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Energy and CO2 savings in fired clay brick production by using olive oil residues

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Abstract

Energy and environmental costs have a great importance in all production plants, and this is particularly the case of fired clay brick production. The use of residues from the olive oil production process to partially substitute ingredients in the clay body is studied in this work. This option was technically demonstrated at laboratory scale. The new bricks meet all requirements based on mechanical properties. As part of the scaling up studies, the simulation of the whole brick production plant is performed using Aspen Plus. The base scenario corresponding to conventional operation was compared with other options, in which residues from olive oil production such as olive pomace or olive oil mill wastewater were included. Results show that the use of these wastes can represent an important saving in gas consumption of up to 2.8-18% in the plant operation. Furthermore, a reduction of up to 13 % in the actual emission rate of CO₂ can be reached, from 0.171 to 0.149 t CO₂/t product. At the same time, this option can alleviate environmental problems derived from olive oil wastes handling and disposal.

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