The use of a non-nuclear density gauge for monitoring the compaction process of asphalt pavement

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Abstract. The mechanical performance of an asphalt pavement affects its durability – thus carbon footprint. Many parameters contribute to the success of a durable asphalt mix, e.g. material selection, an accurate mix and even the road design in which the asphalt mix quality is quantified. The quality of the asphalt mix, by its mechanical properties, is also related to the compaction degree. However, and specifically for high volume rates, the laying process at the construction site needs an effective method to monitor and adjust immediately the compaction quality before cooling and without damaging the layer, which is now absent. In this paper the use of a non-nuclear density gauge (PQI – Pavement Quality Indicator) is evaluated, based on a site at Brussels Airport. Considering the outcome of the present research, this PQI is advised as a unique tool for continuous density measurements and allow immediate adjustments during compaction, and decreases the number of core drilling for quality control, and as a posteriori asphalt pavement density test where cores are prohibited. The use of PQI could be recommended to be a part of the standard quality control process in the Flemish region.