Background information:

The Research Association for Ready-Mixed Concrete (FTB) initiates community research projects. The FTB is a member of the German Federation of Industrial Cooperative Research Associations (AiF). The AiF is bearer of the Industrial Research Community (IGF). With the help of IGF, the FTB is able to apply for funding of the German Federal Ministry of Economics and Technology (BMWi). The BMWi funds research projects that strengthen the competitiveness of small and medium-sized enterprises (SME).

Project Profile:

Project start: 1st of April 2017
Project end: 30th of September 2019
Topic (short): Fresh Concrete Recycling (RC-FRESH)
Topic: Enhancement of Fresh Concrete Recycling in the Ready-Mixed Concrete Industry – Contribution towards the Care for Resources and Waste Avoidance in Correlation with Increasing the Efficiency

Research Association: Research Association for Ready-Mixed Concrete (FTB)
Research Institute: Technical University of Kaiserslautern
Funding amount: 249.970,00 EUR
AiF project number: AiF 18786 N

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Abridged version of the project:

Concrete manufactures daily receive fresh ready-mixed concrete waste for a number of reasons. To avoid disposal, the ready-mixed concrete plants utilize the fresh concrete waste in the production of new concrete. Common practice is emptying the truck mixer in the wash drums where the separation of slushwater and reclaimed washed aggregates takes place. Alternatively, concrete manufactures reclaim aggregates by emptying, hardening and crushing them.

Currently the reuse of processed aggregates (reclaimed washed and crushed aggregates) is limited to five percent by mass with regard to the total amount of aggregates in the new concrete production. The use of larger amounts is only allowed if an additional sieving of the reclaimed aggregates is carried out and if all requirements of the German Committee for Reinforced Concrete’s (DAfStb) guideline “Concrete with recycled aggregates” are met.

Until now, there is a lack of further laboratory examinations on the use of larger amounts of recycled aggregates. However, since the material has many advantages over recycled aggregates from mineral construction and demolition waste, it is expected that a use of 10 to 20 percent by mass without any further restrictions or additional sieving is feasible.

The majority of ready-mixed concrete plants already possess wash drums. At present, the amount of reclaimed aggregates obtained by this procedure is much larger than the applicable amount according to the current five percent limitation. Thus, in order to contribute to resource sustainability and waste avoidance, the objective of this project is a significant increase of this limit. The Technical University of Kaiserslautern examines the characteristics of the reclaimed aggregates. Based on these results they will determine which amount of reclaimed aggregates can be reused in the new concrete composition without affecting the concrete properties. Practical tests with different ready-mixed concrete companies will validate the results. This will contribute to the adaptation of existing German regulations.

Berlin, 28 Feb 2017