



Concrete moves...



OSLO
June 7 - June 8 2018



Concrete contribution to
a changing world

ERMCO
EUROPEAN READY MIXED CONCRETE ORGANIZATION

New environmental solutions for the concrete industry

Sven-Henrik Norman ⁽¹⁾

(1) Dept. of Concrete Industry, Mapei AS, 2120 Sagstua, Norway

Abstract

Mapei AS belongs to the Mapei Group, one of the world's largest manufacturers of adhesives, sealants and chemical products for the construction industry. Mapei AS has been awarded financial support by the Norwegian government industrial development forum to carry out a research project on environmental solutions in concrete industry. The project is containing four main issues of investigation, See below P1-P4.

This paper will present the latest results from this project and provide an overview of a related project lead by Mapei

P1: Design and install solutions to recirculate all fresh returned concrete to high quality aggregate in several concrete plants. Mapei patented Re-Con zero (Evo) technology shall be used in combination with simple logistic solutions with minimum of manual work, low investment costs and minimum need of maintenance.

P2: In most concrete mixing plants today, the washing of concrete trucks and other equipment creates a lot of water with a various concentration of cement and potential pollutions. There are different mechanical solutions to reuse the washing water. All the systems have a need of measurement, control and maintenance to work properly, and still the producers are reporting that 100% recirculation of water is difficult. By using the Mapei Mapeclean Recycler technology, the main volume of water from washing will be used directly in the following batch. A minor part has to be treated as today, but this water will contain almost no cement, and will be easy to control in the recycling facilities.

P3: By using Re-Con Zero technology and the patented HPSS method, materials from demolition of concrete, or soil material contaminated with oil or other substances can be treated and contaminants can be encapsulated in hardened cement as aggregate with minimum leakage. Thus, waste materials can become high value aggregates for concrete production or other applications where today virgin granite is used.

P4: In this sub-project, we study the re-capture of CO₂ into recycled concrete through the carbonation process. We would like to bring focus to the fact that while carbonation of concrete in a construction element is negative to the long-term durability and strength of a building structure, the same process in a non-structural material like unbound recycled concrete could be positive for the reduction of environmental impact of cement production. By replacing virgin natural materials in structures like for example noise barriers with granulated recycled concrete, the carbonation process is initiated over a much larger specific surface of many smaller particles compared to only the surface of for example a concrete wall or beam. In addition, the changes to the recycled concrete through the natural process of carbonation will not have a negative effect on structural integrity or durability. Instead, such use of recycled concrete- rather than just used as landfill-would contribute to the re-capture of CO₂ and decrease the negative climate gas impact from cement production.

Keywords: Re-Con zero technology, HPSS-system, recirculate concrete, recirculate aggregate, CO₂ capture.