Hydrogeological Monitoring

Bilbao, Spain







Background

As part of the railway network enhancement project in the Basque Country, specifically along the access corridor and at Bilbao-Abando station, a hydrogeological study accompanied by an underground monitoring system was planned. This intervention takes place within a complex infrastructure environment, involving excavation activities in an urban setting and the need to ensure continuous monitoring of hydrogeological conditions throughout all operational phases – from preliminary design to construction execution. Monitoring the groundwater table plays a strategic role in site safety, activity planning, and protection of the surrounding environment.

The solution

To meet these requirements, 55-meter-deep wells were drilled, each equipped with vibrating wire piezometers to monitor groundwater behavior in the work areas. The choice of Capetti Elettronica's *WineCap ™* technology ensured the fulfillment of critical demands in terms of reliability, robustness, and long-term continuity. The implemented system demonstrated effective sensor management, easy field configuration, and excellent resistance to environmental conditions – essential factors for optimal performance in complex operational contexts like major infrastructure projects.

The result

Throughout the entire design phase, the data collected proved consistent, accurate, and fully aligned with the needs of the technical teams involved. The system will continue to record and store information during construction activities, supporting hydrogeological behavior control of the area and providing decision-making support based on objective measurements.

This intervention exemplifies a successful application of *WineCap ™* technology in a strategically important European infrastructure project, confirming its effectiveness in highly complex environments and the robustness of its performance over time.

The winning choice WineCap

- ✓ WSD12-4VW (4-channel datalogger for vibrating wire transducers)

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