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Wen-Jing Du, Qian Yin, Lin Cheng

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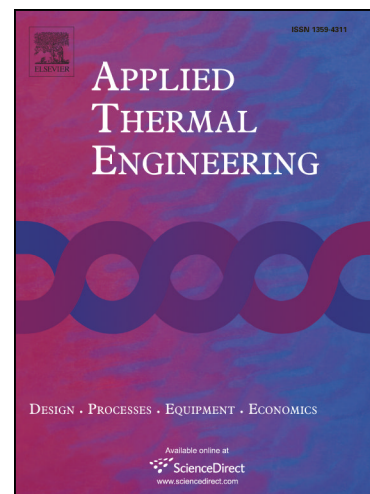
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## Experiments on novel heat recovery systems on rotary

### kilns

Wen-Jing Du, Qian Yin, Lin Cheng\*

*Institute of Thermal Science and Technology, Shandong University, Jinan 250061,*

*Shandong Province, China*

### Abstract

In this paper, we have proposed a novel heat recovery system installed on the rotary kiln. The experimental measurements are carried out to investigate the heat transfer characteristic and fluid flow performance of the nine heat recovery exchangers in the heat recovery system. The experimental platform is set up to study the operational characteristic of the system. The measurement results show that the outlet temperatures of the heat recovery exchangers mostly varies as the inlet temperatures increases while the experiments have certain hysteresis. Besides, the outlet pressure of the heat recovery exchanger varies as the inlet pressure changes. The measurement parameters of the inlet and outlet pressure have the same variation trend and quick responses with no hysteresis. When the inlet mass flow rate varies from 0 to 6 kg/s, the heat recovery exchangers with coiled pipes could effectively improve the heat recovery performance compared with the radiant type. Then the heat recovery performance of three different types of heat recovery exchangers in the system are investigated to obtain the heat transfer surfaces with better thermal

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\* Corresponding author. Tel.: +86 531 88399000. Fax: +86 531 88393000  
E-mail address: [cheng@sdu.edu.cn](mailto:cheng@sdu.edu.cn) (Lin Cheng)

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