

First experiences of civil structural health monitoring in Uruguay

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ABSTRACT

Structural health monitoring (SHM) of civil infrastructure is a world-renowned field for remote and continuous condition assessment. The use SHM systems optimize the resources available for traditional inspection campaigns and allows efficient preventive maintenance. In Uruguay, the use of SHM systems is still incipient. This article comprises recent work carried out by the academia, Facultad de Ingeniería, Univesidad de la República, and by two engineering companies, where different systems of SHM have been used and evaluated in real -or real-size- civil structures. The first case study involves a one 8 m long span of a concrete bridge, instrumented with accelerometers, strain gauges and deflectometers during a 6-month period. The second study involves the static and dynamic loading test of a steel trussed railway bridge using accelerometers, followed by a monitoring period of one week. Two longitudinal beams were extracted from a similar bridge, and analysed in laboratory, where additional damage was introduced to assess the system sensibility over damage. Finally, we present an academic study using ultrasonic wave propagation to monitor the compression level of a real size concrete column. For all case studies, we present the strengths and shortcomings of these first experiences, as well the remaining challenges for our future work.