NKOSITHANDILEB SOLAR

15kW Photovoltaic Container Used in Tirana Cement Plant

Overview

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.

How to run solar reactor for calcination of raw material in cement production?

Solar and thermal energy needed to run the solar reactor for the calcination of raw material in cement production using a heat balance equation is as follows: Solar incident power on the solar reactor (Gonzalez and Flamant, 2013): (7) Q S R = Q r x n + Q h r m 1 − % Q l The mirror surface needed: (8) S m i r r o r = Q S R η S F D N I.

Which cement plant is used for solar thermal application?

Location and DNI availability of the investigated plant A conventional cement plant (Kotputli Cement Works (KCW), an UltraTech Cement Limited manufacturing unit) at Kotputli, Jaipur, Rajasthan, was investigated for solar thermal application.

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The process takes place in a reactor, the calciner. In most cement plants currently in operation, the extracted CO 2 escapes into the atmosphere. The entire process of cement ...

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