

# **Scalable Discount for Solar-Powered Containers in Cement Plants**





## Overview

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This work describes the implementation of concentrated solar energy for the calcination process in cement production. Approach used for providing solar energy includes the utilisation of a solar tower sy.

Can solar energy be used for calcination of cement?

This study shows that it is feasible to implement concentrated solar energy for the calcination process of cement production. Solar resource for the chosen plant location permits operation for an average of 12 h per day. 9 h of these 12 h are useable, with the remaining 3 h being utilized to heat up and cool down the solar reactor.

Can solar energy be used in cement manufacturing?

Gonzalez and Flamant (2013) designed a hybrid model that uses solar and fossil fuel energy to fulfill the thermal energy requirement for cement manufacturing. Concentrated solar thermal (CST) is a potential replacement for 40%–100% of the thermal energy needed in a conventional cement plant.

Can a solar power system save CO<sub>2</sub> in cement industry?

Concentrated solar power system is designed for cement industry. Substitution of required thermal energy ranging from 100% to 50% is studied. 7600 heliostats with 570 ha land required for 50% conventional energy replacement with solar energy. Selected conventional cement plant could save 419 thousand tons of CO<sub>2</sub> annually.

Can solar calciner be used in cement industry?

Moumin et al. (2020) investigated the technical feasibility and financial viability of implementing solar calciner in the cement industry. A design of a solar cement factory was proposed based on the solar calciner model proposed by German Aerospace Centre, and the heliostat field was evaluated.



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