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**Reducing the carbon footprint of cement industry by post-combustion CO<sub>2</sub> capture:  
Techno-economic and environmental assessment of a CCS project in Romania**

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### **Highlights**

- Integration of carbon capture and storage (CCS) technologies into cement industry;
- Reactive absorption and adsorption post-combustion CO<sub>2</sub> capture methods;
- Energy integration analysis for cement production with carbon capture and storage;
- Techno-economic and environmental assessment methodology;
- Calcium looping has reduced cement production cost as well as CO<sub>2</sub> avoidance cost.

### **Abstract**

Reducing the carbon dioxide emissions from the energy-intensive industrial sectors is of great importance in the fight against climate change. The cement industry is responsible for about 5% of global CO<sub>2</sub> emissions. In this article, two reactive absorption and adsorption post-combustion CO<sub>2</sub> capture methods are assessed in conjunction with cement production. The gas-liquid absorption method uses alkanolamine (MDEA) as chemical solvent and the

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