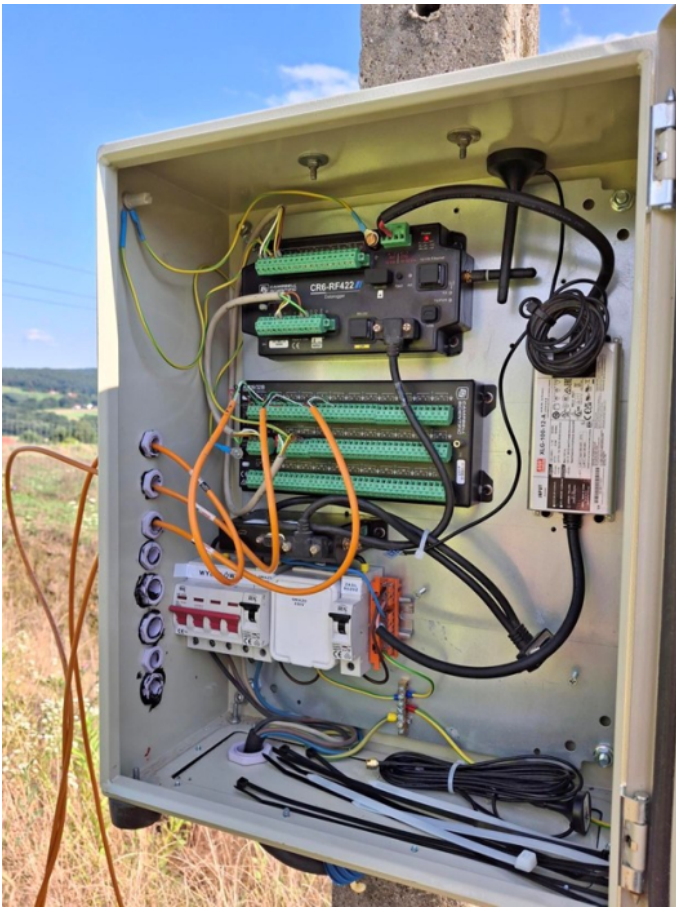
GEO-Instruments Polska's choice to use the CR6-RF422 further highlights their commitment to providing a monitoring solution that not only meets but exceeds the client's needs. The devices support both wired and wireless communications, offering unmatched flexibility in a demanding and constantly evolving environment. With [universal channels](#) able to accommodate a variety of sensors, the system is engineered for adaptability—no matter the monitoring requirements.

A Collaboration Built on Innovation

The collaboration between GEO-Instruments Polska and Campbell Scientific created a powerful combination of technology and expertise. This partnership has brought substantial cost benefits to the project, reducing the number of data-acquisition systems required while delivering reliable 24/7 performance with minimal maintenance. The monitoring network's robustness offers peace of mind in ensuring that geotechnical movements and tunnel convergence are closely tracked, which safeguards the construction process and the infrastructure's long-term viability.

Are you looking for a reliable system that's flexible enough to meet your needs? Reach out to our [sales team](#) for any current or future projects you have. We'll find the best solution for you.





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