

**EQACC SOLAR**

# **Scalable Solar-Powered Containers for 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 clinker be used for cement production?

For the first time ever, CEMEX and Synhelion successfully connected the clinker production process with the Synhelion solar receiver, producing solar clinker. This revolutionary innovation is an initial step to develop fully solar-driven cement plants.

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.

How a solar cement plant is designed?

Solar cement plant was designed based on cement production and the Direct Normal Irradiation (DNI) data available at plant location. Total thermal energy and the amount of land needed for the solar cement factory were analysed. Additionally, total mirror surface, number of heliostats, and land requirement are estimated.

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.

## Scalable Solar-Powered Containers for Cement Plants

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### Producing cement with solar energy

This is where the CemSol project comes in, short for "solar production of cement with integrated CO<sub>2</sub> capture". The team of ...

### Cement Industry Solar Update - Cement ...

This marks a significant milestone in the companies' journey toward the world's first fully solar-powered cement plant. An early 2022 ...



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### Cemex and Synhelion Move Closer to Solar-Powered Cement Plant

Cemex and Synhelion are on their way toward achieving a fully solar-powered cement production with the latest scaling of their technology to industrially-viable levels. ...



### Cemex and Synhelion make further progress toward the ...

Cemex and Synhelion announced today a significant milestone in their joint effort to develop fully solar-driven cement production: the scaling of their technology to industrially ...

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### Synhelion and CEMEX make further progress ...

Synhelion and Cemex will now take further steps toward building a solar-driven industrial-scale pilot cement plant. "I am convinced ...

PUSUNG-R (Fit for 19 inch cabinet)



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Synhelion and Cemex will now take further steps toward building a solar-driven industrial-scale pilot cement plant. "I am convinced we are getting closer to the technologies ...



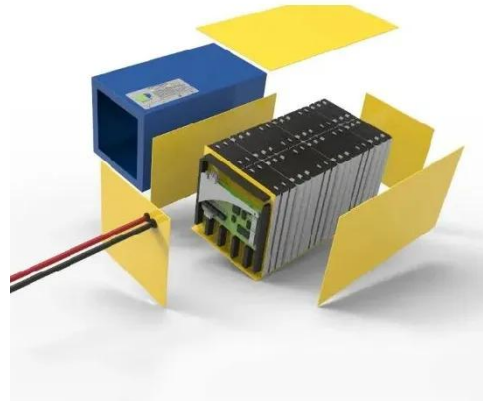
## Solar-driven calcium looping system for carbon capture in cement plants

This work analyses on novel solar-driven CaL process for carbon capture in a cement plant. In the system proposed, the energy required for the CO<sub>2</sub> sorbent regeneration is ...

## Concentrating Solar Power for Cement Decarbonization

Concentrating Solar Power for Cement Decarbonization Solar-Thermal Mixed-Media Enhancement and

## Decarbonization of Clinker Formation (Solar MEAD)



## CEMEX and Synhelion achieve breakthrough ...

CEMEX and Synhelion announced today the successful production of the world's first solar clinker, the key component of cement, ...

## Design of solar cement plant for supplying thermal energy in cement

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



## Decarbonizing Cement Production Using Concentrated Solar ...

The Technological Frontier of Solar Calcination The theoretical appeal of solar-powered cement has translated





Standard 20ft containers

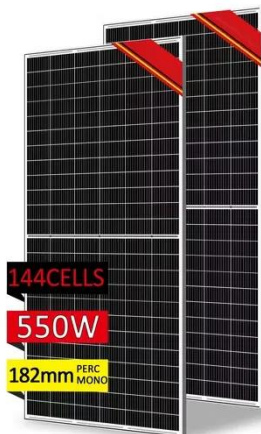


Standard 40ft containers

into tangible, albeit nascent, real-world progress. Pilot ...

## CEMEX and Synhelion achieve breakthrough in cement ...

CEMEX and Synhelion announced today the successful production of the world's first solar clinker, the key component of cement, a significant step towards developing fully ...



## Cement Industry Solar Update - Cement Optimized

This marks a significant milestone in the companies' journey toward the world's first fully solar-powered cement plant. An early 2022 energy lab demonstration in Spain saw ...

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