

Structural safety control of the Feiticeiro dam based on an automated data acquisition system

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ABSTRACT

This paper presents the main characteristics of the automated monitoring system of Feiticeiro dam and addresses a proposal for the definition of thresholds for the physical quantities measured through the use of an automated data acquisition systems (ADAS) for concrete dams.

Feiticeiro is 45m high concrete gravity dam, designed, constructed and explored by EDP, located in Portugal in Sabor river (a tributary of Douro river).

The defined thresholds for the physical quantities will be linked to an Internal Early Warning Control System (IEWCS) of the dam, allowing the early identification and notification of potential abnormal situations to the entities responsible for the dam safety.

In operation since August 2016, the ADAS of the Feiticeiro dam defined by EDP allows the measurement of several quantities used for the safety control, analysis and interpretation of the dam behaviour, such as: horizontal and vertical displacements, movements of joints, strain, uplift pressure, foundation displacements, seepage, concrete and air temperatures, and reservoir water level, among others.

The measurements, obtained through the use of the ADAS developed and installed by Prointega Ingeniería, are sent to the gestBarragens system – the LNEC and EDP data processing and management system used for monitoring, diagnosis and safety.