

# PROJECT FACTS

UNIVERSITY OF KENTUCKY CENTER FOR APPLIED ENERGY RESEARCH

## PARTICIPANTS

Ecocem  
Center for Applied Energy  
Research

## ENVIRONMENTAL & COAL TECHNOLOGIES

### Ground Granulated Blast-Furnace Slag (GGBS) Research and Development

There is a growing scientific consensus that the amount of carbon dioxide (CO<sub>2</sub>) in the Earth's atmosphere needs to be reduced. Reducing this carbon dioxide would require curbing the growth of CO<sub>2</sub>, and ultimately limiting those emissions to a level that would stabilize atmospheric concentrations. One way to limit these emissions to a manageable level would be to limit CO<sub>2</sub> emissions on the industrial and production levels.

Portland cement production is not only a source of combustion-related CO<sub>2</sub> emissions, but it is also a large source of industrial process-related emissions. Being able to reduce the amount of Portland cement used in concrete with a lower energy/emissions material, such as ground granulated blast furnace slag (GGBS), would have a large impact on reducing those emissions. Using slag cement in concrete can greatly decrease the amount of Portland cement typically used for a specific mixture of concrete; either by direct replacement or by reduction in total cementitious material in a mixture.

The main objective for these projects is to test the efficacy of different slag materials as activators for the hydration of GGBS, with the goal of formulating "green or recycled" cement, which contains a zero to minimum amount of Portland cement, and maximizes the use of waste materials. The overarching goal of this project is to advance the production of cements that can help to reduce the amount of CO<sub>2</sub> emitted into the atmosphere.

## CONTACT

UK CAER  
Dr. Tom Robl  
2540 Research Park Dr.  
Lexington, KY 40511  
Tel.: (859) 257-0272  
Fax: (859) 257-0220  
[tom.rob1@uky.edu](mailto:tom.rob1@uky.edu)

