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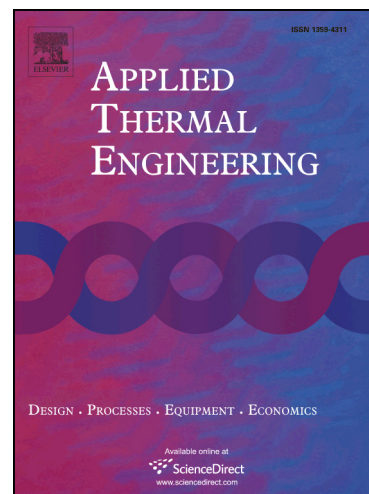
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Analysis on Energy Consumption of Drying Process for Dried Chinese Noodles

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Abstract: Drying is an important operation during the production of dried Chinese noodles, and the energy consumption from drying accounts for approximately 60% of the total energy consumption during the manufacturing process. To investigate the energy consumption and throughput of dryers for dried Chinese noodles, experiments were conducted using a new 130-m long tunnel dryer with two lines of noodles (ND) and an old 60-m long tunnel dryer with five lines of noodles (OD). The energy saving effects of a modified new 130-m long tunnel dryer (MND), which was only modified through the inclusion of automatic control for temperature and humidity without any modifications to the oil heater or ND dryer structure, were also compared. The energy saving effect was determined from the enthalpy difference between the inlet and outlet humid air of the ND and MND. Finally, the MND was found to be better than ND in terms of energy efficiency and throughput, and trends for the future of noodle drying were discussed.

Keywords: dryer; energy saving; uniformity; energy analysis; automatic control

1. Introduction

China's industrial sector accounted for 69.8% of the country's total energy use in 2012. Industrial energy use in China grew at an average rate of 7% per year from 2005 to 2012[1]. In 2010, China became the world's largest energy consumer, accounting for 19% of global energy consumption[2]. Moreover, specific heat consumption by the food industry in China was 2-3 times higher than that of developed countries.

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