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AN ALTERNATIVE METHOD TO EVALUATE THE HEALTH STATUS FOR CONCRETE DAMS

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Abstract

Dam's behavior monitoring is highly influenced by the existence of an appropriate instrumentation system installed in structure's body, its foundation and in the neighboring area as well as by the periodical acquisition, collection, processing and interpretation of data. Existing monitoring systems may be enhanced with mobile labs that can perform regular or special measurements. Hybrid models appear to be an attractive option for the evaluation of the static and/or the dynamic behavior of the hydraulic structures throughout their operation phases. We may define the hybrid model as the combination between the in situ measurements and the analytical numerical models associated to a certain hydraulic structure system. The hybrid model allows the calibration of the computational model based on the post-analyses using the data provided by the monitoring systems. The authors use the new concept of the global elastic modulus (GEM) for an existing dam. GEM can be successfully used for the safety assessment of a dam during all phases of its lifetime. The new field measurements acquired by the monitoring system and/or with special field tests are used for the calibration/re-calibration of the analytical behavioral model of a certain dam and thus the GEM can be re-assessed. If the GEM value is preserved, one may conclude the safety status of the analysed dam is assured.

Key words: dams, global elastic modulus, hybrid model, monitoring, risk

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