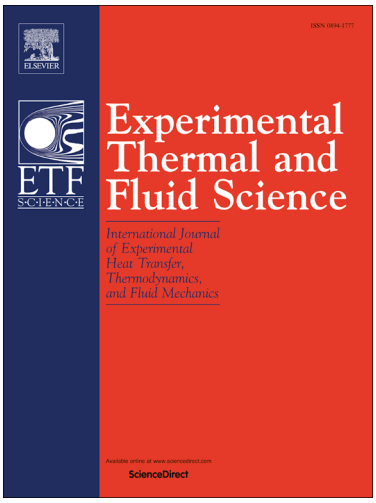

Experimental study on Heat transfer and pressure drop of twisted oval tube bundle in cross flow

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Experimental study on Heat transfer and pressure drop of twisted oval tube bundle in cross flow

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Abstract: An experimental research on air side heat transfer and pressure drop performance of twisted oval tube bundle with staggered layout in cross flow is conducted. The comprehensive performance of present twisted oval tube bundle is larger than that of round tube bundle with the same layout by 25.5% ~ 33.3% during the experimental range of Re_{max} (7500 ~ 18000). The economic operation Re_{max} among the experimental range is from 7 500 to 13 000 for present twist oval tube bundle in cross flow. The correlations for Nusselt number and Euler number deduced from this paper are well compatible with experimental data, which could provide a theoretical reference of twisted oval tube bundle for industrial applications.

Keywords: Twisted oval tube; Heat transfer; Pressure drop; Tube bundle; Cross flow

1 Introduction

The increasing demand of energy requires more intelligent and efficient heat exchangers. Various heat transfer enhancement technologies have been applied in the development of novel heat exchangers. The passive enhancement technology of convection heat transfer has been widely used in industries because it does not require ancillary equipment and consume extra power [1].