MODELLING OF A RECENTLY INVENTED SOLAR POT

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ABSTRACT

The subject of the research, the solar pot, is a new invention protected at the Hungarian Intellectual Property Office (utility model, patent number 5489). The pot can be used for heating or cooking (foods, drinks or other fluids). It has a similar structure to a double pipe heat exchanger with an outer jacket and an inner cooking space. Although it has been manufactured, its capabilities have not been tested neither by modelling and simulation nor with measurements and experiments, so these investigations represent a completely new research field. The goal of this work is the mathematical modelling of the pot and the solar collector providing heat necessary for operation, which allows the prediction of the temperature of the jacket and the cooking space, as well as the temperature of the collector. The modelling and the first simulation results based on it are presented, based on which conclusions can be drawn regarding the efficiency and applicability of the pot. Future research plan is presented which includes the construction of an experimental system of the pot and the collector, on which measurements will be made under different conditions, allowing the assessment of the pot's functionality and the validation of the mathematical model(s).

Keywords: solar pot, solar collector, mathematical modelling, simulation results, planning of experiments