

Monitoring roof and ground stability of a newly built stadium in a high-risk mining area

Country

Polonia

Industry

Infrastructure

Application Areas

Structural

Context

A new football stadium was under construction in Katowice, Poland. As part of the project, a comprehensive roof monitoring system was designed, installed, and put into operation for both the stadium and the adjacent sports hall. The goal was to integrate all monitoring devices during the construction phase to ensure reliable, long-term infrastructure supervision.

The project was carried out in full compliance with Polish regulations. This requirement has particular importance in Katowice, a region that has unfortunately experienced past infrastructure collapses, prompting the introduction of stricter monitoring standards. Moreover, the Silesian Voivodeship, where Katowice is located, is known for its extensive coal mining activity and the associated risk of ground subsidence. As a result, both existing and new infrastructure in the region are subject to analysis and continuous monitoring throughout construction and maintenance.

Solution

As part of the project, DMT Engineering designed a comprehensive monitoring system for the stadium's roofs, sports hall, atrium, and entrance zone. The system incorporates:

- 39 strain gauges
- 24 [Worldsensing one-channel Vibrating Wires](#)
- 17 [Worldsensing Tiltmeters](#) mounted directly on the steel structure
- 4 snow sensors installed on the roof
- One weather station

It is engineered to automatically issue warning alerts whenever predefined safety thresholds are exceeded. All measurement data is stored on a local server within the facility, and the system is fully integrated with the data visualization platform.



“Our goal was to deliver a monitoring system that ensures safety, meets strict regulations, and provides long-term resilience for the stadium and sports hall. The use of Worldsensing tiltmeters was key to achieving this objective.”

Anna Lenart

Sales Manager

DMT Engineering sp. z o.o

Benefits

The installation of the monitoring system significantly enhances safety by ensuring early detection of structural risks and environmental hazards. Automatic alerts triggered when predefined thresholds are exceeded provide immediate warnings, allowing for quick preventive actions that protect both the infrastructure and its users. By continuously tracking loads, deformations, and weather-related factors such as snow accumulation, the system creates the safest possible conditions for stadium visitors, athletes, and staff.

Advantages

- Long-term reliability and resilience through compliance with regulations and adaptation to geological risks.
- Continuous supervision in a region affected by mining activity and past infrastructure collapses
- Compliance with strict Polish monitoring standards, reduced repair costs, and extended service life of structures
- Uninterrupted and safe use of the stadium and sports hall as key public venues



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