

Reduce of the Consumption of Industrial Kilns a Pottery Kiln as Example, Recovery of Lost Energy Using a System of Heat Exchangers and Modeling of Heat Transfer Through the Walls of the Kiln

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Abstract : In this work, we present some characteristics of the furnace studied, its operating principle and the experimental measurements of the evolutions of the temperatures inside and outside the walls of the This work deals with the problem of energy consumption of pottery kilns whose energy consumption is relatively too high. In this work, we determined the sources of energy loss by studying the heat transfer of a pottery furnace, we proposed a recovery system to reduce energy consumption, and then we developed a numerical model modeling the transfers through the walls of the furnace and to optimize the insulation (reduce heat losses) by testing multiple insulators. The recovery and reuse of energy recovered by the recovery system will present a significant gain in energy consumption of the oven and cooking time. This research is one of the solutions that helps reduce the greenhouse effect of the planet earth, a problem that worries the world.

Keywords : recovery lost energy, energy efficiency, modeling, heat transfer

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