

## **ENVIRONMENTAL IMPACT DEMONSTRATED BY CARBON FOOTPRINT OF COLD RECYCLING PAVEMENT TECHNOLOGY**

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### *ABSTRACT*

This paper presents detailed analysis of the cold recycling process with a focus on describing precisely the contribution to the reduction of CO<sub>2</sub>, NO<sub>x</sub>+HC emissions, CO and particle matters with respect to used machinery and the material processing. Impact is calculated from real selected job sites. The contribution caused of greenhouse gas emissions mainly by material production and machinery operation was studied as one of the objectives set within the European CoRePaSol project. Regarding the use of less traditional rehabilitation method of cold recycling, authors were also aware of potential differences within the life cycle of the newly reconstructed pavement. Exact data from machine measurements were ensured by the Wirtgen GmbH (producer of cold milling and recycler machinery) and the methodology was prepared by the Czech Technical University in Prague as a base for latter calculation tool combining traditional carbon footprint calculators with simple LCC approach (not included in this stage). This close cooperation allowed completion of the research with an objective result covering cold recycling technology done in-situ. It created ideal base for similar ongoing research on other alternative pavement rehabilitation technologies and their variants, as hot in-place asphalt recycling or in-plant recycling techniques. Final part of this paper concludes the total impact of CO<sub>2</sub> and other emissions and proofs, how minimally contribute used machines if compared to material production (bitumen and hydraulic binders) in terms of the total CO<sub>2</sub> production.