

New Advances in Geodetic and Geotechnical Data Fusion for Hydro Power Dams and Structural Monitoring Projects

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ABSTRACT:

The value of a monitoring system is to provide up to date and reliable data for support managers and operators of structures, such as dams or buildings, to carry out their work, to recognize on time unexpected behaviours and react accordingly. Using high-precision sensors and performing automatic measurements today is possible to control the daily behavior of structures and thus be able to recognize possible problems on time. Monitoring systems based on geodetic instruments allow the control of movements from an external point of view. Geotechnical sensors allow the control of localized environmental parameters and movements from inside the structure or between points of the structure itself. An analysis of the results obtained at Cixerri dam experimental monitoring system and from an integrated structural monitoring system in Milan is conducted. The study underlined the value of integrated processing of measurements obtained with both geodetic and geotechnical instrumentations. Specifically, the use of local geotechnical measures as offsets for the movements measured from the outside is proved to always be a fundamental element to better understanding the real behaviour of the structure. In this perspective, the integrated use of different technologies have been drawn, since the earliest stages, of monitoring systems definitive projects winners of international tender of the World Bank for the rehabilitation of 4 dams in Ukraine.