Solidia Technologies

R&D Collaborators






Solidia Technologies® is a cement and concrete technology company with patented scientific processes that make it easy and profitable to use CO_2 to create better building, construction and industrial products. Our patented, sustainable technologies utilize the industry's existing infrastructure, raw materials, formulations, production methods and specifications, making them easy to adopt anywhere in the world. An array of partners from the public and private sectors and academia are helping shift the discovery from theory to application. These third-party, collaborative efforts include applied research, materials testing and characterization, manufacturing logistics and general marketing.

INDUSTRY

LafargeHolcim

A world leader in building materials, LafargeHolcim researchers and technical experts worked with Solidia on research in concrete applications to demonstrate the feasibility of commercial-scale production in a conventional cement plant. In April 2014, a joint LafargeHolcim and Solidia team validated the reduced carbon footprint and commercial viability of Solidia Cement™ during a full-scale trial at LafargeHolcim's Whitehall cement plant in the U.S. Collaborative testing performed with many customers in recent months has demonstrated both the superior quality of Solidia Concrete™ products and their cost competitiveness. In addition to cement activities, LafargeHolcim Western Canada Precast operations will be an important test bed for the demonstration of Solidia Concrete manufacturing and performance. Much of this work is financially supported by the Alberta-based Climate Change and Emissions Management Corporation (CCEMC).

CDS Group

The world's leading curing and drying specialists, CDS Group is collaborating on the design and manufacture of curing chambers to accommodate the CO_2-curing process.

Air Liquide

A global leader in the international gases market and engineering, Air Liquide will work with Solidia to design new equipment that will demonstrate the feasibility of commercial-scale production. Air Liquide will also serve as the worldwide preferred provider of CO_2 and of associated equipment and systems for use with Solidia's patented processes.

GOVERNMENT

U.S. Department of Energy National Energy Technology Laboratory

NETL has co-funded a four-year research and development project as part of its CO_2 Storage Program. That research has focused in part on improving the understanding of water distribution in Solidia Concrete during the drying and CO_2-curing process. The research demonstrated that Solidia Concrete can achieve full hardness in a time comparable to that of Portland cement-based concrete in a controlled curing environment. In every application studied, Solidia Concrete fully cures in less than 24 hours as compared to the curing time of 28 days required for Portland cement-based concrete to achieve final hardness. At every stage of curing, Solidia Concrete parts match or exceed the strength of comparable products made with Portland cement-based concrete.

—more—

U.S. Environmental Protection Agency

Results of research conducted under Phase I of the EPA's Small Business Innovation Research (SBIR) Program confirmed that the incorporation of supplementary cementitious materials can further reduce the carbon footprint associated with the production and use of Solidia Cement. This research demonstrated that waste materials such as ground fly ash and blast furnace slag can be used to replace Solidia Cement by as much as 40% in concrete formulations.

U.S. Department of Transportation Federal Highway Administration

DOT's Federal Highway Administration supports Solidia with a multi-year Cooperative Agreement to examine transportation infrastructure applications. This joint program will include independent testing of Solidia Concrete at the Turner-Fairbank Highway Research Center.

ACADEMIA

Academic partners have helped to better characterize and understand the behavior of Solidia Concrete in actual service environments.

Purdue University

A team at the Purdue School of Engineering led by Professors Jan Olek, Ph.D., and Jason Weiss, Ph.D. (now at Oregon State University) report Solidia Concrete's outstanding performance in freeze-thaw, freeze-thaw with deicing salts and sulfate environments.

The University of South Florida

Professor Alberto A. Sagüés, Ph.D., heads a Civil and Environmental Engineering team at the University of South Florida that is aimed at characterizing the corrosion of steel rebar embedded in Solidia Concrete in a variety of service environments.

Ohio University

At Ohio University's Institute for Corrosion and Multiphase Technology (ICMT), Professors Yoon-Seok Choi, Ph.D., and Srdjan Nesic, Ph.D., are leading a group of scientists examining methods to better passivate the surface of steel rebar.

Rutgers, the State University of New Jersey

The original generation of the technology was co-invented in Rutgers' Material Science Department by Professor Richard Riman, Ph.D., and Vahit Atakan, Ph.D., who is now Solidia's Chief Scientist. Early research initiatives included the development of practical cast-in-place technologies for Solidia Concrete products. Ongoing research includes the development of alternative manufacturing processes for the synthesis of Solidia Cement, which would potentially further reduce the CO_2 footprint, capital equipment costs, energy consumption and other direct manufacturing costs associated with cement-making.

Princeton University

The microstructural characteristics of Solidia Concrete composites have been studied in the state-of-the-art analytical facilities at the Princeton Institute for the Science and Technology of Materials.

Follow Solidia at www.solidiatech.com and on LinkedIn, YouTube and Twitter @SolidiaCO2.

###