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An Experimental investigation on the effect of NEW continuous core-baffle geometry on the mixed convection heat transfer in shell and coil heat exchanger

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**AN EXPERIMENTAL INVESTIGATION ON THE EFFECT OF
NEW CONTINUOUS CORE-BAFFLE GEOMETRY ON THE MIXED
CONVECTION HEAT TRANSFER IN SHELL AND COIL HEAT
EXCHANGER**

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Abstract

In the article, the authors presented the influence of continuous core-baffle geometry at mixed convection heat transfer in shell and coil heat exchanger. Experiments were carried out for a large power range, i.e. from 100W to 1200W and mass flow rates ranging from 0.01 kg/s to 0.025 kg/s. During the experiments, the mass flow rate of cooling water, the temperature of water at the inlet and outlet as well as the wall temperature of the coil (at 6 points over the coil's circumference) and the water temperature in the jacket of the exchanger (at 10 points along the shell height) were measured. The article confirmed that new form of continuous baffle geometry can successfully enhance heat transfer, but rather for small values of mass flow rates. It was also noted that the inlet/outlet configuration has significant influences on the fluid flow as well as temperature distribution at the jacket of the heat exchanger. The new experimental Nusselt numbers correlation at the shell side of the heat exchanger with continuous core-baffles was presented.

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