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# Air side heat transfer and pressure drop of H type fin and tube bundles with in line layouts

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**Abstract:** A set of experiments to research the heat transfer and pressure drop performance of H type fin and tube bundles with in line layouts are conducted. The effects of different geometry parameters including fin width, fin height, fin pitch, transverse tube pitch, longitudinal tube pitch and Reynolds number on heat transfer and pressure drop characteristics are discussed. The correlations of Nusselt number and Euler number deduced by multiple regressions from this paper are well compatible with experimental data, which could provide a theoretical reference of H type finned tubes for industrial applications related to air or gas heat exchangers.

**Keywords:** H type fin; Heat transfer; Pressure drop; Tube bundle

## 1 Introduction

Extending heat transfer surfaces is an effective method to enhance heat transfer and downsize heat exchangers, and several types of finned tubes have been used as key units in heat exchangers especially used in air or gas. Numerous experimental and numerical studies on air side heat transfer enhancement with several kinds of fin-and-tube heat exchangers have been conducted according to different fin patterns, such as annular fins, plain fins [1-4], spiral fins [5-13], wavy fins [14-16], and slotted fins [17-20]. Wang et al. [1-3] investigated the effect of number of tube rows, fin pitch and tube diameter on heat transfer and pressure drop of plain fin-and-tube heat

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