

PERFORMANCES AND MULTI-CRITERIA APPROACH OF LOW IMPACTS BITUMINOUS MIXTURES

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SUMMARY

Various innovative techniques allowing a reduction of the energy consumption and environmental impact have appeared during the last decade.

The first phase of the research consists in a detailed analysis of the performances of a selection of warm mix asphalt processes. Firstly, a study of the viscosity of such mixtures has been carried out, with a specific emphasis on the bitumen and mastic properties. Then, the performance evaluation phase has been dedicated to the potentially critical parameters; focusing on the performance rising process (curing time) and storage conditions.

In the second phase, a multi-criteria methodology for the evaluation of bituminous mixtures is proposed. Numbers of emissions (greenhouse gas) and energy calculator allowing comparing various road construction projects exist. However, despite the important effect of the asphalt mixture type on the energy and emissions, very few tools allow a detailed comparison of the coating technologies. The proposed multi-criteria model considers the emissions, energy consumption and economic aspects over the whole lifespan, but also the performance parameter that is essential in a decision process. This method offers a wider view of these technologies and finally allows refining the decision making process and thus encouraging innovation.

(193 words)