



LafargeHolcim:

Founded in 2015 following the merger of Lafarge and Holcim, [LafargeHolcim](http://www.lafargeholcim.com) operates in 90 countries. LafargeHolcim solutions and services include cement, concrete, and aggregate solutions for the following businesses: buildings, infrastructure, distribution, oil and gas, affordable housing, and construction systems. With 386.5 mt of installed capacity worldwide, more than 2,500 plants (including over 1,600 in ready mix concrete, over 600 in aggregates, over 180 in cement, and 70 grinding plants) and 115,000 employees, LafargeHolcim is a worldwide leader (www.lafargeholcim.com).

Solidia Technologies:

[Solidia Technologies](http://www.solidiatech.com)[®] is a cement and concrete technology company that makes it easy and profitable to use CO₂ to create superior and sustainable building materials. Solidia's patented processes produce sustainable cement and concrete that cures using CO₂. Combined, these technologies reduce carbon emissions up to 70% and recycle 60-80% of the water used in the production of concrete. Based in Piscataway, N.J. (USA), Solidia's investors include Kleiner Perkins Caufield & Byers, Bright Capital, BASF, BP, LafargeHolcim, Total Energy Ventures, Bill Joy and other private investors. Honors include: 2016 Sustainia100, 2015 NJBiz Business of the Year; 2014 Global Cleantech 100; 2013 R&D Top 100; 2014 Best Place to Work in NJ; 2014 CCEMC Grand Challenge First Round award; 2016 CCEMC Grand Challenge Second Round finalist; 2013 Katerva Award finalist; and MIT's Climate CoLab shortlist. Follow Solidia Technologies at www.solidiatech.com and on [LinkedIn](#), [YouTube](#) and Twitter: [@SolidiaCO2](#).



Technologies for carbon emission valorization

LafargeHolcim and Solidia Technologies signed a first **Joint Development Agreement** in August 2013, followed by a **Commercial Agreement** in January 2015 in order to bring the Solidia cement and concrete solutions on the market.

The Solidia cement solution is a **non-hydraulic binder** that is produced in existing cement kilns using the same raw material used to make Portland cement (PC). The key difference is that the Solidia binder is produced using less limestone and at lower kiln temperatures. **These factors translate into reduced CO₂ emissions during cement manufacturing (30% reduction)**, from 820 kg per ton of Portland cement in the most efficient kilns to 570 kg per ton of Solidia Cement.

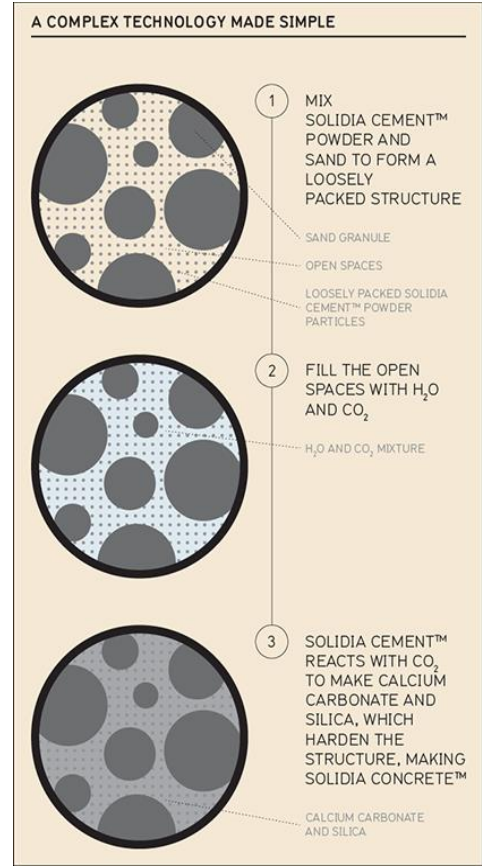
The Solidia concrete solution is based on **mineral carbonation** of the non-hydraulic binder. The binder is mixed with aggregate and water, and is then reacted with CO₂ gas to form a durable matrix. The curing process captures up to 300 kg of CO₂ per ton of cement used.

Together, the Solidia cement and concrete solutions reduce the CO₂ footprint by up to 70% when compared to conventional cement and concrete products.

The advantages to precasters are multiple:

- **Full strength in concrete parts achieved within 24 hours** (compared to 28 days for PC-based concrete). This permits just-in-time manufacturing and a significant reduction in inventory cost.
- Concrete waste is virtually eliminated and equipment cleanup time is significantly reduced because the concrete does not harden until it is exposed to CO₂.
- The final precast products present better aesthetics than PC-based concretes (no efflorescence, better pigmentation, and better color grading).

The first two non-hydraulic cement production campaigns were performed in the **Whitehall (USA) and Pecs plants (Europe)** of the LafargeHolcim group. The first precaster (in the USA) has commenced concrete production using the Solidia cement and concrete solutions. Durability tests and characterizations are on-going according to the norms in place for PC, both in the USA and the European Union.



LafargeHolcim and Solidia acknowledge the European Union for its funding in the framework of LIFE Program under grant agreement N° LIFE15 CCM/FR/000116. This funding will help the development of Solidia solution in Europe.

Key words: Mineralization, carbonation, Carbon Capture & Use, CO₂, precast, cement

Contact person

Dr Vincent MEYER
R&D Project Manager
vincent.meyer@lafargeholcim.com

