

COMPARISON OF CARBON EMISSIONS AND ENERGY CONSUMPTION FOR TWO ROAD MAINTENANCE SOLUTIONS

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ABSTRACT

Until the present time, road maintenance work has been based on technical and economic aspects, and only recently in France have environmental considerations been taken into account in project-related decisions. Road administrators are now being asked much more frequently to introduce so-called "green solutions" when it comes to maintaining their roads. Some of these solutions involve the reuse of bituminous mixtures, which includes applying hot recycling techniques in asphalt mix plants and reclamation techniques conducted *in situ* at cold temperatures.

This article presents a study carried out within the framework of an LCPC research program, entitled EPEES (for "Evaluation and Prediction of the Environmental Effects caused by Infrastructure"). The focus here is to track energy consumption and greenhouse gas emissions relative to two comparable road maintenance worksites, both located in the center of France. The first project consists of *in situ* reclamation at cold temperature using emulsions, while the second entails a conventional bituminous mixture at high temperature. Results target energy consumption and equivalent carbon for various phases of the production process: materials, transport and actual road works. The study also draws up an environmental comparison between these two techniques, according to a greenhouse gas indicator, and reveals the gas emission savings realized when employing the cold reclamation technique.

KEY WORDS: Road maintenance, carbon emissions, energy consumption