

PRODUCTION OF CEMENTITIOUS MATERIALS USING MICROWAVE INDUCED PLASMA HEATING

Tech ID: 33878 / UC Case 2025-078-0

PATENT STATUS

Patent Pending

BRIEF DESCRIPTION

Cement manufacturing is an energy-intensive process, traditionally requiring high-temperature kilns, which contributes significantly to industrial energy consumption and emissions. This innovation, developed by UC Berkeley researchers, presents a novel, energy-efficient method for producing cementitious materials.

SUGGESTED USES

- » Manufacturing clinker or cementitious materials with reduced energy expenditure.
- » Integrating a lower-carbon cement production step into existing manufacturing facilities.
- » Producing specialty or high-performance cementitious materials.
- » Developing small-scale or distributed cement production units that leverage microwave technology.

ADVANTAGES

- » Energy Efficiency: Microwave heating can be more direct and efficient than conventional kiln firing, leading to lower energy consumption during clinker production.
- » Reduced Emissions Potential: The lower energy requirements and potentially different reaction kinetics may lead to a reduction in emissions compared to traditional methods.
- » Rapid Heating: Microwave-induced plasma heating can achieve the necessary temperatures quickly.
- » Novel Materials: The unique heating mechanism may enable the production of cementitious materials with novel properties.

RELATED MATERIALS

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OTHER INFORMATION

KEYWORDS

cement, plasma heating, microwave-induced plasma, MIP, calcination, carbon sequestration

CATEGORIZED AS

- » **Energy**
- » Other
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