

Conceptual design of the intermediate heat exchanger for the helium gas cooled reactor

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In this study, we developed the thermal sizing code for segmentally baffled helium to helium heat exchanger which is a counter current shell and tube type unit with a vertical orientation. And using the code, preliminary design of optimized the heat exchanger was done through parametric sensitivity study.

This paper describes the mechanical features of the heat exchanger and summarizes the design procedures of it. The results of thermal sizing for the intermediate heat exchanger of a very high temperature gas cooled reactor are also presented. The major requirements in the conceptual designing process are the pressure drop, the flow velocity, and the exit flow temperature in the shell and the tube sides.

From the parametric analysis, it is found that the baffle spacing has noticeable effects on the thermal-hydraulic characteristics and the overall size of heat exchanger. In current design condition, the case of twelve baffles is the most reasonable design to meet requirements above mentioned.