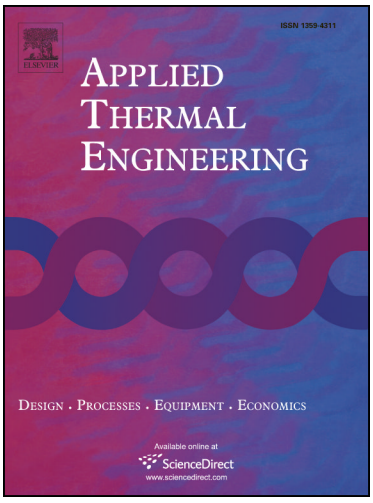

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Abstract

The domestic venting tumble clothes dryer consumes a lot of energy during the drying process, which has drawn more and more attention. This article reports a method to reduce its energy consumption by using heat recovery. A self-made heat pipe heat exchanger was used for a domestic venting tumble clothes dryer as a heat recovery unit. The performance of the clothes dryer in the case of heat recovery and no heat recovery was tested under the same conditions, including weighing before drying, drying and weighing after drying. Compared with the case of without heat recovery, it can be found that the exergy efficiency of the venting tumble clothes dryer with heat recovery is increased from 10.122% to 12.292%, and the energy efficiency is increased from 47.211% to 57.335%. The increase of the temperature of the moist air entering the drum increases the temperature difference between the hot dry air and the moisture in the clothes. This enhances the evaporation of moisture. So it takes less energy to evaporate the same amount of moisture. The electricity consumption can reduce 17.606%. The effect of heat pipe heat recovery on the dryer can be a guide to the optimization of clothes dryers.