



**Project Snapshot:**

- **Location:** Brevik, Norway
  - **Timeline:** May 2013 to March 2016
  - **Technology:** Solid sorbent CO<sub>2</sub> capture
- Leverages R&D conducted on U.S. DOE-funded project

RTI International is one of the world’s leading research institutes with a staff of more than 3,700, active in more than 75 countries, and dedicated to improving the human condition by turning knowledge into practice. Within its Energy Technology Division RTI develops innovative technologies for the production and use of clean energy which supports the work of government agencies as well as commercial/industrial clients.

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# Advanced Solid Sorbent CO<sub>2</sub> Capture Demonstration at Norcem’s Cement Plant

(Brevik, Norway)

RTI and Norcem – part of HeidelbergCement Group – have partnered to carry out a pilot-scale CO<sub>2</sub> capture technology demonstration in an operating cement plant utilizing an advanced, solid sorbent CO<sub>2</sub> capture process. RTI’s process technology – currently being developed for coal power plant applications – has the potential to substantially reduce the energy load and capital and operating costs compared to conventional aqueous amine CO<sub>2</sub> scrubbing. Provided the cement plant demonstration and future scale-up are successful, RTI’s technology will give the cement industry a viable carbon mitigation option in an increasingly carbon-constrained world. Financial support for the project is provided by Gassnova, the Norwegian state enterprise for CO<sub>2</sub> capture and storage.



Norcem’s Brevik Cement Plant - Norway

## Project Scope and Objectives

The three year project is structured into two phases. Phase I is focused on proving the viability of the solid sorbent CO<sub>2</sub> capture process for cement plants through detailed economic analyses and sorbent exposure testing using cement flue gas. Phase II comprises the actual pilot demonstration of RTI’s process at Norcem’s cement plant in Brevik, Norway. Following are the main objectives of the project:

- Develop a commercial design of the solid sorbent CO<sub>2</sub> capture technology for a typical commercial cement plant
- Prove the technology’s economic feasibility for application within the cement industry
- Collect representative gas exposure data for the CO<sub>2</sub> capture sorbent and optimize the process accordingly
- Demonstrate, on a pilot-scale, the effective and continuous removal of CO<sub>2</sub> from Norcem’s cement plant.

## RTI Solid Sorbent CO<sub>2</sub> Capture Technology

RTI, in collaboration with Pennsylvania State University, is developing the solid sorbent-based CO<sub>2</sub> capture process through financial support from the U.S. Department of Energy (DOE/NETL) and Masdar (United Arab Emirates). The process is a thermal-swing CO<sub>2</sub> capture process utilizing high CO<sub>2</sub> capacity sorbents in a fluidized, moving-bed reactor arrangement.

## HeidelbergCement / Norcem

HeidelbergCement is the global market leader in aggregates and prominent player in cement and concrete, making it one of the world’s largest manufacturers of building materials. Norcem’s two plants in Brevik and Kjøpsvik are among the most modern in Europe, in terms of energy consumption and emissions restrictions.

