

Experimental Investigation of Effect of Corrugation Angle on Local Heat Transfer Characteristics of a Corrugated Plate

張志全、吳佩學

E-mail: 360080@mail.dyu.edu.tw

ABSTRACT

Heat exchanger can be used and applied to a very extensive range. The most typical and common applications of the heat transfer enhancement are on the plate heat exchange. So far, most of the plate heat exchanger research and analysis are focused on the total pressure drop and the heat transfer coefficient. According to this method, you can only adapt the benchmarks of the total pressure drop or heat transfer coefficient. Meanwhile, the numerical calculation data is significantly different from the actual experimental results. Furthermore, the measurement of the full – wall convective heat transfer coefficient is still less reference for public documents. Therefore, the following experiments are aimed at different angles (30 ° ,45 ° ,60 °) wave plate flow channel in full wall heat transfer coefficient distribution of the measured data to come out the results. At the same time, they are adapted the different corrugation angles ' and the different Reynolds numbers ' circumstances to evaluate the conditions of the channel full wall convection heat transfer coefficients and pressure drop. The results show that the average Nusselt number of the entrance are vulnerable to the influence of plate geometry of the poor reliability of it value on the plate. And the differences of the two plates ' average Nusselt values ' high and low are changed by the corrugation angle of the grain direction and direction of flowing of the folder. In the other words, when the substances are accumulated to flow from the exit of the up board, Nusselt value is up. But when the substances didn ' t flow from the exit of the down board, Nusselt value is down.

Keywords : plate heat exchangers、 corrugated angle、 transient liquid crystal technology、 local heat transfer coefficient

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