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Experimental assessment of the accuracy of High Speed Weigh-In-Motion systems

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Abstract

This paper presents the results of research on the accuracy of two HS-WIM systems located in Wielka Wieś near Tarnów, Poland. Each of the systems is fitted with eight load sensors laid out in four lines, manufactured using different technologies. Quartz and bending plate sensors were used. The study of the accuracy of these systems was conducted using the pre-weighed vehicles method, after two years of operation of the systems, without correction of calibration factors during this period. The results obtained indicate that in both systems there is an systematic error with a value of approximately 2.9 %. These results have made it possible to assess the current error of the HS-WIM systems and to assign to them accuracy classes according to COST 323 guidelines. The calibration which was performed on both systems allowed for the elimination of among others of systematic error and showed the possibilities for reducing random errors in the analysed systems. Studies such as this one may be useful for assessing the periods between successive calibrations of HS-WIM systems in order to maintain accuracy in the assumed class in accordance with COST 323 (e.g. A(5), B+(7), B (10) etc.).

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