SOLPART

High Temperature Solar-Heated Reactors for Industrial Production of Reactive Particulates

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Deliverable D2.1

WP2 – Lab scale development and testing of 800-1000°C solar reactors

Deliverable 2.1. Report on lab-scale solar reactors innovative designs and chosen designs

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Introduction

Lime and cement production are energy and carbon intensive industries. Together, they are responsible of at least 7% of the CO2 global emissions [1]. In both industries, the decarbonation of CaCO3 is the most energy consuming step of the process. In the case of cement production, calcination represents the 60% of the total required energy in a cement the plant [2]. Calcination is therefore, a paramount step on the overall lime or cement production process in terms of energy consumption.

In the present document, we focus on the calcination reactors design. Firstly we present an overview of the manufacturing process used in energy intensive mineral industries, focusing on the industrial calcination reactors. Secondly, the state-of-the-art of the solar calcination. Finally, the design of the two lab scale reactors to be tested in the first part of the SOLPART project is introduced.

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References


