CO_2 Concrete: A New Recycled Material

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Professor Vivian Tam has pioneered sustainable construction research with the invention of CO_2 Concrete. CO_2 Concrete utilises waste and harmful greenhouse-gas emissions to create new material for structural applications. This is the world's first recycled concrete research to raise the Australian industry's awareness of the: (i) severe impact of emissions on the environment; and (ii) potential of recycled concrete which has only been used for non-structural applications to date. Using this new techniques, CO_2 Concrete has matched its strength of virgin concrete. CO_2 Concrete also uses less cement which makes its more environment-friendly and cost effective with 11% cost reduction.

Using existing annual Australian concrete production, a potential net life-cycle benefit of $16 billion could be achieved using CO_2 Concrete instead of the net deficit of $22 billion using virgin concrete and 2.68 billion kgs of CO_2-e of life-cycle greenhouse-gas emissions could be reduced using CO_2 Concrete. This gap will only grow bigger with the increasing growth rate of concrete production.

This innovation has founded a start-up company, Ecobond (http://www.ecobond.com.au) in January 2018. The technology has been adopted in the market on a commercial scale for biosecurity platforms in April 2018 at Western Sydney University, and 3m x 3m slabs in partner with Volumetric Concrete Australia in March 2019.