Keynote Lecture

Decarbonising pathways for cement and concrete: Will innovation overcome industry resistance?

Jannie S.J. van Deventer
Zeobond Pty Ltd
Factory 10, 260 Wickham Road, Highett, Victoria 3190, Australia

Abstract

Portland cement (PC) production is the world's largest emitter of CO_2 at 8% of global emissions, equal to the global car fleet. Pressure from the community on the construction sector to decrease CO_2 emissions results in green-washing from the industry, with no plan for radical change. Also, the prescriptive standards for construction materials and design codes based on PC act as a major obstacle to adopt low CO_2 binders. By analysing the interplay between technical and commercial factors, especially regarding concrete durability, a pathway will be proposed for the adoption of new technology to decarbonise cement and concrete.

New technology, including electrically-enhanced supersonic shockwave reactors, will produce low CO_2 cements and supplementary cementitious materials (SCMs) from primary and secondary resources. Synthetic SCMs will create a new value chain by replacing the dwindling supplies of blast furnace slag and coal fly ash as the steel and energy sectors decarbonise.