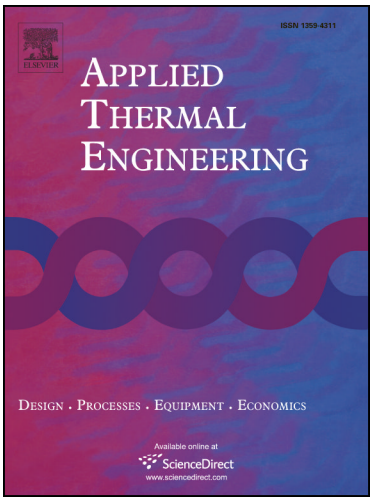

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The improvement on drying performance and energy efficiency of a tumbler clothes dryer with a novel electric heating element

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Abstract:

The heating characteristic of electric heating element has great influence on the drying performance of a clothes dryer. In this paper, a self-designed condenser was applied in a condensing tumbler clothes dryer to enhance heat transfer. Performance parameters, such as average moisture evaporation rate, final moisture content and moisture extraction rate (MER), were used to study the effect of three different types of electric heating elements (PTC, resistance wire and modified resistance wire) on drying performance of the dryer. The results indicated that a resistance wire did not enhance the drying performance and the energy efficiency of the dryer significantly, compared with PTC. So a modified resistance wire with aluminum splints was developed. It was observed that the average moisture evaporation rate increased obviously. Besides, both the moisture extraction rate and the final moisture content were reduced in different degrees. Even more gratifying was that the drying time