

# Investigation on Shell and Tube Heat Exchanger by Using CFD

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**Abstract:** In this study, a detailed technique is built to examine the effectiveness of a shell and tube heat exchanger (STHE) with 35% baffle cuts (Bc) and variable numbers of baffles. Water was used as the working fluid in CFD simulations of a single pass and single tube heat exchanger. For this simulation investigation, a counterflow approach is used. The commercial CFD software package ANSYS-Fluent was utilized for computational analysis of STHE, and distribution of temperature was obtained due to the usage of copper and aluminum materials. In this research, the shell and tube heat exchanger was studied with the number of baffles of four, and six pieces by varying the mass flow rate value which is 0.5, 0.8, and 0.9. From this research, it was found that the highest total heat transfer rate and highest heat transfer coefficient is produced by copper with Six baffles at 0.9 mass flow rate.

**Keywords:** Shell and tube heat exchanger, Mass flow rate computational fluid dynamics (CFD), Ansys Fluent.

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#### BIOGRAPHICAL NOTES



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