A METHODOLOGY TO DESIGN THE ASPHALT FIELD COMPACTION PROCESS IN THE LABORATORY TO PROVIDE CLEAR GUIDELINES FOR ROLLER OPERATORS

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ABSTRACT
Asphalt teams follow different time and temperature windows for asphalt compaction and the process still is based on tacit knowledge, making it hard to provide clear instructions to roller operators. To overcome this, a methodology was developed combining field measurements and laboratory simulation. Roller passes are simulated within different temperature-time windows varying the number of roller passes on a porous asphalt (PA8G-Plus). Next, the functional and mechanical properties are evaluated. The optimal compaction of a PA8G-Plus consists of 5-6 roller passes using a tandem roller in the temperature window 140-90 °C. The resulting properties are a lifespan of 15-18 years, a rolling resistance of 7.5-8.0 kg/ton, a noise reduction of 7.8-8.6 dB(A), and a skid resistance of 0.64-0.67 (friction coefficient). This research contributes to a deeper understanding between operational choices and the effects on asphalt performance. Also, a practical method has been developed to provide clear guidelines for roller operators.