AllBack2Pave

ALLBACK2PAVE: TOWARD A SUSTAINABLE 100% RECYCLING OF RECLAIMED ASPHALT IN ROAD PAVEMENTS

Given today's societal concerns with environmental protection and sustainable development in a post-fossil fuel era, road authorities in Europe are working together to make the dismantling and end-of-life strategies of asphalt pavements more energy efficient. In this context, the amount of recycling of reclaimed asphalt (RA) in new asphalt pavements has grown to the point that it is no longer simply an isolated green construction alternative but a common practice in almost all of Europe. However, in general the share of recycling of RA in new asphalt courses is rather lower than it could be technically, especially in surface course layers.

Mixing plant in Italy: Ferrara Accardi & Figli s.r.l.

Stockpiling in mixing plant of Germany: Richard Schulz Tiefbau GmbH & Co.KG

AllBack2Pave is a two-year CEDR Transnational Road Research project that will evaluate the feasibility of going towards 100% recycling of asphalt pavements into surface courses. Led by the Technische Universitaet Dresden (TU Dresden) in Germany, together with the University of Nottingham (UNOTT) in the UK and University of Palermo (UNIPA) in Italy, the project started in November 2013. To facilitate the deployment of lean concepts and lean production practices, the investigation will be implemented in close collaboration with the private sector, including asphalt mixing plants, chemical additives producers and waste material managers.

The main objectives of the project are two-fold:

- To establish, through laboratory tests on binders and asphalt mixes, whether the use of high rates of RA is feasible in developing mixes with a high level of durability.
- To develop the so-called "*AllBack2Pave end-user manual*" on how to best produce cost-effective and high-quality asphalt mixes with high RA content.

The mixes selected for the investigation are two Stone Mastic Asphalt (SMA) mixes typically encountered in the surface courses of Germany and Italy. The percentage of RA within each mixture will vary from 0% (control mix) to the closest feasible to 100%. By comparison to the mechanical characterisation results between the control mix and the mixes with increasing content of RA, the most sensitive factors that affect the mixture performance - either good or poor - will be identified.

The project consists of four technical work packages (WPs). In WP2, blend and mixture design will be performed. The aim of this WP is to achieve mix designs with acceptable volumetric and mechanical properties. The blend design will provide information on the quality and quantity of virgin binders and/or additives that will allow high-content RA mixes for the selected asphalt surface courses to be obtained. The plant production related aspects will be investigated in WP3. Factors such as fractionation and stockpiling of the RA in the mixing plant and quality control during the production process will be considered. WP4 is dedicated to the mechanical characterisation of the asphalt mixes. The materials will be characterised in the laboratory in terms of stiffness, fatigue cracking behaviour, rutting susceptibility, moisture damage resistance and permanent deformation behaviour. WP5 aims to perform a sustainability assessment of the practice of using asphalt surface mixes with high recycling rates. The study will be based on chosen European case studies and will identify the most cost-effective solutions, together with their environmental impact over the whole lifecycle of the selected road pavements.

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